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Articles

The Effect of 4+1 Planned Writing and Evaluation Model on Developing Writing Skills and Writing Self-Sufficiency Levels of Learners of Turkish as a Foreign Language

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Abstract

Language is the most basic tool for communication. There are four basic areas of skills: listening, speaking, reading and writing. Each skill has a special importance in itself. Therefore, development of all skills will be beneficial for individuals. Writing skill is separated from other skills in that it has permanency. With writing, knowledge transfer could be realized through ages. People used the writing skill at points where oral expression was insufficient. Although writing skill is so important, it is the most challenging skill. This shows that writing skills should be developed with new methods in which students will be more active, rather than with traditional methods. The traditional method gives importance to the product that is produced at the end of the writing process instead of the writing process. However, this method prevents the development of writing skills in students. Nowadays, new methods have emerged out of the traditional method, and these methods gave importance to the process, not to the product. One of the methods that prioritize the process is the 4 + 1 Planned Writing Model. This model aims at the development of the student's writing skills and the active participation of the students in the process. When the fact that even the students whose native language is Turkish have difficulties in writing is considered, it is obvious that writing skill will become even more difficult for students who learn Turkish as a foreign language. These students' alphabets may be different and this may force them to improve their writing skills according to other skills. In these respects, it will be easier for those who learn Turkish as a foreign language to develop their writing skills with 4 + 1 Planned Writing Model. The aim of this study was to determine the effect of 4 + 1 Planned Writing Model on the development of writing skills and writing self-sufficiency levels of students. The participants of the study, in which the pre-test post-test empirical model was used, were 12 students who learnt Turkish as a foreign language. The study lasted 10 weeks. In the study, the data related to the development status of students' writing skills were obtained by evaluating the texts written by the students at the beginning and at the end of the study. The data related to the writing self-efficiency were collected by the Writing Self-Efficacy Scale. The statistical analysis of the data was made by SPSS 21.000.

Keywords: Writing, 4 + 1 Planned Writing, Writing skills, Writing, Self-efficacy, Teaching Turkish to foreigners.

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Introduction

Language has four basic skill areas and writing skill is one of them. Writing skill, which is initiated to be taught and developed in the first reading and writing lessons, is an important skill area for the permanence and continuity of knowledge. When the literature was reviewed, it was seen that many definitions were made about writing. According to Özdemir (1991, p.121), writing consists of a series of intellectual activities that are connected to each other like choosing and limiting the topic, associating it with a purpose, determining what is going to be written, associating the determined thoughts with a plan, and converting the plan into writing. According to Sever (2004, p.24), writing is the expression of what we hear, think, design, see and experience. According to Akyol (2000, p.146), it means producing the symbols and signs that are needed to express the thoughts in a legible way in line with certain rules. A similar definition was made by Özbay (2006, p.121), who claimed that writing was the narration of feelings, thoughts, wishes and events with certain symbols in line with certain rules.

Based on the definitions made in the literature, writing is a language skill, which allows the individual to express himself/herself by using the figures, symbols and numbers in line with certain rules. Individuals often meet writing in their daily lives. Writing skills are used when verbal expression is insufficient or when it is desired that feelings and thoughts become permanent.

Ağca (1999, p.61) explained the importance of writing and written works as "*it is very important for human beings to communicate with themselves, with their close-far surroundings, and with sacred values, to enable them to be controlled over time*". Covey (2006: p.153) emphasized the thought dimension of writing and explained the importance of writing as *"writing clarifies and distills thoughts"*.

Writing skill is the most difficult of the four skill areas. One of the most important reasons for this is that writing skill has its specific rules. Teaching these rules to students starts with the initial reading and writing classes. According to the results of the study of Temur (2001) that was conducted to determine the importance of writing skill, a significant and linear relation was detected between the written expression skill levels and school achievements of students. As it is understood from this study, it is obvious that making students acquire writing skills from the first reading and writing classes is of vital importance.

Güneş summarized the contributions of writing to students as follows (2013, p.160):

- Writing facilitates the activation of mental processes, regulation of thoughts and establishing communication by conveying thoughts to sentences.
- Writing ensures that thoughts are transferred to paper and are made easy to examine, compare, expand and rearrange.

- Writing opens the gates of thinking.
- Writing requires touching many feelings. The meaning received by the senses affect the student and the student expresses his/her thoughts by writing.
- Writing ensures that students understand better what they observe, listen and read.

The point that must be emphasized with great importance is the frequency of the writing activities. Because writing skill is acquired by writing. Yılmaz (2008, p.204) emphasized that writing skills might be acquired through making frequent practices, and that the acquired skill might be developed by working.

While students are writing, they should not move away from the writing process in the stage of teaching writing skill to students. Many writing exercises are done according to the product-based model, and only the product of the student is considered, without considering the writing process. In this approach, as Oral (2008, p.24) also stated, writing is considered as recording or transferring of ideas onto paper. Product evaluation is made in line with some technical criteria like grammar, word usage and the form.

In the product-based writing approach, written expression studies are continued in a linear manner, and therefore, no successful products appear in linearly-proceeding writing activities (Karatay, 2014). In addition to the failure in producing successful products, students move away from writing process. As a result of observing this situation, in recent years, the process-based writing model has been given importance in which the writing process of students is cared for, in which students are active and the teacher is only the guide.

According to Ashman and Conway (1993), the Process-Based Learning Model targets to develop the planning skills and thinking processes of students. The Process-Based Learning Model is a thinking model aiming that teachers only guide students by thinking aloud in the planning process, and provides students with cognitive awareness on how they learn (Narrated by Karatay, 2014, p.25). "In the process-based approach, writing is considered as a way of learning and development and as a creative activity that is organized in line with certain rules that may be analyzed and defined" (Maltepe, 2006, p.31).

"In the process-based writing model, it is expected that the teacher activates basic writing processes like the prior knowledge of students on writing subject, make them organize their thoughts, create a writing draft, review and evaluate the expression in the writing activities (Karatay, 2015, p.27). This model suggests that students are active and are taken as the bases in the writing process, while teachers provide guidance. According to this model, students learn how to access to knowledge when they are communicating with others through writing, speaking and listening and using information technologies while researching (Nancy, 1997).

There are two models that are cared for in the process-based writing approach. These are the 4+1 and 6+1 Planned Writing models. In this study, the effect of 4+1 Planned Writing Model on writing self-efficiency of learners of Turkish as a foreign language will be examined.

As a process, the 4+1 Planned Writing and Evaluation Process consists of the following stages. According to Karatay (2014, p.29):

1. Preparation: Brainstorming about the subject, determining what students know about the subject, doing research, making use of observations and experiences, determining what to say.

2. Creating a writing draft: Limiting the subject, determining the purpose of writing, organizing the main items and titles.

3. Reviewing/Organizing/Developing the writing draft: Reviewing what are and what are not mentioned about the main subject, and how these are organized.

4. Editing and spell-checking the writing: Editing and checking the writing in terms of spelling, language, narration, and punctuation.

5. Producing-releasing the writing: Sharing the written expression texts with readers. The realization of this sharing with classroom noticeboard, wall newspaper, school journal, internet page, local newspapers etc.
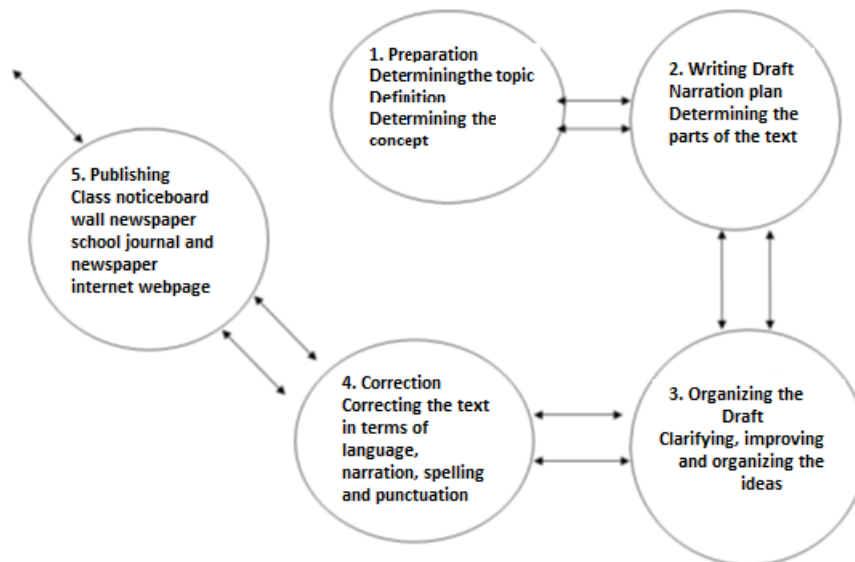
Figure 1 - Planned Writing and Evaluation Model (Karatay, 2014, p.30)

In this approach, several techniques like universal, analytical, peer and self-assessment are used. "These evaluations ensure that learning experiences and experiences that enable the emergence

of writing products and that reinforce the learning process are transferred into the classroom setting" (White and Arndt, 1991).

A great number of studies were conducted in the literature that investigated the effects of 4+1 Planned Writing Model on writing skills in native language education (Balcı, 2017; Karatay, 2011; Yılmaz & Aklar, 2015; Sever, 2013; Selanikli, 2015; Şentürk, 2009; Karatosun , 2014; Bayat, 2014). In these studies, it was determined that 4+1 Planned Writing Model had positive effects on the writing processes of students who had difficulty in writing.

No studies were detected in the literature other than the one that was conducted by Yıldırım (2018) to determine the effects of 4+1 Planned Writing Evaluation Model on the development of writing skills of students who learn Turkish as a foreign language. There are no studies conducted to determine the effects of 4+1 Planned Writing Model on writing self-efficiency of students in native language education and in Turkish education as a foreign language. In actual fact, one of the most important factors that affect the writing process is the self-efficacy perception. Because the students whose writing self-efficiency levels are low move away from the writing process, and cannot improve their writing skills.

A great number of descriptions have been made about self-efficiency in the literature. According to Bandura, self-efficiency is an attribute that is effective in the formation of behaviors as one of the building blocks of the Social Cognitive Theory, and it is defined as "the self-judgment of an individual about the capacity to organize the activities that are necessary for showing a certain performance" (Narrated by Karabay, 2013; p.1109). According to İpek and Bayraktar (2009), self-efficiency is a concept on whether or not an individual will convert his/her potential into behavior. According to Senemoğlu (2009), self-efficiency is the self-perception, belief and own judgment about the ability of one to cope with different situations, ability to achieve a certain activity, and capacity. Based on the above-mentioned definitions, self-efficiency may be defined as the attitude of an individual about being successful or not in doing an act.

The self-efficiency belief in a certain topic is very important in an individual's life. Alabay (2006) explained this situation as that the self-efficiency affected not only the behaviors of an individual to carry out right or wrong activities, but also it indicates how much effort an individual will spend to resolve a problem when faced with it and how persistent the individual will be.

The self-efficiency, which affects the writing processes of native Turkish language students, may affect the students who learn Turkish as a foreign language more. Even, some of the native alphabets of these students may also differ. This difference will cause that students have difficulty in writing processes, and parallel to this, weaken their self-efficiency perceptions. This situation shows

that the writing self-efficiency of students, who learn Turkish as a foreign language, must be increased.

The basic purpose of language education is to develop the comprehensions (listening and reading) and "narration" (speaking and writing) skills of students. Whether in mother tongue teaching or in foreign language teaching, four basic skills develop in an integrated manner with each other. Leaving any one of these four skills or not being able to develop these means that the basic purpose of language teaching is not achieved. For this reason, writing skill must be considered important in teaching Turkish to foreigners like other skills.

The purpose of the present study was to determine the effect of 4+1 Planned Writing Model on writing skills and writing self-efficiency levels of learners of Turkish as a foreign language. In line with this purpose, the answers to the following questions were sought.

- Is there a significant difference between the pre-test and post-test scores of the study group students in writing narrative text according to the 4+1 Planned Writing Model?

- Is there a significant difference between the pre-test and post-test scores of the study group students in writing informative text according to the 4+1 Planned Writing Model?

- Is there a significant difference between the pre-test and post-test scores of the study group students in writing self-efficiency according to the 4+1 Planned Writing Model?

Method

The Study Model

In this study, a Pre-test-Post-test experimental model was used without a Control Group to determine the effect of 4+1 Planned Writing and Evaluation Model on the writing skills and writing self-efficiency of those who learnt Turkish as a foreign language.

The Sampling

The sampling of the study consisted of the students who were learning Turkish as a foreign language in the Turkish Teaching Center in 2017-2018 spring academic year. As there was one class in the center, the study was conducted on one class. There were 15 people in the study group. However, throughout the study period, 12 students who attended the course regularly were included.

Data Collection Tools

Two data collection tools were used in the study. The first data collection tool was the "Writing Skills for Foreigners Self-Efficacy Scale", which was developed by Büyükikiz (2012). The scale had 2 sub-dimensions and consisted of 16 items. The Cronbach Alpha Coefficient of the scale

was determined to be 0.92. The scale was applied to the same group as a Pre-test before the commencement of the study and as a Post-test after 10 weeks' time. The second data collection tool was the texts that were written by the students. To determine the writing skills of the participants, they were made to write two texts, one at the beginning, and one at the end of the study. These texts were evaluated with the 4+1 Planned Writing and Evaluation Scale that consisted of 5 titles as Preparation, Planning, Development, Correction and Presentation and was developed by Karatay (2011). In the scale, the characteristics, which an article must have are listed as 30 items; and are evaluated over 1-3-5 (No, Partially Adequate, and Yes). The writing works were scored together with the researcher and another expert in this field.

Procedure

The present study lasted 10 weeks. The group was at level B1 at the beginning of the study, and it became level B2 at the end of the study. The study was carried out as 3 hours a week. Each lesson was determined to last 40 minutes. At the beginning of the study, the Writing Skill Self-Efficiency Scale was applied to the students, and they were asked to write informative and narrative texts. Before the application, information was provided to them on narrative and informative texts. Then, throughout 10 weeks' time, the lesson was taught in line with the 4+1 Planned Writing Model. In the 10th week, the Writing Skill Self-Efficiency Scale was applied again to the students, and they were asked again to write narrative and informative texts.

The Analysis of the Data

At the end of the study, the data obtained in the Pre-test and Post-tests were analyzed in statistical terms in the SPSS 21.000 program.

Application

The application, which was planned to be run for 10 weeks in total, was applied as follows:

1. Week: The students were asked to write informative and narrative texts on any topic they would determine. Then, the "Writing Self-efficiency Scale" was applied.

2. Week. Preparation: "My Idea Tree Activity" was applied by using the brainstorming technique. The ideas that were stated in the "My Idea Tree Activity" were decreased in number with the "Collect the Rotten Fruits to the Box from the Idea Tree". Following this activity, the students chose a topic from the box.

3. Week Preparation: The "Detailing the Subject Activity" was carried out on the subjects that were chosen by the students. Following this, the "Researching the Topic I selected" activity was carried out.

4. Week Planning: Before starting to write in this week, it was told to the students that they needed to make a plan before writing. The students were also told that the integrity of the writing

could only be protected with a plan. Information was given on the Introduction, Development, and Conclusion parts of texts. Explanations were made on text types, and the characteristics of narrative and informative texts were told to the students. As the narrator text, the text of "Beauty Water" that was written by Saim Sakaoğlu was chosen. As the informative text, the text "The Importance of National Culture" was selected.

5. Week Planning: In line with the informative text that was examined in previous week, the students prepared writing plans that were in accordance with their topics. For this purpose, the "I am Creating the Scheme of My Draft for My Opinion Writing" was made. Following the creation of the writing draft scheme, the "My Writing Draft "activity was employed to identify helping ideas and supporting elements.

6. Week Planning: For the purpose of determining the narrative text elements in line with the narrative text samples, the "I am Determining the Event Writing Elements" activity was carried out. The students determined the elements like place, time, main character, helping character, problem, result and main idea to be used in the writing activities. For the purpose of determining the character, place, and time elements of the narrative texts, the "I am Determining the Characteristics of the Event Writing Elements" activity was carried out.

7. Week: Organization. The students talked about the final form of their writing drafts with the researcher face-to-face. The mistakes in the drafts were corrected by the researcher.

8. Week. Organization. Following the organizations, the students wrote their texts again. Those who wanted read their texts to set an example for their friends. Then, the researcher evaluated the texts in terms of semantic consistence and integrity, and provided feedbacks for the students.

9. Week. Correction: In this week, the informative and narrative texts were examined in terms of formal characteristics like paper order, spelling and punctuation.

10. Week. Presentation/Sharing and Applying Post-test: All of the students read the texts they wrote in the classroom. Then, the students were asked to write a narrative and informative text about a topic, which was told them at the beginning of the study. After the texts they wrote were collected, the "Writing Self-efficiency Scale" was applied.

Findings

Table 1. The t-test results of the Study group according to the pre-test and post-test 4+1 Planned Writing model in writing narrative text.

Dimensions (4+1)	N	X	S	SD	T	P
Pre-test preparation	12	1,6667	,71774	11	-5,234	,001
Post-test preparation	12	3,1875	1,07727			
Pre-test planning	12	1,6667	,71774	11	-3,571	,000
Post-test planning	12	3,1667	,91287			

Pre-test development	12	2,4583	,85834	11	-2,265	,005
Post-test development	12	3,2917	,48656			
Pre-test correction	12	2,5833	2,08470	11	-2,362	,795
Post-test correction	12	2,7500	,51493			
Pre-test presentation	12	1,7917	,49810	11	-1,733	,010
Post-test presentation	12	2,6667	,96138			
PRE-TEST_TOTAL	12	2,2111	,39269	11	-6,628	,000
POST_TEST_TOTAL	12	3,0556	,53548			

The averages of the narrative text writing skill scores of the study group students before and after the application are given in Table 1. It was determined that the pre-test narrative text writing levels of the study group before the Writing Education Activities based on 4+1 Planned Writing and Evaluation Model and the total score averages (X=2,21) were lower than the Post-test total score averages (X=3,05).

For the purpose of determining whether or not there were significant differences between pre-test and post-test story writing skills of the study group students, the average scores were tested with Related Samples **t**-test. As a result of the study, it was determined that there was a significant difference between the total average scores in the pre-test and the Post-test scores based on the 4+1 Planned writing and Evaluation Model study group students [t(11) = -6,628, p<.000]. This situation shows that the 4+1 Planned Writing Evaluation Model targeting to increase the story writing levels of students in teaching Turkish as a foreign language increases the Post-test scores in all stages of 4+1 Planned writing and Evaluation Model, which are Preparation, Planning, Development, Correction and Presentation, increases the post-test scores.

According to the data that were obtained in the present study, when the five stages of the 4+1 Planned Writing Evaluation Model (Preparation, Planning, Development, Correction and Presentation) were examined one by one, significant differences were detected at the Preparation, planning, development and presentation stages in favor of the post-test scores; however, there was no statistically significant difference in the Correction stage. However, when the pre-test (X = 2,58) and post-test (2,75) scores of the Correction stage of the students were compared, it was determined that there was an increase in the Post-test average scores.

Table 2. The t-test results of the Study group according to the pre-test and post-test 4+1 Planned Writing model in writing informative text.

Dimensions (4+1)	N	X	S	SD	T	P
Pre-test preparation	12	2,4167	,34267	11	-5,234	,000
Post-test preparation	12	3,9792	,98545			
Pre-test planning	12	1,6667	,61546	11	-3,571	,004
Post-test planning	12	2,7083	,83824			
Pre-test development	12	2,6458	,61661	11	-2,265	,045
Post-test development	12	3,2083	,62006			
Pre-test correction	12	2,1389	,95831	11	-2,362	,038
Post-test correction	12	2,7778	,64092			
Pre-test presentation	12	2,0833	,70173	11	-1,733	,111
Post-test presentation	12	2,5417	1,05439			
PRE-TEST_TOTAL	12	2,2778	,30329	11	-6,628	,000
POST_TEST_TOTAL	12	3,1722	,53368			

The average scores of the informative text writing skills of the study group students before and after the application are given in Table 2. The arithmetic total mean scores (X=2,27) of the Pre-test planned writing levels of the study group were lower than the Post-test total score averages (X=3.17) before the 4+1 Planned Writing and Evaluation Model Based Writing Training Activities applications. For the purpose of determining whether there were significant differences between the Pre-test and Post-test informative text writing levels of the study group students, the average scores were tested with the Related Samples t-test. As a result of this test, it was determined that there were significant differences between the average scores of the Pre-test and Post-test 4+1 Planned Writing and Evaluation Model based on informative text writing scores [t(11) = -6,628, p<.000]. This shows indicates that the 4+1 Planned Writing and Evaluation Model-based Writing Education Activities that were applied to increase informative text writing levels of learners of Turkish as a foreign language increased the Post-test scores of the students in all stages (Preparation, Planning, Development, Correction and Presentation) in terms of informative text writing process.

According to the data that were obtained in the present study, when each stage of the 4+1 Planned Writing Evaluation Model (Preparation, Planning, Development, Correction and Presentation) was examined one-by-one, it was determined that there were significant differences between the Preparation, Planning, Development and Correction stages in favor of the Post-test scores; however, no statistically significant differences were detected at the Presentation stage. However, the Pre-test (X=2.08) and Post-test (2.54) scores of the students who participated in the study in Presentation stage were higher in favor of the Post-test average scores.

Table 3. The t-test results of the Study group according to the pre-test and post-test 4+1 Planned Writing model in written expression self-efficiency.

Dimensions (4+1)	N	X	S	SD	T	p
1.Study Pre-test	12	4,7396	1,48162	11	-4,510	,001
2.Study Post-test	12	6,0781	,70616			

In Table 3, the pre-test and post-test self-efficiency average scores of the study group students in written expression are given. The written expression self-efficiency Pre-test score arithmetic mean of the study group students was X=4.73, and the post-test mean score was X=6.07. In the light of these data, it was determined that there was a significant difference in favor of the post-test scores of the students when the pre-test scores of the students in writing education applications were compared with the post-test scores after the 4+1 Planned Writing and Evaluation Model-Based Writing Training Practices [t(11) = -4,510, p<.000]. This can be interpreted as that the 4+1 Planned Writing and Evaluation Model affects the written expression self-efficiency of students who learn Turkish as a foreign language n a positive way.

Discussion, Result and Recommendations

Narrative texts constitute the fictional types of writing, which describe one or more events faced by one or several people, very closely to these people who face these events, and as if the writer lives with them (Gündüz, 2007). In narrative texts, the purpose is to convey a message to be transmitted in the context of a specific plot.

In text-oriented language teaching, narrative texts are frequently made use of. In the development of reading-comprehension skills of an individual, narrative texts, which increase the power of thinking, analyzing, synthesizing and evaluating of students are made use of in developing writing skill, which is one of the self-expression skills. As it is the case in teaching Turkish as a native language, narrative texts are included in the course books that are used as teaching materials in the teaching of foreign languages. Narrative texts are made use of in teaching Turkish to foreigners in traditional narrative approaches, and in narrative tales, which has become common in recent years. In these new approaches, in the Process-Oriented Writing Approach, narrative texts are employed to improve the writing skills of students as texts that care for the process and not for the product.

The 4+1 Planned Writing Evaluation Model, which is one of the models in the Process-Oriented Writing Models that have been developed in recent years, requires a good preparation for the text before having a holistic viewpoint on the text, then developing the structural plan of the text,

writing the text in line with this plan, and then finalizing the completed text according to the spelling and punctuation rules, and then bringing the text to the presentation stage step-by-step.

Since the previous dimension constitutes the infrastructure of the following dimension, the relation between the dimensions is as strong as to affect the whole of the text. For this reason, the efficiency at every stage of the model must be acquired by students with certain activities during the production of a text that will determine the written expression skills of students.

In this study, which was conducted to determine whether each stage of the 4+1 Planned Writing Evaluation Model contributed to the development of these qualifications of the students or not, it was determined that there was a significant difference between the pre-test and post-test scores of the study group students and the 4+1 Planned Writing and Writing Model-based average scores in favor of the post-test scores. This difference is similar to the results reported in the studies of Balcı, 2017; Karatay, 2011; Özkara, 2007 and Sever, 2013 in which they conducted on different target groups. The results that were obtained in the present study show that the 4+1 Planned Writing Evaluation Model improves the narrative text writing skills of students in a positive way.

Writing skill, which is one of the self-expression skills in Turkish Teaching, is at least as important as other skill areas. Every written text is a communication means between its writer and the reader. Text is more concrete and limited than words. For this reason, priority has been given to writing as a linguistic study area more than verbal expression. This situation has continued in this way from the past to the present. However, nowadays, students stay away from writing skills. This skill, which is avoided even by those who learn the Turkish language as a native language, is becoming more difficult for students who learn Turkish as a foreign language. Because written text has its own rules. While traditional approaches focused more frequently on the appearance of these rules on the product, recent process-based approaches, which have become widespread, give more importance to the process of writing and the development of the stages in this process.

The process-based approaches emphasizes the importance of the whole process, which recommends that the student is actively involved in the writing process from the first step where the text is formed instead of the formal characteristics of the text till the last step where the text is completed. Halliday & Hasan (1976), who stated that the meaning was important not the formal aspect of a text, said "A text is not a formal unit but a semantic unit" A text might be in verbal form or may be written as prose or verse, dialogue or monologue. It is explained that "Everything, from a single proverb to a game or to an instant call for help or to an all-day-long discussion in a community may be text."

In Turkish teaching, to improve the writing skills of students, both narrative and informative texts may be used. Informative text is the one that is written to convey information to the reader. The

text types that explain a phenomenon, thought or situation and that are written to enable the reader to better understand a subject may be defined as informative text (Günay, 2007). In informative texts, the author avoids ornamented and metaphorical narration. The main purpose of such a text type is providing information. The approaches aside from the traditional ones that are used to improve the writing skills of students require that students firstly examine the sample informative text in the preparation step, then choose a topic and collect information about it, plan the writing by putting the information s/he collected in order. In this way, the student takes an active role in every step and then develops positive attitudes for the writing process. In this study, the applications were made to the study group based on this process.

As a result of the study, it was concluded that there was a significant difference in favor of the post-test scores of the study group students in 4+1 Planned Writing Evaluation Model after the 10-week 4+1 Planned Writing Evaluation Model. These results are in agreement with the results of the study that was conducted by Balcı (2017) on the development of Writing Skills and Written Expression Attitudes of 6th Grade Students after 4+1 Planned Writing Evaluation Model. Similar studies were conducted on student groups with different target groups (Olson, 2004; Yılmaz, 2012; Tabak & Göçer, 2013; Karatosun, 2014; Balcı, 2017) reported parallel results for the development of informative text writing skills of students, which clearly demonstrates the importance of the 4+1 Planned Writing Evaluation Model.

An effective writing teaching must enable students to write one step further by making use of their past experiences accompanied by courage and pleasure and to express themselves, their feelings, their thoughts, their desires, and their dreams (Yıldız, 2008). Although students are expected to develop equally in four basic skills, they stay far from writing skill. This situation affects writing self-efficiency levels of students in a negative way. For the purpose of overcoming this negative image and to improve writing skill, the self-efficiency and beliefs of students in writing should be increased. The increasing successful written text production experiences of students as a result of the evaluation of students in line with their process development levels, strengthens the self-belief scores of students in writing; and depending on this, also increases the motivation for writing.

Developing the writing skills, whether in mother tongue teaching or in foreign language teaching and increasing the self-efficiency of students in writing are important to achieve the basic purpose of Turkish Language Teaching. This importance comes to the forefront even more for students who learn Turkish as a foreign language. Since the languages and alphabets of such students are different, it becomes difficult for them to develop their writing skills. For the purpose of overcoming this difficulty more easily, it is necessary that the writing skill self-efficiency of students is increased. Based on this necessity, it was concluded as a result of the present study that there was a significant difference between the results of self-efficiency pre-test scores of the study group students

and the results of the post-test scores according to the 4+1 Planned Writing and Evaluation Model in favor of the post-test scores.

Although no similar studies were detected on the effects of 4+1 Planned Writing and Evaluation Model on writing self-efficiency in the literature, in a study that was conducted by Yıldırım (2018), the effect of planned writing and evaluation model in teaching Turkish as a foreign language on writing skill was investigated and it was determined that a teaching model that was in line with the 4+1 Planned Writing and Evaluation Model developed the written expression skills of students in the Study Group at a significant level. In addition, (Balcı, 2017; Karatay, 2011; Sever, 2013; Bayat, 2014; Ata, 2017; Avcı, 2018) examined the results of different studies conducted on mother tongue and foreign language education. It was concluded in these studies that this model contributed positively to the written text production skills. The results that were obtained from the study show that the 4+1 Planned Writing and Evaluation Model increases positively the self-efficiency of students in written expression.

Limitations

1. The data of the study were limited with the students who were learning Turkish as a foreign language at Turkish Teaching Application and Research Center.

2. The application time was limited with 10 weeks.

3. The application was limited with the students who learnt Turkish as a foreign language at B1 and B2 level.

Recommendations

1. When conducting writing activities with students who learn Turkish as a foreign language, process-oriented writing studies should be given priority instead of product-oriented writing activities.

2. The 4+1 Planned Writing and Evaluation Model should be made use of for the purpose of improving the ability of the students to produce narrative and informative texts in writing lessons for students who learn Turkish as a foreign language.

3. For the purpose of improving written expression skills of students who learn Turkish as a foreign language, and to increase their writing self-efficiency, the 4+1 Planned Writing and Evaluation Model must be included in writing lessons.

4. Similar studies may be applied to students who are educated at other Turkish learning and application centers.

5.   Studies that are based on Process-Based Writing Approach may be applied to student groups who learn Turkish as a foreign language and who are at advanced level (C1 and C2).

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APPENDICES

Appendix-1: Writing Skill Self-efficiency Scale for Foreigners

)	ITEMS	I DO NOT AGREE – I AGREE						
		1	2	3	4	5	6	7
1	I can write all words of a one-page composition accurately.							
2	I can make up accurate sentences that are in accordance with grammar rules when I am writing.							
3	I can use prefixes and suffixes accurately when I am writing.							
4	I can write a paragraph that supports the main idea or topic.							
5	I can write my composition in line with the introduction, development and conclusion plan.							
6	I can write my ideas without moving away from the topic.							
7	I can select proper heading for my composition.							
8	position on which I have knowledge.							
9	I can write a composition on what I imagine.							
10	I can express my emotions and thoughts in written form.							
11	I can give examples that fit the topic when I am writing a composition.							
12	I can write my composition within a certain plan.							
13	I can write my composition in line with the writing and page layout order.							
14	I can write a conclusion that is proper for my composition.							
15	I can write a composition on a specified/chosen topic.							
16	I can write a text that tells my educational life.							

Appendix-2: 4+1 Planned Writing and Evaluation Scale

4+1 PLANNED WRITING AND EVALUATION SCALE		NO (1)	PARTLY (3)	YES (5)
1.PREPARATION	1. The text has a topic.			
	2. The student has determined the keywords, and basic concepts.			
	3. The student has limited the topic of the text.			
	4. The student has a purpose (main idea).			
	5. The text has a certain target audience.			
	6. The student has done research about the text.			
	7. The student has made use of different sources.			
	8. The student has organized the information about the text.			
2.PLANNING	9. The student has created a writing plant that fits the text.			
	10. The student has determined the main and sub-headings of the text.			
	11. The student has determined the introduction, development and result sections of the text.			
	12. The student has integrity among its sections.			
3.DEVELOPMENT	13. The student has made an introduction that fits the type of the text.			
	14. The student has supported the main idea with auxiliary ideas			
	15. The student has made use of thought development methods in the text.			
	16. The student has proper transition among the sections of the text.			
	17. There are not any sections that are not understood in the text.			
	18. The student has not included unnecessary details in the text.			
	19. There is knowledge, idea or event that evoke interest in every section of the text.			
	20. The student has concluded the text in an impressive manner.			
4.ORGANIZATION	21. The thoughts and events have been ranked in the text in a consistent manner.			
	22. There are no ambiguities in the sentences the student has used in the text.			
	23. The cause-effect, purpose-result relations have been established accurately in the text.			
	24. The student has used words that fits the context in the text.			
	25. The student has used punctuation marks accurately.			
	26. There are no spelling mistakes in the text.			
5.PRESENTATION	27. The student has organized the text in line with the characteristics of the type of the text.			
	28. The student has used a proper and legible writing in the text.			
	29. The student has cared for the page layout.			
	30. The heading and images used in the text are interesting.			

Affective Comparison of Messages in Narrative Texts of First- and Fourth-Grade Preservice Turkish Teachers

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Abstract

The aim of this study is to compare the messages in the narrative text written by first- and fourth-grade preservice Turkish teachers in order to assess their positive or negative views. To this end, 13 first- and 13 fourth-grade students of the Turkish Language Teaching Department of Van Yüzüncü Yıl University were asked to complete a narrative text. Data were analyzed using content analysis. Texts were assessed both as a whole and as a unit. Result showed that fourth graders used more positive sentences than first graders. The analysis of sentences as a whole revealed a difference between male and female participants. However, it was not statistically significant. The analysis of sentences as a unit revealed that male participants had significantly more positive views than female participants. The reasons for the significant difference between first and fourth graders are that before starting higher education, students have high expectations, which are, however, not fully met, and various reasons arising from universities or cities. The difference between male and female participants might be due to the fact that the latter have higher expectations and are more perfectionist than the former.

Keywords: Preservice Turkish teachers, affect, narrative text, message.

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Introduction

The Grand Turkish Dictionary of the Turkish Language Association defines the term "affect" as the impression of certain objects, events or people in one's inner world, or as the ability to evaluate objects or events morally and aesthetically or as a unique spiritual movement and mobility. Defined as an observable manifestation of a subjective experience (Bakırcıoğlu, 2012), affect is concerned with how one feels and what kind of effect that feeling has on one. In this respect, to what extent affect has an effect on one is of key importance when it is positively or negatively taken into account (Zubaroglu & Yanardağ, 2017). Positive affectivity refers to positive mood and overall content while negative affectivity refers to negative mood and overall discontent. Discontent often manifests itself as dissatisfaction and complaint. According to Isen, Daubman and Nowicki (1987, p. 1122), research shows that positive affectivity can affect the organization of cognitive materials, and therefore, creativity. Erdoğan (2009) also reports that differences in mood affect problem-solving performance, indicating that groups with negative mood have poorer problem-solving performance than those with positive mood.

According to Doğan and Özdevecioğlu (2009, p. 168), positive affectivity can be defined by energy, joy and happiness while negative affectivity has a different mood structure. People with high negative affectivity feel anger, tension, worry, guilt and sorrow. They also state that low negative affectivity means lack of negative affectivity and that people with negative affectivity are also calm and satisfied.

Affectivity determines which subject is more important than others for a person feeling it. The transition from what is most important to least important is about positive affectivity while the opposite is about negative sentimentality. The intensity of affectivity refers to the significance of value preference (Doğan & Özdevecioğlu, 2009, p. 169). Watson, Clark and Tellegen (1988, p. 1064) use the adjectives "attentive, concerned, alert, excited, enthusiastic, inspired, proud, determined, strong and active" to define positive affectivity while they use the adjectives of "distressed, upset, jittery, hostile, afraid, scared, ashamed, guilty, nervous and irritable" to define negative affectivity.

Writing

People have always found a way to express their thoughts. They do it by talking, using symbols and pictures and writing. Since the discovery of writing, people have been able to express and convey their thoughts and feelings more easily.

From the moment the individual is born, he/she begins to live in an environment surrounded by language (Sarıkaya, 2018, p. 9). Writing is one of the ways of communicating with language. According to Özbay (2007, p. 115), writing is the expression of feelings, thoughts, wishes and events in accordance with certain rules. Writing is a behavior that allows self-expression. People use writing

to convey knowledge to others in their daily and professional lives. Not only people who are interested in literature but also those working in other areas need writing. According to Karatay (2013, p. 21), writing, in other words, written expression, is defined as the task of conveying emotions and thoughts to others by using the characters, symbols and signs of a language. In short, as Şengül (2001, p. 24) states, writing is the transfer of knowledge, thoughts, experiences, emotions and dreams in a certain order and harmony with the grammatical rules of a language.

People acquire their native language during infancy and, later on, deliberately shape their language skills through formal education, which is the point where Turkish teaching comes into play. The aim of Turkish teaching is to enable people to develop language skills to be able to express their feelings and thoughts comprehensively in written or oral form (Çamurcu, 2011, p. 505). When given the choice between writing or speaking to convey their thoughts, students mostly prefer to use the latter (Altuntaş, 2017, p. 8) because writing is the last and hardest language skill to acquire.

Writing is as important as reading in every aspect of life and a matter of particular attention in teaching. Courses should include activities to help students develop writing skills. According to the 2005 Turkish Primary Education Curriculum (Grades 1-5), writing about emotions and thoughts in a clear and understandable way requires a variety of mental skills. Through writing skills, students learn how to sort, limit and organize their thoughts and apply grammatical rules. Writing skills are directly associated with other skills (listening, speaking and reading). Students who read, write and scrutinize what they write can develop writing skills.

According to Güneş (2016, p. 157), students should perform activities to develop understanding and mental skills such as writing their thoughts in a logical way, using expressions that lead to different thinking, making comparisons, establishing a cause and effect relationship, and classifying, evaluating and summarizing. They should also practice on different types, methods and techniques of writing such as writing to have fun and to learn, and questioning, persuasive, descriptive and free writing. High motivation is also required for writing. The ability of a student to actively create a text is closely related to his/her willingness to write. Students do not want to be involved in the writing process, which manifests their writing shortcomings, and therefore, adversely affects their motivation. Students with low motivation may fail in this process (Hamaratli, 2015, p. 81). Therefore, Turkish teaching should include not only theoretical but also motivation-raising activities. This is of great importance for students to develop writing skills. One thing to keep in mind is that all activities carried out in Turkish teaching are interrelated as they help students express themselves and convey their feelings and thoughts.

The content of writing, which is the transfer of emotions and thoughts through letters and symbols, is also important. When authors express their emotions and thoughts in writing, they are generally concerned about the messages that their texts convey. Every text conveys a different

message to its readers depending on interpretation and viewpoint. Therefore, the content of a text is as important as its form. Written expressions consisting of words are very important in order to be able to get into the inner world of people and to understand and share what they think and feel (Kaynaş, 2014, p. 25).

Reflections of Affectivity Through Narrative Texts

Stories have been used for thousands of years and varies according to time and culture. Stories are texts that can be detected in the most concrete form and creates common expectations in people in terms of text structure (Sahin, 2012, pp. 34-35). Children across the world are interested in stories and tales the most.

Narrative texts depend on events. When students write their thoughts through narrative texts, they develop events around characters and come up with a conclusion. From another point of view, observation, perception and imagination are the source of narrative texts. In other words, the subject of a narrative text is the product of its author's observations and imagination. Thus, narrative texts help readers reconstruct their daily experiences and enrich their lives (Chenfeld, 1978 cited in Başaran & Akyol, 2009, p. 14).

Narrative texts are the type of text that people use most to express their experiences. Narrative texts are also the type of texts through which people can most easily express their views of life and attitudes towards events because the topics of narrative texts are things that happened or are likely to happen. In other words, narrative texts tell stories from life. People often turn what have happened to them or what they have witnessed into stories. This kind of conveyance also shows the emotional aspect of the person who writes the text. Readers understand authors' emotions and their approach to life and events through their event-based writings.

Objective and Significance

Having a positive perspective on life brings happiness. Therefore, societies with positive energy and perspectives are happy. The aim of this study is to compare the messages in the narrative texts written by first- and fourth-grade preservice Turkish teachers in order to assess their positive or negative views.

Family is where children learn to develop a positive view of life. School years are also a critical period for the development of this positive view. Therefore, students, who are the managers, teachers, shopkeepers, employers, employees and parents of the future, should develop a positive view of life in the early years of school. This is much more important when it comes to teaching because teachers play a key role in shaping people's views and emotions and helping them develop positive attitudes towards life. The more positive the teachers' views of events and situations, the more likely they are to make students good citizens who contribute to society.

Narrative texts depend on events. When people write their thoughts through narrative texts, they often reflect their feelings and insights on life through the heroes that they create. The purpose of this study is to examine people' perspectives through texts. Therefore, narrative texts were used. This study aimed to investigate preservice teachers' attitudes towards events and situations through their texts and determine whether their attitudes differ by grade level and gender.

This study sought answers to the following questions:

✓ What is the distribution of first-grade preservice Turkish teachers' narrative texts according to the categories (positive, negative, equivocal and mixed)?

✓ What is the distribution of fourth-grade preservice Turkish teachers' narrative texts according to the categories (positive, negative, equivocal and mixed)?

✓ Do first- and fourth-grade preservice Turkish teachers' narrative texts differ affectively?

✓ Do male and female preservice Turkish teachers' narrative texts differ affectively?

Method

This was a case study. Case study is performed to elicit information on a mixed situation through a comprehensive explanation and contextual analysis (Davey, 1991). "Case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (Yin, Cited in Yildirim & Simsek, 2011, p. 277). Based on the questions "how" and "why," case study is a research method that allows researchers to examine a phenomenon or event that they cannot control (Yıldırım & Şimşek, 2011, p. 277). In short, case study is conducted for in-depth analysis of a single case or event. It is a systematic way to collect data, analyze and report results. The resulting product provides information on why the phenomenon in question occurred the way it occurred and what future research should pay attention to. Case studies are, therefore, rather suitable to produce hypotheses (Davey, 1991).

Data were collected using a qualitative research methodology. Qualitative data are based on well-defined rich definitions and detailed descriptions of a process (Miles & Huberman, 2015, p. 1). Qualitative data collection methods such as observation, interview and document analysis are used in qualitative studies in which perceptions and events are analyzed in their natural settings in a realistic and holistic way. One way to obtain data in qualitative studies is to collect documents from people and analyze them. This method is used to elicit information on people's experiences, ideas, critiques, tastes, feelings, attitudes, beliefs and ideologies and is highly effective in scientific studies.

Data were analyzed using affect analysis, which is performed to elicit information on the direction, tendency or attitude of any oral or written material categorized in the early stages of analysis (Tavşancıl & Aslan, 2001, p. 105). Affect analysis is a type of content analysis.

Study Sample and Material

The study sample consisted of 13 first- and 13 fourth-grade students of the Turkish Language Teaching Department of Van Yüzüncü Yıl University. The study material consisted of 26 narrative texts written by all participants.

Data Analysis

Affect analysis, which is a type of content analysis, was used. In affect analysis, bad and low sentences are coded as "negative," sentences with phrases such as increase, winning, development as "positive," those with equivocal or neutral expression expressions as well as negative and positive expressions as "mixed," those with no clear positive or negative meaning as "equivocal" and those containing no judgments as "neutral" (Tarhan, 2010, p. 48).

This study investigated the positive, negative, mixed and equivocal aspects of messages conveyed by narrative texts written by participants. For convenience, precision and quantitative operations, Tavşancıl and Aslan (2001, p. 110) assigned numbers to the categories (Positive = 1, mixed = 3, negative = 5 and equivocal = 7). All sentences were analyzed based on the categories. Their frequency and percentages were calculated and presented in tables. The study also investigated whether participants' views differed by grade level and gender.

In affect analysis, it is important to group data according to affectivity and to explain and write the rules of encryption in a logical and clear manner (Tavşancıl & Aslan, 2001, p. 110). This process provides a standardization for both analysts and raters.

Below is an example of how participants' narrative texts were affectively analyzed.

Groups of affect analysis	Sentences as a whole	Sentences as a unit
The pigeon asked where he was going.		7
"I'm very unhappy in this forest. I want to go to a remote city, but I don't want to go alone" said the Owl.	3	3
The pigeon thought about it for a while and then agreed, and they headed for the remote city together.		1
They crossed mountains and streams and went a long way.		1
When they stopped to rest, the owl saw a sparrow among the trees and then the sparrow disappeared.	7	7

Yes, the sparrow was following them.		7
Because the sparrow was bored of where she was living and wanted to see other places, but, she did not dare to do it alone.		3
The sparrow knew that the owl was as unhappy as she was and was going to talk to the owl and offer him to go somewhere else together, but the sparrow saw the pigeon talking to the pigeon and so decided not to talk to him.	5	3
Then the sparrow started following them, and now she got caught.		5
The owl thought that she was wrong and wanted to have a chat with the pigeon, but the pigeon was very upset and angry at the owl because she had regretted having left home.	5	5 1
They began to argue, and the pigeon left the owl there and returned.		5
The owl was left alone. The sparrow felt sorry for the owl, but then she was happy because she thought they could travel together and be friends.		7
While the owl was thinking about what to do alone, the sparrow appeared right next to him and asked him "Would you come with me?"	3	7
The owl was surprised and said to the sparrow "You would abandon me like the pigeon," and declined the owl's offer.		5
The sparrow was very upset and went on her own way.		5
The owl thought that he broke the sparrow's heart but did not want the same thing to happen to him and so decided to move on.	3	5
The owl could not stop thinking about the sparrow.		7
The owl could not get the sparrow out of his head and started looking for the sparrow.		7
The owl began to look for the sparrow everywhere and ran into her after a long time.	3	1
The owl told the sparrow that he was sorry and that he did not mean to hurt her and apologized to her.		1
Then they set off for the remote city where they could be happy together.	1	1

According to the Table, if all sentences in the column "Sentences as a unit" are coded by a category (for example, if all of them are encoded as 1), then they are answered in column "Sentences as a whole" according to the same category. If sentences in the column "Sentences as a Unit" are encoded by mixed categories (such as 1, 5), then these three sentences are assigned the number 3 in the column "Sentences as a whole" to indicate that they are "mixed" sentences.

Validity and Reliability

Experts were consulted at every stage of the study. Actual information was reached to establish validity, and the phenomenon in question was analyzed as it was without any intervention. Affect analysis is a type of content analysis, and therefore, reliability for content analysis also applies to affect analysis. For this, the following formula is proposed by Miles and Huberman (cited in 1994 by Tavşancıl and Aslan, 2001):

Reliability = (number of agreements) / (number of agreements + number of disagreements)

For reliability, the inter-rater agreement should be 70% or higher.

In this study, three researchers evaluated the data and analyzed almost all of the 26 narrative texts together. Based on their feedback, reliability was tested and established for all the narrative texts.

Findings

The first research question was "what is the distribution of first-grade preservice Turkish teachers' narrative texts according to the categories (positive, negative, equivocal and mixed)?" To answer this question, first graders' narrative texts were grouped according to the categories of positive, negative, equivocal and mixed, and the statistical data are given in Table 1.

Table 1. Frequency (f) and percentage (%) distribution of first graders' narrative texts (based on unit and whole sentences)

Sentences as a unit									
Groups	Positive		Negative		Equivocal		Mixed		Total	
	F	%	F	%	F	%	f	%	f	%
First-grade	110	37	100	33	87	29	3	1	300	100
Sentences as a whole										
First grade	15	14	12	12	6	6	70	68	103	100

Of 300 sentences written by first graders based on "Sentences as a Unit", 37%, 33%, 29% and 1% were positive, negative, equivocal and mixed, respectively. Of 103 sentences written by first graders based on "Sentences as a Whole," 14%, 12%, 6% and 68% were positive, negative, equivocal and mixed, respectively.

The second research question was "what is the distribution of fourth-grade preservice Turkish teachers' narrative texts according to the categories (positive, negative, equivocal and mixed)?" To answer this question, fourth graders' narrative texts were grouped according to the categories of positive, negative, equivocal and mixed. Table 2 presents the statistical data.

Table 2. Frequency (f) and percentage (%) distribution of fourth graders' narrative texts (based on unit and whole sentences)

Groups	Positive		Negative		Equivocal		Mixed		Total	
Sentences as a unit										
	f	%	F	%	f	%	F	%	f	%
Fourth-grade	267	60	113	25	58	13	9	2	447	100
Sentences as a whole										
Fourth-grade	42	28	12	8	-	-	97	64	151	100

Of 447 sentences written by fourth graders based on "Sentences as a Unit", 60%, 25%, 13% and 2% were positive, negative, equivocal and mixed, respectively. Of 151 sentences written by first graders based on "Sentences as a Whole," 28%, 8% and 64% were positive, negative, and mixed, respectively. They had no equivocal sentences.

The third research question was "do first- and fourth-grade preservice Turkish teachers' narrative texts differ affectively?" To answer this question, the narrative texts were analyzed using an independent measures t-test. Table 3 presents the results.

Table 3. Results of independent measures t-test for grade difference

Groups	N	$\overline{X}$	S	sd	T	p	% (positive)	% (negative)
Sentences as a unit								
First-grade	300	4.09	2.50	748	6.84	.000	37	33
Fourth-grade	450	2.86	2.35				60	25
Sentences as a whole								
First-grade	103	3.27	1.50	254	3.85	.000	14	12
Fourth-grade	153	2.62	1.18				28	8

There was a statistically significant difference between first- and fourth graders in favor of the latter. For "Sentences as a Unit," first graders had 37% positive and 33% negative messages while fourth graders had 60% positive and 25% negative messages. For "Sentences as a Whole," first graders had 14% positive and 12% negative messages while fourth graders had 28% positive and 8% negative messages. These percentages show the statistical difference between the two groups. The

results showed that first graders used more negative sentences than fourth graders, suggesting that the lower the grade level, the higher the percentage of negative sentences.

The fourth research question was "do male and female preservice Turkish teachers' narrative texts differ affectively?" To answer this question, the narrative texts were analyzed based on gender using an independent measures t-test. Table 4 presents the results.

Table 4. Results of independent measures t-test for gender difference

Groups	N	$\overline{\text{X}}$	S	Sd	T	P	% (positive)
Sentences as a unit							
Female	615	3,48	2,50	208,44	3,22	,001	49
Male	135	2,76	2,31				61
Sentences as a whole							
Female	210	3,93	1,37	254	1,27	,205	21
Male	46	2,65	1,28				28

The analysis of sentences as a unit showed that male participants had significantly more positive views than female participants. The analysis of sentences as a whole showed a difference between male (28%) and female (21%) participants. However, the difference was not statistically significant.The analysis of sentences as a unit showed that female and male participants had 49% and 61% positive messages, respectively. The analysis of sentences as a whole showed that female and male participants had 21% and 28% positive messages, respectively.

Conclusion and Discussion

This study analyzed narrative texts written by 13 first- and 13 fourth-grade preservice Turkish teachers.

The results are as follows:

• Of 300 sentences written by first graders based on "Sentences as a Unit", 37%, 33%, 29% and 1% were positive, negative, equivocal and mixed, respectively. Of 103 sentences written by first graders based on "Sentences as a Whole," 14%, 12%, 6% and 68% were positive, negative, equivocal and mixed, respectively.

• Of 447 sentences written by fourth graders based on "Sentences as a Unit", 60%, 25%, 13% and 2% were positive, negative, equivocal and mixed, respectively. Of 151 sentences written by first graders based on "Sentences as a Whole," 28%, 8% and 64% were positive, negative, and mixed, respectively. They had no equivocal sentences.

• First graders mostly used mixed sentences consisting of positive, negative and equivocal expressions. However, fourth graders used significantly more positive sentences and fewer negative and equivocal sentences than did first graders (.000).

• Male participants used more positive sentences than female participants. This difference was statistically significant especially considering sentences as a unit (.001).

These results might be due to numerous reasons such as the failure of colleges or cities to meet the expectations of students. However, by the time students reach fourth grade, they develop more positive views because they become more adjusted to college and city life. The gender difference might be due to the fact that women have higher expectations and are more perfectionist than men. The literature contains no studies that perform affective analysis on narrative texts. There are, however, some studies that compare students or employees in terms of positive/negative affectivity. We will discuss our findings in relationship to those studies. In our study, male participants had more positive sentences than female participants. Zubaroğlu and Yanardağ (2017) reported that male students had significantly higher positive affectivity and negative affectivity scores than female students. Topal (2011) also found that male students had higher mean positive affectivity score than female students. These results are consistent with our findings. In our study, fourth graders had significantly more positive sentences than first graders. Alver (2005) reported that fourth graders had higher mean problem solving skills and academic achievement scores. This result is consistent with our result.

Deniz, Arslan, Özyeşil and İzmirli (2012) compared Turkish college students and those from other countries. They could, however, not find any difference in terms of positive-negative affectivity.

There are some other affect studies, the results of which cannot be compared with ours. One of those studies is the "affect analysis of messages in fables in the fifth-grade Turkish textbook" conducted by Çiftçi and Kaya (2018). They performed affect analysis on each sentence of the fables in the fifth-grade Turkish textbook. According to their results, 60%, 42% and 60% of the fables "Pigeon," "White Rabbit" and "Snowflake" consisted of positive sentences, respectively. They concluded that "Pigeon" and "Snowflake" were qualified fables that contributed to the cognitive and affective development of children, but not the "White Rabbit." Another study is the "examination of the texts in the fifth grade Turkish textbook in terms of their values" conducted by Çırak, Şahin, Özberk and Eriş (2014), who analyzed 2173 sentences in 40 texts both in terms of value categories and affect analysis. They concluded that 15 categories consisted mostly of positive sentences.

Erdoğan (2009) also reported that differences in mood affected problem-solving performance, indicating that groups with negative mood had poorer problem-solving performance than those with positive mood.

Suggestions

According to Doğan and Özdevecioğlu (2009, p. 166), affects are obtained through experiences and prepare people to act. They are as important in perception and attitude development processes as cognitive and behavioral factors and play a key role in all relationships and adaptation to the environment. It is, therefore, important not only for preservice teachers but also for future generations to be able to think positively and have positive affect because positive or negative affectivity causing satisfaction or dissatisfaction has an effect not only on us but also on people around us. All results considered; the following suggestions can be made:

- Learning settings should be improved to help preservice teachers develop more positive affectivity.

- Curricula should be designed in a way to encourage preservice teachers to develop positive perceptions of and attitudes towards the future, and course contents should be prepared accordingly.

- The profession of teaching should be made more attractive to teachers and preservice teachers in a way that they feel the urge to develop positive perceptions and attitudes towards it.

Further research should be conducted on this subject matter.

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Augmented Reality, Virtual Reality and Digital Games: A Research on Teacher Candidates

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Abstract

Virtual reality, although it is in the real world, is a three-dimensional simulation model that brings users to a different environment with computer-generated graphics, video and audio, and enables communication with the media. Virtual reality is the imitation of the physical structure from a real-world or an imaginary world in a computer-generated environment. Augmented reality is the combination of the real world with the virtual world, the creation of enriched environments using virtual objects, the combination of physical reality and digital holograms, or the creation of a virtual world suitable for the purpose by using digital products. The aim of this study is to determine the opinions of teacher candidates studying in the faculty of education in terms of augmented reality, virtual reality and digital games depending on some demographic variables. The working group of the study consisted of teacher candidates studying in different departments of the Faculty of Education of Mustafa Kemal University in 2018-2019 Academic Year. Mixed model and General survey model were used in the study. In order to determine the opinions of teacher candidates, Using Digital Educational Plays Scale was used as a data collection tool. As a result of the research, there was no statistically significant difference between the opinions of the teacher candidates about the use of digital educational games in terms of the affective component, perceived usefulness, perceived control and the scale generally in terms of the scale, however, however, it has been concluded that there is a difference in favor of women in sub-dimension of affective components. In addition, in the research, teacher candidates were not afraid to use computer, but they were afraid of playing computer games.

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Introduction

Virtual reality and augmented reality are two technologies that are similar, but in some ways different from each other. Augmented reality is a term used to describe the direct environment of reality. Real or other virtual objects form a new real-time and complex reality and consist of several devices that add virtual information to existing physical information (Aveleyra, Racero & Toba, 2018). Augmented reality is a reality where physical reality and digital holograms are used together. In augmented reality, users see the holograms as much as the real world (Noor, 2016). Thus, objects of the real world and objects of the virtual world coexist in augmented reality.

Virtual reality is basically a set of technology and computer hardware used to create an immersive simulation of a three-dimensional environment (Neelakantam & Pant, 2017). Virtual reality is the imitation of the physical structure from the real-world or an imaginary world in a computer-generated environment. Virtual reality can be thought of as an environment that changes senses such as image and sound according to its users. Virtual reality is a simulation model that gives the participants a realistic feeling and provides mutual communication with a dynamic environment created by computers (Ozdinc, et al, 2016; Bayraktar & Kaleli, 2007). Although the users are in the real world, they are taken to a completely different environment with effects such as graphics, video and sound with computer-generated virtual reality environment (Jaros, 2018).

The idea of Virtual Reality dates to the 1930s, when different technologies and concepts first emerged. In 1929, Edward Link developed the Link Trainer, which was completely electromechanical, as the first example of a commercial flight simulator. Also, in the 1930s, science fiction writer Stanley G. Weinbaum wrote a story named Pygmalion's Spectacles, the first idea of a pair of glasses that made the wearer live a fictional world through holograms, smells, flavors and touches (Cruz-Neira, Fernandez & Portales, 2018: 1). In the 1950s, the idea of virtual reality re-emerged with Morton Heilig's Experience Theater. In this play, all the senses were tried to be revived and the audience was given the feeling of being inside the film. In 1962, Morton made a prototype like the virtual glasses called Sensorama, which has not lost its function (Aslan & Erdogan, 2017: 207). Later, Philco Corporation designed a head-mounted device, with a monitor and an eye tracker for each eye, called Headsight, but it was not released because of the high cost of the device (Hearn, 2018).

From the 1960s until today, more advanced and better equipped virtual reality glasses have been designed to be presented to users in research laboratories (Dey, Billinghurst, Lindeman & Swan, 2015). Ivan Sutherland, a software developer in the 1963, was the first to see the benefits of virtual reality and did some experimental work on this subject (Blascovich & Bailenson, 2005). The next big turning point for virtual reality was Jaron Lanier's first use of the term virtual reality in 1987. Until then, this technology had no name. In 1985, Lanier was working on a glove that would turn hand

movements into virtual reality. This technology has evolved over time and paved the way for the creation of the current Oculus Rift (Hearn, 2018).

By the 1990s, the Nintendo Company developed a console called *Virtual Boy*, which provided users with experience in virtual reality games. Due to the technical limitation, this game console had a small screen. Thanks to its low-performance processors, it was able to run only simple graphics and boring games, so it wasn't favoured by users (Schmalstieg & Hollerer, 2016). Although virtual reality is used commercially, reasons such as security problems, high price, difficulty in use, freezing and health risks limit virtual reality applications. While the development of technology gets rid of some of these kinds of problems over time, the content of virtual reality will be enriched as time progresses. It still needs a long time, a lot of money and people's attention to be able to correct them all (Chin, et al, 2018).

The augmented reality was designed by Ivan Sutherland in 1968 to assist helicopter pilots as a head-mounted display system. This system consisted of three-dimensional skeletal models where only lines could be seen using computer-assisted graphics. The system was not completely virtual, projected onto a transparent glass, and the pilot could see the physical world. In fact, the main purpose of the system was to enable the pilots to make safe landings at night, and it could also monitor the eye and head movements of the users (Sundar, 2008).

In 1972, Myron Krueger discovered Video Place, a system that allows users to interact with virtual objects for the first time. In the 1990s, Rosenberg and Steven Feiner designed the first major prototype of an Augmented Reality system called KARMA. In 1994, Paul Milgram and Fumio Kishino announced that they would build a virtual reality device for constant use, and then in 1997 they designed the first mobile augmented reality system, the Touring Machine (Aveleyra, Racero & Toba, 2018). In 1997, Azuma announced to the whole world that he had separated the augmented reality from virtual reality. According to his definition, augmented reality was a technology that could combine the real world with the digital world, which allows real-time and spatial co-existence of reality and virtuality (Azuma, 1997; Azuma, Billinghurst & Klinker, 2011). Since the days when it was developed, augmented reality tools were both designed and used for entertainment purposes (Kruger, et al, 1995). In the 2000s, the AR-Quake game was launched for augmented reality technology users, and such games continued to increase in number over time (Thomas, et al, 2000).

In 2013, Google Glass designed virtual holograms in a lens over the user's eye. The designed device acts as a camera and can also display the current time, menus and web browsers (Sawyer, at al, 2014). The HoloLens device, developed in 2016, uses sensors to learn the shape of the physical environment, connect its virtual holograms to objects in the physical world, and detect the predefined hand gestures through sensors, and use the hand movements to select, move, exit, and navigate virtual holograms (Hearn, 2018).

Although some devices have been developed in the areas of virtual reality or augmented reality, virtual reality is an area in which users do not communicate with real life in any way. Users can wear virtual glassses to obtain a 360-degree view of the simulation world with special software and sensors designed in this field (Noor, 2016). Virtual reality is a multi-input output device that provides two-way information flow between the user and the virtual world (Burdea & Coiffet, 2003).

The virtual environment is usually a copy of a real environment, and it is performed with three-dimensional settings, sounds and various tools for users to interact with consoles. A user's movement is monitored using a head mounted device or using motion detection sensors (Neelakantam & Pant, 2017).

These environments are created entirely by the software developer's imagination and coding capability. Second life and openin Muve's are considered as the first international softwares to be organized according to the virtual world and capable of contributing to different areas of education (Penfold, 2009; Schott, 2012; Wang & Burton, 2013). Recently, new versions of software such as unity and unreal that can allow virtual reality games are released (Rogers, 2012). The development of softwares depends mostly on the development of the hardware with which the software will be used. The hand gestures of the users who will replace the keyboard or mouse in the real world will be created by integrating the software and hardware together (Wozniak, Vauderwange, Mandal, Javahiraly & Curticapean, 2016). Virtual reality is implemented using interactive devices such as gloves, headphones or helmets. The most famous virtual reality equipments used in the market are Oculus Rift and HTC VIVE (Dempsey, 2016; Desai, Desai, Ajmera & Mehta, 2014).

In general, augmented reality and virtual reality are not completely different topics. While virtual reality does not provide users with a visual connection to the physical world, augmented reality is created by adding virtual information to the physical world (Jaros, 2018). There are three principles of augmented reality. The first is to bring the real and the virtual together, the second is to interact in real time, and the third is the three-dimensionality (Azuma, 1997).

Recently, there has been an increasing interest in augmented reality. Especially wearable augmented reality devices, with Google glasses, have become very attractive to users. Google glasses using computer-assisted graphics by creating holograms in front of users' eyes (Tseng-Lung & Feng, 2014), give holograms the feeling as if they are flowing in front of the eye. Thanks to these Google glasses, messages can be sent to the users via smart wifi or bluetooth, and directions can be given to the users. In addition, video and photo shooting can be done with the camera (Muensterer, Lacher, Zoeller, Bronstein & Kubler, 2014). Another device is HoloLens developed by Microsoft. HoloLens means that it does not cover the user's entire field of view; instead it displays holograms around the user's physical environment based on where the user is looking.

There are many uses of virtual reality and augmented reality. Virtual and Augmented Reality technology can be used comfortably in areas such as education, engineering and entertainment (Dey, Billinghurst, Lindeman & Swan, 2018). Blascovich & Bailenson (2005) stated that virtual reality can be used in choreography, golf, health education and flight simulations, as well as by playwrights, filmmakers and educators, in physical exercises such as psychological therapy and exercise.

Virtual reality is also used in many areas such as video games, engineering, education, psychological therapy, e-commerce, marketing and art. Virtual reality is used to create a realistic digital environment in digital games, especially in first-person games. With mechanical modeling using both computer-assisted design software in engineering and education, it allows engineers and students to manipulate and develop the models they design as if they were working with a physical object (Neelakantam & Pant, 2017). Virtual reality is also used in medicine. In addition to the development of medical care, virtual reality is used to improve training given to soldiers. Virtual reality helps scientists in defeating patients' fears and making explanatory therapy (Hearn, 2018).

Digital games were first produced for entertainment purposes and after the realization of its effect, it was started to be used in the field of military and education with the help of simulations, respectively (Celen, Celik & Seferoglu, 2011). Digital games used in medical education have been also used in primary, middle and high school and even in pre-school education. The first digital games were produced educationally in the 1990s. These games are not used much in schools as they support the development of operational knowledge instead of conceptual teaching. Microsoft, in the 2000s, produced educational digital games about health, engineering, disaster management, education, policy, etc. in many areas. However, these games are too expensive to be used at the desired level of educational institutions.

There are two reasons why digital games are not preferred at the desired level. The first of these is that the designed digital games are usually designed by computer engineers or software developers, not by the help of experts in the field of education (Connolly, et al, 2012), and these games are usually designed to give simple skills such as addition and multiplication. The second reason is that teachers and parents have negative perceptions about digital games. In addition, teachers who have worked in the profession for many years have low perceptions about educational digital games (Valkcke, et al, 2011). The reason for this is that the educational digital games are used together with the concept of addiction and this situation is exposed to the negative point of view of parents and teachers (Aktas-Arnas, 2005).

Despite all these negative perspectives, digital games have many benefits to students in terms of education in particular, students can gain new concepts and skills (Li, et al, 2014), it can can increase students' motivation and perceptions of the course and students can follow their lessons fondly (Castellar, All, Marez & Looy, 2015). The best examples are in the interest and participation of

the students. Normally, the attention and motivation of the students is reduced after 15-20 minutes (Bonwell & Eison, 1991). However, it has been proved in the researches that digital games increased the interest and motivation of the students over 30 minutes (Ravenscroft, 2007).

The concept of digital games in education programs facilitates the teaching of many lessons and subjects such as history, geography, language education, physics, chemistry, biology and mathematics (Beak, 2013). In addition to these contributions, they have a positive effect on the desired skills development such as creativity, problem solving, cooperative learning and critical thinking of students (Hwang & Wu, 2012). Especially for critical thinking, structuring knowledge and problem-solving skills (Kapp, 2007), its contribution to the creation of the most appropriate teaching environments to facilitate learning is quite high (Ebner & Holzinger, 2007). Because of these features, digital games can be used easily in student-centered education.

There are many studies on how digital games weaken social communication. However, a well-designed digital game can become an important tool that positively affects social learning (Kauchak & Eggen, 2003). Digital games can develop learning through cooperative learning, self-regulated learning and learning by doing, which are elements of social learning (Vos, et al, 2011).

When digital technologies are evaluated cumulatively, virtual reality, augmented reality and digital games are becoming increasingly important in educational terms. Developments in these technologies, which are ever increasing in variety, provide increasingly greater opportunities for students and educators especially in the field of education and provide numerous learning opportunities to learners with virtual learning (Huang, et al, 2016). In fact, according to some researchers, virtual reality and augmented reality technologies will soon replace the standard materials (computers, classrooms, schools, etc.) and change the educational system from the ground up (Rozinaj, et al, 2018). For this reason, the number of studies on virtual reality is increasing in almost all areas of education (Bacca, et al, 2014). Already since the 2000s, virtual reality technology has also been used as a means of supporting the education process.

Every learner has his/her own style of learning. For many users, virtual reality can be a very effective learning tool. Especially when visual, real world and verbal information are brought together, virtual reality can create the most effective learning environments (Brazley, 2018). Educators especially think that virtual reality tools will be one of the most effective tools that will provide learning through experience in the future (Niju, et al, 2018). In addition, devices designed based on virtual reality and augmented reality support the principle of learning by experiencing the constructivism approach. Moreover, the virtual reality environment also creates authentic content that allows users to format, share, and enhance the scope of learning (Häfner, et al, 2013).

Virtual reality and augmented reality technologies will increase student-student and student-teacher interaction and communication as opposed to what is believed (Brazley, 2014). Global videos

can capture and record images from all directions. Interactive global video-based virtual reality applications can provide new pedagogical advantages to teachers. In this way, teachers can see every movement of the students and obtain more information about the student's personality, temperament and learning situation. In addition, students can examine themselves in more detail by watching the virtual records of how they worked or learned. In general, virtual reality can create educational environments that enable students to interact with each other and with other students during activities.

It is believed that virtual reality will visualize the abstract concepts of students and observe the events in atomic and planetary scales (Youngblut, 1998). Through virtual reality tools, history students can walk through the streets of ancient Greece, biology teachers can learn about human physiology by navigating through human organs and vessels, exploring people in the past, present, and future events (Rickel, 2001). Virtual reality brings the environments where people cannot go, see and feel to their feet, and thus enriches the teaching and learning styles in education (Pan, et al, 2006). In some studies from the literature, the benefits of this technology and its contribution to education are highly mentioned. It has also been stated that it benefits students in understanding abstract concepts in science and in understanding mixed learning activities (Ragan, et al, 2012). Abbasi, et al, (2017) compared augmented reality and traditional education method for critical thinking in chemistry education, and at the end of the study, it was concluded that the students who received augmented reality education were more successful than the students who received traditional education.

In addition to mathematical courses, virtual reality also contributes to linguistics courses. In a study conducted by Vázquez, et al, (2018), it was determined that the language education performed in virtual reality environment or with virtual reality tools was more successful than the traditional language education made with paper, pencil and notebook only. It is also known that spatial presentations in virtual reality have a positive effect on students. Due to the nature of this spatial visualization, students need to see and interact with the 3D scenes as soon as possible to make sense of this 3D model. Virtual reality tools can also display 3D objects, and virtual spatial presentations are more instructive for students (Brazley, 2018). In the studies, it was found that spatial presentations and 3D vision improved the memory of the individual. In a study by Ragan, et al, (2012), virtual reality has been shown to strengthen memory through spatial presentations.

Virtual reality tools do not only affect learning but also affect student attitudes. In some researches, it has been determined that this technology has a positive effect on attitudes such as motivation, interaction and cooperation. Virtual reality is an important factor to improve cooperation among students (Huang, et al, 2016). In addition, augmented virtual reality increases the participation of students in the classroom and enables students to develop positive attitudes towards the course (Bacca, et al, 2014). Studies have shown that augmented reality in the classroom can be used as an

advanced learning tool and that students can increase their motivation to learn positively (Vate-U-lan, 2012).

One of the most important features of virtual reality is its security feature. Security is also important in schools as in workplaces. Particularly, science laboratories are the places where most fatal or injured accidents occur in schools (Chin, et al, 2018). Therefore, thanks to the laboratories arranged in a virtual reality environment, misconceptions resulting from education will be prevented and the risks of accidents will be eliminated.

The virtual learning environment not only provides rich teaching patterns and teaching content, but also helps students develop their ability to analyze problems and explore concepts. Virtual reality constitutes a shareable virtual learning area accessible to all students living in virtual societies integrated with interactive, integrated and imaginary advantages (Pan, et al, 2006).

In general, virtual reality content is collected under four main features. According to Rickel (2001), these features;

1. It provides an integrated learning resource, including tools to help access learning resources, assessment and guidance.

2. It enables the communication through community's communication e-mail, group discussion, internet connectivity and social media.

3. Being active. Students actively participate in the education with the action function. With virtual reality, students are not just accepting information. They are the ones who are asking questions, answering questions, providing information and analyzing concepts.

4. Facilitating tools help map the program elements. By evaluating and recording these elements, students can evaluate the success of these elements.

Potentially, this technology can both inspire students' motivations and increase their learning performance. However, teachers' willingness to learn or use this technology remains unclear. Therefore, teachers are the biggest obstacle to using this technology in the classroom. In fact, there are cases where teachers are right. Even though augmented reality and virtual reality tools are on the market, security problems, high price, difficulty in use, errors due to software, health risks, etc., limit the application of augmented reality and virtual reality technology. The development of technology can solve some of the problems. As time goes by, the content of augmented reality and virtual reality will increase and prosper. But it still needs a lot of money, time and people's attention (Chin, et al, 2018).

Despite all the studies, many software related to virtual reality and augmented reality being designed, the use of this technology in educational environments is still in its infancy (Bacca, et al,

2014). Virtual reality and augmented reality can be used in many different areas but can also lead to very large changes and problems, especially in the field of education. Because our educational institutions are designed in accordance with the industrial age instead of digital age. Therefore, teachers still have difficulty in adjusting new courses according to current cultural and social values (Bates, 2015). This will inevitably affect teacher training and will require teachers to re-organize their lessons according to the new system (Niju, et al, 2018). According to Regan (2012), although there is considerable consensus that these technologies will make a great contribution to education, there is still little research on how learning can be done or how it should be done.

Method

Research Problem

What is the level of teacher candidates' views on Augmented Reality, Virtual Reality and Digital Games? Do teacher candidates' views about Augmented Reality, Virtual Reality and Digital Games differ in terms of gender, type of program, and class level demographic variables?

Research Model

For this purpose, the Use of Digital Educational Games Scale, which was developed by Bonanno & Kommers, (2008) and was adapted to Turkish and by Sarigoz, Bolat & Alkan, (2018) with a high correlation (r=092; p<.01) was used as a data collection tool.

Affective Component: The affective component expresses the feelings of fear, hesitation and uneasiness experienced by the individual before and during game.

Perceived Usefulness: Perceived usefulness includes behaviors that arise from an individual's beliefs about the advantages of using educational games.

Perceived Control: Perceived control expresses emotions and reactive behaviors of an individual while manipulating technological tools (using educational games). These skills include the ability to self-learn skills related to the task, control skills when using gaming tools and software, and the degree to which they can help others in carrying out the desired tasks.

Behavioural Components: It includes the positive behaviors that demonstrate the willingness to play educational games and the negative behavior of avoiding playing games.

The Turkish adaptation of the scale to use in studies from Turkey is done by Sarigoz, Bolat & Alkan (2018). The adaptation studies of the scale were carried out with 150 undergraduate students (65.7% female; 34.3% male) studying at Mustafa Kemal University Faculty of Education. The scale's Kaiser Meyer Olkin test result was 0.782 and Barlett's Sphericity Test result was (X_2 = 1223.40; p = 0.00). In the results of the analysis, the self-value of the scale is 4 factors greater than 1.0 and the variance explained by these four factors is 45,934% of the total variance. When Cronbach Alpha

reliability coefficients of 4 factors are examined, it was found that the reliability coefficient of the 'Affective Component' sub-dimension was 0.79, the reliability coefficient of the 'Perceived Usability' sub-dimension was 0.77, the reliability coefficient of the 'Perceived Control' sub-dimension was 0.79 and the reliability coefficient of the 'Behavioral Components' sub-dimension was 0.80. The internal consistency of the scale was 0.88. In order to determine the reliability by test-retest method, the scale was applied to 30 participants at two weeks intervals and the test-retest reliability of the scale was found to be 0.78.

The responses of the participants to the scale based on the demographic variables were calculated by using T-test and one-way ANOVA test with SPSS 20 statistical package program. The items which are negative from the scale items were calculated by reversing. The scale used in the study consists of 21 items in five-point likert type (0) Strongly disagree, (1) Disagree, (2) Undecided, (3) Agree, (4) Strongly agree. The general evaluation of the scale used in the research is as follows (Uzunboylu & Sarigoz, 2015):

$$SA = \frac{EYD - EDD}{SS} = \frac{5-1}{5} = 0.8$$

SI: Scale Interval

MV: Maximum Value

LV: Lowest Value

NO: Number of Options

0.00 - 0.80: Strongly Disagree

0.81 - 1.60: Disagree

1.61 - 2.40: Undecided

2.41 - 3.20: Agree

3.21 - 4.00: Strongly Agree

General surveying model, which is one of the mixed method and descriptive surveying methods, was used in the study. Mixed-method research is defined as the combination of qualitative and quantitative methods, approaches and concepts in a study or consecutive studies (Creswell, 2003; Johnson & Onwuegbuzie, 2004). The general survey model is the surveying arrangements carried out overall or a sample taken from the whole or a group of the universe in order to make a judgment about the universe of many elements (Karasar, 2010: 79).

Findings

In this section, depending on the gender, program type and class level demographic variables, the opinions of teacher candidates on Augmented Reality, Virtual Reality and Digital Games were

tried to be determined. In addition, the responses of the teacher candidates to the scale items were tabulated and interpreted.

Table 1. The t-test analysis results of teacher candidates' answers to The Use of Digital Educational Games Scale in terms of the gender variable.

Sub-dimensions	Gender	N	$\overline{\chi}$	Sd	Df	-t	p
Affective Component	*1. Female*	451	24.45	2.82	740	1.00	.316
	2. Male	291	24.24	2.77			
	Total	742					p>0.05
Perceived Usefulness	*1. Female*	451	19.99	2.69			.486
	2. Male	291	20.12	2.36	740	.70	
	Total	742					p>0.05
Perceived Control	*1. Female*	451	24.70	2.69			.091
	2. Male	291	25.06	2.91	740	1.70	
	Total	742					p>0.05
Behavioral Components	*1. Female*	451	16.66	2.01			.047
	2. Male	291	16.35	2.13	740	1.99	
	Total	742					p<0.05
General	*1. Female*	451	85.80	6.97			.953
	2. Male	291	85.77	7.00	740	.06	
	Total	742					p>0.05

From the analysis of the data in Table 1, depending on the gender variable, from the answers of the teacher candidates who participated in the research to the Use of Digital Educational Games Scale; in terms of affective component, perceived usefulness, perceived control and overall scale, there was no statistically significant difference between the views (p> .05) of using digital educational games. This shows that the views of teacher candidate participated in the research on using digital educational games are the same or similar. However, it was concluded that there was a significant difference in opinion among the teacher candidates in the research, in favor of females, from the responses to the behavioral components sub-dimension. Behavioral components refer to positive behaviors that demonstrate willingness to play and reluctant behavior to avoid the game. Therefore, from the research data and interviews with female teacher candidates, it is concluded that female teacher candidates are more reluctant to play educational digital games than male teacher candidates.

Table. 2. Anova test analysis results of teacher candidates' answers to the Use of Digital Educational Games Scale in terms of the program type variable.

	Program Type	N	$\overline{X}$	Sd	Source of Variance	Sum of Squares	Sd	Squares Avg.	F	p (Tukey)
Affective Component	1. ST	128	24.53	3.08	Betw. gr.	9.21	3	3.07	.39	.761
	2. TLT	211	24.46	2.74	With. gr.	5817.61	738	7.88		
	3. ELT	140	24.30	2.88	Total	5826.82	741			
	4. CT	263	24.26	2.68				p>0.05		
Perceived Usefulness	1. ST	128	20.31	2.34	Betw. gr.	38.74	3	12.91	1.97	.118
	2. TLT	211	19.71	2.60	With. gr.	4848.97	738	6.57		
	3. ELT	140	20.01	2.46	Total	4887.71	741			
	4. CT	263	20.19	2.69				p>0.05		
Perceived Control	1. ST	128	25.32	2.47	Betw. gr.	140.93	3	46.98	6.19	.000
	2. TLT	211	25.29	2.83	With. gr.	5600.99	738	7.59		1-4; 3-4
	3. ELT	140	24.62	2.36	Total	5741.92	741			
	4. CT	263	24.36	3.01				p<0.05		
Behavioral Components	1. ST	128	16.54	2.05	Betw. gr.	238.15	3	79.38	20.09	.000
	2. TLT	211	16.78	1.80	With. gr.	2916.29	738	3.95		2-1;4-1
	3. ELT	140	15.40	2.34	Total	3154.44	741			
	4. SÖ.	263	16.95	1.90				p<0.05		
General	1. ST	128	86.70	7.05	Betw. gr.	449.08	3	149.69	3.10	.026
	2. TLT	211	86.24	7.25	With. gr.	35632.70	738	48.28		1-2
	3. ELT	140	84.33	6.64	Total	36081.78	741			
	4. CT	263	85.76	6.82						
	Total	742	85.79	6.98				p<0.05		

From the analysis of the data in Table 2, as a result of the Anova test conducted based on the answers of the teacher candidates to the Use of Digital Educational Games Scale, it was determined that there was no statistically significant difference between the cognitive component and the perceived usefulness subscales from the subdimensions of the scale. (p> .05). However, it was determined that there was a statistically significant difference (p <.05) between Perceived control, Behavioral components and Overall scale with respect to teacher candidates from different departments. From the results of the Tukey's test to learn the source of this difference;

Regarding the perceived control sub-dimension of the scale; there was a statistically significant difference (p <.05) between the students in the Department of Turkish Language Teaching (TLT) and the students in the Department of Classroom Teaching (CT) in favor of the students from Department of Turkish Language Teaching; there was a statistically significant difference between the students from the Department of English Language Teaching (ELT) and the students from the Department of Classroom Teaching in favor of the students from the Department of Classroom teaching (p<.05).

Regarding the Behavioral components sub-dimension of the scale; there was a statistically significant difference in opinion (p<.05) between the students from Turkish Language Teaching, Classroom Teaching and Science Teaching (ST) in favor of the students from Turkish Language

teaching and Classroom teaching; there was a statistically significant difference (p<.05) between the students of Science teaching and English language teaching in favor of students from Science teaching.

In terms of Overall scale; It was found out that there was a statistically significant difference (p<.05) between the teacher candidates studying in the departments of Turkish Language Teaching and Science Teaching in favor of teacher candidates from Science teaching.

Table. 3. Anova test analysis results of the answers of the teacher candidates to the Use of Digital Educational Games Scale according to the grade level

Sub-dimension	Program Type	N	$\bar{X}$	Sd	Source of Variance	Sum of Squares	Sd	Squares Avg.	F	p (Tukey)
Affective Component	1. Grade	197	24.61	2.62	Betw. gr.	45.74	3	15.25	1.95	.121
	2. Grade	185	24.52	2.73	With. gr.	5781.08	738	7.83		
	3. Grade	178	24.37	2.92	Total	5826.82	741			
	4. Grade	182	23.96	2.94				p>0.05		
Perceived Usefulness	1. Grade	197	20.19	2.50	Betw. gr.	200.60	3	66.87	10.53	.000 1-4; 2-4;3-4
	2. Grade	185	20.54	2.36	With. gr. Total	4687.11	738	6.35		
	3. Grade	178	20.26	2.55		4887.71	741			
	4. Grade	182	19.16	2.67				p<0.05		
Perceived Control	1. Grade	197	24.43	2.90	Betw. gr.	150.44	3	50.15	6.62	.000 3-1;3-4
	2. Grade	185	24.90	2.62	With. gr.	5591.48	738	7.58		
	3. Grade	178	25.57	2.79	Total	5741.92	741			
	4. Grade	182	24.51	2.68				p<0.05		
Behavioral Components	1. Grade	197	16.44	2.22	Betw. gr.	29.75	3	9.92	2.34	.072
	2. Grade	185	16.82	1.91	With. gr.	3124.70	738	4.23		
	3. Grade	178	16.62	1.88	Total	3154.45	741			
	4. Grade	182	16.28	2.18				p>0.05		
General	1. Grade	197	85.67	6.63	Betw. gr.	1018.32	3	339.44	7.14	.000 2-4;3-4
	2. Grade	185	86.78	7.01	With. gr.	35063.46	738	47.51		
	3. Grade	178	86.82	6.88	Total	36081.78	741			
	4. Grade	182	83.91	7.07						
	Total	742	85.79	6.98						p<0.05

From the analysis of the data in Table 3, As a result of the Anova test done with the answers of teacher candidates to the Use of Digital Educational Games Scale, it was determined that there was no statistically significant difference between the Affective components and Behavioral components sub-dimensions (p> .05). However, it was found that there was a statistically significant difference in opinion (p <.05) among the teacher candidates who were studying in different grades for Perceived Usefulness, Perceived Control and Overall Scale. From the results of the Tukey's test to learn the source of this difference;

Regarding the perceived usefulness sub-dimension of the scale; between the 1st, 2nd, 3rd and 4th grades, there was a statistically significant difference (p<.05) among teacher candidates in favor of 1st, 2nd and 3rd grades. Regarding the perceived control sub-dimension of the scale; there

was a statistically significant difference in opinion (p<.05) among teacher candidates in the 1st, 3rd and 4th grades in favor of teacher candidates studying in the 3rd grade. Regarding the Overall scale; between the 2nd, 3rd and 4th grade teacher candidates, there was a statistically significant difference (p<.05) in favor of teacher candidates studying in the 2nd and 3rd grades.

Table. 4. Arithmetic averages and skill levels of teacher candidates' responses to the Use of Digital Educational Games Scale

The Use of Digital Educational Games Scale	$\overline{X}$	Skill Level
AFFECTİVE COMPONENT		
5. I hesitate to use an educational digital game with the concern that I might look stupid.	3.26	Strongly Agree
20. Educational digital games bother me.	3.24	Strongly Agree
8. I'm not nervous when I use an educational digital game.	3.13	Agree
12. Playing educational digital games doesn't scare me in any way.	3.06	Agree
When I'm given the opportunity to play a popular digital game, I get scared that I'll have trouble navigating through the game.	2.90	Agree
16. I hesitate to use the computer to play games because I'm afraid to make mistakes that I can't fix.	2.83	Agree
PERCEIVED USEFULNESS		Agree
21. Educational digital games provide opportunities for more efficient learning.	3.14	Agree
13. We can also obtain many other achievements, which we can obtain from an educational digital game, in other ways.	3.03	Agree
6. Educational digital games that requires extra effort enrich our learning experience to a degree.	3.01	Agree
2. I'm working better because educational digital games make me feel better.	2.95	Agree
17. Educational digital games offer more interesting and creative ways to learn.	2.91	Agree
PERCEIVED CONTROL		
3. I can learn a lot of information I need to know about a digital game on my own.	3.29	Strongly Agree
7. When I play games on the computer, I have difficulty controlling the game completely.	3.24	Strongly Agree
9. When playing an educational digital game, I can do what I want on the computer.	3.17	Agree
19. I need someone to tell me the best ways to use an educational digital game.	3.10	Agree
11. I need an experienced person with me when using an educational digital game.	3.06	Agree
15. When I encounter a problem using an educational digital game, I can usually solve that problem in one or more ways.	2.94	Agree
BEHAVIORAL COMPONENTS		
18. I will regularly use educational digital games throughout the school years.	3.33	Strongly Agree
10. I only play educational digital games when told to do so.	3.22	Strongly Agree
4. I find it hard to learn if a subject is taught with digital games.	3.18	Agree
14. I avoid playing educational digital games.	2.82	Agree

*General Arithmetic Average of the Scale: 3.09 (Agree)

Table 4 shows the arithmetical averages and skill levels of the answers of teacher candidates studying at the Faculty of Education to the Use of Educational Digital Games Scale. Examining

responses to scale items, the *highest* arithmetic means of the responses given to the sub-dimensions of the scale are as following; teacher candidates avoiding playing digital games, being hesitant, playing only when they are told and having enough knowledge about digital games. In addition, in interviews with teacher candidates on educational digital games;

Related to the topic, they said '*It is necessary that students play such educational games rather than teachers. This way, students' motivation and attention will be increased. As they learn by having fun, their morale and their academic success will increase… (SAB25)*'.

In parallel with the responses of the teacher candidates to the scale, the teacher candidates emphasize that they can learn about the digital games themselves. Regarding this, a teacher candidate said '*Learning the content of educational games is not difficult. When I examine a game, I can also learn about what needs to be learned on this subject…(SAE8)*'.

Although some teachers' fears of digital educational games have been determined with the help of a scale, teacher candidtaes think that they can use digital educational games to obtain fruitful results for learning. Regarding this finding, a teacher candidate said, '*Digital educational games may have dangerous and problematic points. However, when used correctly, it can provide positive environments for learning to take place. Students can learn more easily and quickly…(SAB33)*'.

In this research, it has been found that these games increase the motivation of the learner and provide a comfortable learning environment for the learner. Regarding this, a teacher candidate said '*Having lots of fun playing digital educational games. This situation makes me very comfortable. A comfortable learning environment increases my desire for learning. For this reason, I find educational games quite successful in terms of teaching…(SAB5)*'.

When the responses to the scale items are examined, the item with the lowest arithmetic mean is as following; teacher candidates avoiding playing digital games. *Regarding this, a teacher candidate said 'I don't know. Educational digital games make me uncomfortable. I need help while playing these games…(SAE17)'. Another teacher candidate said 'I believe educational games will be useful. I do not believe that it will create a negative situation for the student when used consciously…(SAE1)'.*

When faced with a problem using digital games, it was found out that teacher candidate's fear that they would not be able to solve the problem. Regarding this, a teacher candidate said '*Digital games don't give me confidence. I don't know what to do if I run into a problem playing games. These problems can also make educational games a problem. I think educational games are quite difficult to control…(SAE19)*'. In addition, prospective teachers are afraid to make hard-to-fix mistakes while playing digital games, and that they avoid playing digital educational games. From the interviews with teacher candidates to find out why, among the reasons for the low scores of these items, these should

be thought as reasons: when sitting in front of the computer to play digital educational games, such games will become addictive over time, they will spend a lot of time to solve the problem when they encounter one, and they do not have much knowledge about the computer to solve the problem when they encounter one.

Conclusion and Recommendations

In this study, basic information about virtual reality, augmented reality and digital games are given and the opinions of teacher candidates on using digital educational games are tried to be identified. At the end of the study, the opinions of teacher candidates about the digital games were examined in terms of gender, grade level and department type variables and the relations between these variables were tried to be identified.

In the research, a significant difference was found in the behavioral components sub-dimension of the scale in favor of female teacher candidates in terms of the gender variable. Behavioral components refer to positive behaviors that demonstrate willingness to play and reluctant behavior to avoid the games. Therefore, from both research data and interviews with male and female teacher candidates, it is concluded that male teacher candidates are more reluctant to play educational digital games than female teacher candidates. This is due to the fact that male teacher candidates are more interested in other digital games than educational games. Therefore, male teacher candidates should be informed more about educational games.

Significant differences were found in the perceived control and behavioral components dimensions of the scale in terms of type of the program. Perceived usefulness is the beliefs about the advantages of using educational games while the behavioral components are the positive and negative behaviors of the individual to play the educational games. Therefore, all pupils should be provided with sufficient basic knowledge and training about educational games, so that the students' behaviors towards educational games and using educational games should be positively changed.

When the research data were examined in terms of the overall scale, it was determined that teacher candidates avoided playing digital games, hesitated, played only when told, feared that they would not be able to solve the problem when faced with one when using digital games or feared to make mistakes that is hard to fixed. In order to learn the reasons of these negative thoughts, interviews were made with teacher candidates. Based on the interviews, the basis of the negative thoughts of teacher candidates are as follows; when they sit in front of the computer to play digital educational games, such games will become addictive over time, they will spend a lot of time to solve the problem when they encounter one, and they do not have much knowledge about the computer to solve a problem when they experience one. To save the students from these thoughts, help should be taken from the necessary disciplines such as psychological counseling and guidance and the students should be freed from these thoughts.

In recent years, the research and development processes of virtual retina viewers, bionic contact lenses, holograms, mobile applications and smart glasses have been continuing at a great pace and are gradually being used in various fields. At this point, it is aimed to integrate augmented reality, especially human computer interaction, and to develop more advanced applications and devices, and in the near future it is expected that augmented reality technology will be used as a normal part of daily life (Altinpulluk & Kesim, 2015). For this reason, virtual technologies and augmented reality environments should be created very quickly in education.

As the learning is carried out in a virtual reality, as the students are driven to a more active learning process, as the attention and motivation increases, as the opportunity to work freely is provided, the learning is realized faster, and the students' upper thinking skills will increase, thus the success in education increases. Therefore, educational digital technology should be used effectively in education.

There are two important factors limiting the use of this technology in education. The first of these; to use digital technology in education, a serious economy is needed for the creation of infrastructure, equipment needs, software and hardware. The second is dizziness, nausea, headache or physical problems that can occur in students who are too much in technology. The first of these situations can be solved with time, and the second can only be solved by various measures to be taken by the individual and the family.

In order to be able to apply this technology in education, in-service trainings bout this technology should be given to teachers in schools and to instructors in universities so that individuals who know and are prone to technology should be trained, and the benefits and harms of this technology should be taught to all educators thoroughly.

Educational environments with virtual reality and augmented reality should be provided for students with difficulties in learning or with distractions. Thus, an effective and efficient learning environment to be provided to students with poor perception, their success in education should be raised.

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The Views of Pre-Service Primary School Teachers Regarding the Concept Of "Basic Life Skills" Of Life Science Course[1]

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Abstract

The teaching of life skills has an important place in primary school programs which are the first step in gaining basic knowledge and skills about life. Since 2004-2005, life science teaching has been established to provide basic life skills. In this context, it is important that classroom teachers who will gain these skills should be informed about these skills. This study examined what pre-service teachers understood from the concept of "basic life skills", how they dealt with the concept and what they associated the concept with. For this purpose, an open-ended questionnaire was administered to 132 pre-service primary school teachers studying at A University and B University in the 2017-2018 academic year. The qualitative survey model was used in the study and the data were gathered by descriptive analysis. As a result of the research, it can be said that even if the majority of the class teacher candidates hear "basic life skills", the rates of hearing the concept of "basic life skills" in the life science course are low. In addition, basic life skills are often defined as "maintaining daily life" and "meeting their own needs without needing anyone else". However, it has been observed that the classroom teacher candidates perceive the concept of "basic life skills" as "self-care skills" in general. In addition, pre-service primary school teachers pointed out that the teaching of life skills could be done by using different methods and techniques that are effective by the student, and they also emphasized the context of family, school and environment.

Key words: Pre-Service Primary School Teachers, Life Science Teaching, Basic Life Skills

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Introduction

Rapid advances in science and technology and globalization have led to radical changes in the political, economic, cultural and social structures of the societies. In order to initiate these changes and adapt to them, important transformations are put into practice in the educational systems of countries in terms of purpose, function and operations. In line with these transformations, new searches are ongoing in the Turkish education system. In this respect, in the 2004-2005 academic year, fundamental changes were made both in philosophical terms and content in educational programs. One of the programs in which such changes were experienced is "life science" program.

Life science course is defined by Sağlam (2015; p.3) as a course which aims to raise a good person and a good citizen in general terms by integrating social and natural sciences; by Tay (2017; p.6) as a course which aims to make children aware of themselves and help them to gain the characteristics related to being a good man, an international citizen and global citizen through the help of social sciences, science, art, ideas and values, which aim to help children to gain the knowledge of life by means of collective education. Based on the definitions, it could be said that life science teaching aims to help children to gain knowledge, skills, and abilities that will enable them to develop multidimensional development both individually and socially.

The life science program implemented in Turkey for the first time in 1926 was renewed in 1936, 1948, 1962, 1968, 1998. However, in 2004-2005, a significant change was experienced in the life science program and the vision of the program was explained by the Ministry of National Education [MoNE] (2009; p. 9) as follows:

> *Raising individual who enjoys learning; who is in peace with himself/herself, with his/her social environments and with nature; who knows himself/herself, protect and develop himself/herself, his/her nation, homeland and nature; who owns the basic knowledge required in daily life, life skills and equipment required by his/her age; and raising individual who is flexible and happy enough to adapt to changes dynamically*

The concept of basic life skills was included in the life science program for the first time in the 2004-2005 academic year, and later programs were organized based on life skills. In the program which was designed as skill-based, 85 outcomes for the 1st grade, 94 outcomes for the second grade and 113 outcomes for the 3rd grade were designed and implemented (Mone, 2005). However, as a result of numerous evaluation studies conducted in 2005 on the life science course program, the number of outcomes of the life science program was regulated as 86 years in 2009 for the first grades, 95 for the 2nd grade, and 111 for the 3rd grades and then implemented (MoNE, 2009). In 2015, the program's outcomes were once again reduced and the program vision was written as "raising individuals who have basic life skills, self-knowledge, live a healthy and safe life, sensitive to nature

and the environment, make research, have high self-confidence, are at peace with themselves and internalize national and spiritual values" (MoNE, 2015). The draft program was published in 2017 without changing the vision of the 2015 program and it aimed to be implemented in the 2018-2019 academic year.

Life skills which are intended to help students to gain in 2004-2005 life science program were also included in the life science program developed later. However, there was a discrepancy between the life skills stated in 2004-2005 and the life skills stated in the 2015 and 2017 programs. While 22 skills were included in the 2015 program, 23 skills were included in the 2017 draft program by adding the skill of "developing career awareness". The concept of life skills was first used by psychologists in the field of clinical psychology in 1960 for psycho-social skills (UNESCO, 2004). Life skills are defined as the skills that help people to cope with difficult situations in their daily lives, to gain interpersonal skills and abilities based on the fulfilment of their duties and responsibilities (Curtis and Warren, 1974, as cited in Stacy 1981). The World Health Organization [WHO] (1997) defines life skills as the ones which aim to encourage individuals against the problems encountered in life and to develop individuals' relevant skills accordingly, and these skills support all areas of development, and help them to lead independent lives, gain personal cleaning and basic business skills. According to the definitions, it is possible to say that life skills are the skills that enable individuals to cope with every problem encountered in daily life and to support individuals to live independently.

Life Science Program

The first reform movement in the history of the Republic of Turkey is Tevhid-i Tedrisat Law, which was the law on the unification of the education put into effect on March 3, 1924. Although the needs and requirements of a newly founded republic were thought in the first school program in 1924 (Gozutok, 2013; p. 18), John Dewey who participated in the Congress of Turkiye Muallimler Birliği (Turkish Teachers' Union) held on August 22, 1924 and expressed a collective teaching approach in the new program (Bektas, 2009; p.20). As a result of the Congress and reports, on March 22, 1926, the courses of Tabiat Tetkiki (Nature Inspection), Ziraat ve Hıfzısıhha (Agriculture and Hygiene), Coğrafya ve Tarih Mebadisi (Geography and History), Musabahat-ı Ahlakiye ve Malumat-ı Vataniye were gathered under the name of "life Science" in 1926 as suggested in Dewey's relevant report.

As a result of the revolutions in 1936, there were changes in education and the life science program was changed in order to help the principles of the newly established state to settle. In 1938, following the death of Atatürk in 1938 and the political, economic and social events in the world, it was revised again in 1948. The aim of the life science program in 1948 was to help students to adopt

the love of nature and to raise individuals with the awareness of history and cultural values as in previous programs (Baymur, 1954; p. 10-11).

The developments experienced in Turkey in 1961 led new changes in the program and the program was revised following the 6-year piloting in 1968. Moreover, in the 1968 program, 10 skills were given place under the title of "Skills and Skill Types" which were not mentioned in the previous programs. In addition to reading, writing and calculating skills that should be acquired as basic skills by children, some other skills related to accessing to information, presenting and using information technologies were also included in the new program (Ulubey and Koçer, 2013; p.151). Although the program had been in effect for a long time, there were almost no radical revisions along the years. Due to the changes in the economic situation in Turkey, it was changed in 1998. New unit topics such as participation in classroom activities and task sharing, conscious consumerism and productivity, communication, collective life, earth and space, and movement and force were added into the program (Özdemir, 1998; p.9). The 1998 program was not long-termed and in the 2004-2005 academic year, a new constructivism based program was generated. The new program was prepared based on basic life skills. Basic life skills were defined as critical thinking, creative thinking, research, communication, use of information technologies, entrepreneurship, problem-solving, effective use of Turkish language, decision-making, effective use of resources, self-management, security and protection, and basic terms regarding science (MoNE, 2009). In 2009, the program was revised. In 2015, the number of program outcomes was reduced and a unit-based program was developed. However, basic life skills were put in the centre of the program. In 2017 program, the draft program was released and the program was revised again. The program, which was put into effect in 2018, was organized according to a unit-based and basic life skills approach.

Basic Life Skills

Considering that the developments in the world and education are closely related to each other, a very different structure in the world was formed in the late 1800s and individualistic views came to the forefront. In addition, a liberal economic policy began to prevail in the field of economics. The changes in this context also affected education. With the 7 Cardinal Principles in Secondary Education in the USA, the importance of taking leisure times, being good citizens, occupation, being a family member, managing basic functions, health and viewing individuals as a whole were pointed out more. The National Assessment of Educational Progress (NAEP) was found to have given importance to individual development as well as obtaining information by identifying basic skills in 7 fields; conscious consumerism, healthy living, interpersonal relations, citizenship, family relationships, social skills and professional and career development skills (Gazda et all., 2005; p.1). In this context, it is seen that life skills were important for the schools and life skills gained significance in coping with the problems encountered in life.

Life skills emerged in the literature in the late 1960s and many skills related to the definition and content of life skills in the international field were noted. Flanagan (1978), who emphasizes the quality of life and explains the skills that individuals should have in order to improve the quality of life, explained 5 life skills as physical and material well-being, relations with other people, social and citizenship-related activities, individual development and recreation, and explained these skills under 15 categories. WHO (1997) explained these skills as decision-making, problem-solving, creative thinking, critical thinking, communication, interpersonal skills, self-awareness, empathy, controlling emotions and coping with stress. The Collaborative for Academic, Social, and Emotional Learning (CASEL) organisation explained these skills as self-awareness, self-management, social awareness, communication and decision-making (Singh and Menon, 2016, 4). Gazda et al. (2005; p. 3) explained life skills as interpersonal communication/human relations, physical health/health protection/identity development/purpose of life and problem solving / decision-making. As seen, many skills are mentioned about what life skills are. In the 1990s; however, UNICEF, WHO, UNESCO and many other organisations drew attention to the concept of life skills. Discussions on the necessity of helping generations to gain these skills in the international arena started and programs were organized.

Organizing life skills training programs in the United States to prevent smoking (United States Department of Health and Human Services [USDHHS], 1979; cited in Botvin, 1985; Botvin and Griffin, 2001), GOAL program rewarded with the prevention reward from National Mental Health Association 1996 (Danish, 1996), Implementation of a sports-based program that aims to teach cognitive, behavioural and emotional programs to individuals aged 10-24 in the life science program prepared in Ethiopia (Kibret, 2016), the programs like "Pay It Smart" all aim to teach life skills in a positive and goal-oriented environment.

The teaching of life skills has an important place in primary school programs which are the first step in gaining basic knowledge and skills about life. The qualifications of the primary school teachers who will help generations to gain this basic knowledge and skills are of great importance for the future academic and social achievements of children. Although life skills are not clearly defined in the life science program, it is a term frequently emphasized. Without understanding a concept sufficiently, it becomes difficult to acquire the knowledge and skills related to that concept. Based on this concern, the general aim of this study is to examine what the pre-service primary school teachers understand about the concept of "life skills", how they deal with the concept and what they associate them with.

Method

This study, which examined the views of the pre-service primary school teachers about the concept of basic life skills, was conducted with the use of a qualitative survey model. A survey model aims to describe and present a situation, a phenomenon or an event that existed in the past or still exist today without interfering it (Karasar, 2011; p. 77). Survey research is a preferred method for determining the attitudes, actions, ideas, or beliefs of individuals, thus helping to make estimates regarding the relationships between variables and also how the sub-groups change (Christen, Johnson and Turner 2015; p.371). In this study, the perceptions of the pre-service primary school teachers regarding the concept of basic life skills are described as they exist without any influence on the students.

Participants

In this study which examined the views of pre-service primary school teachers about the basic life skills, participants from two public universities in Ankara, which were taken as the target population of the study, were reached in the 2017-2018 academic year. In the 2017-2018 academic year, a total of 132 pre-service teachers out of 120 students from A University and 90 from B University, who were in the 4th grade of the Department of Primary School Teacher Training, participated in the study. Participation was on a volunteer basis. In this context, information about the participants is shown in Table 1.

Table 1. Information about the Participants

University	Female	Male	Total
	N	n	n
A University	43	7	50
B University	69	13	82
Total	112	20	132

Data Collection Tool and Data Collection Procedure

In this study, the data were collected through the personal information form and life skills open ended questionnaire developed and administered by the researcher. In the personal information form, gender and education related information was demanded from the pre-service teachers. An open-ended questionnaire consisting of 7 items was used to examine their views regarding basic life skills. In order to examine the pre-service teachers' opinions about basic life skills, a form consisting of 7 questions about whether they have heard their life skills before, how they defined them, what life skills can be and how they can be taught. Before administering the questionnaire, the opinions of 2 experts teaching life science course were taken. In addition, the piloting of the questionnaire was done on 20 pre-service primary school teachers at A University who were not included in the main participant

group. The data obtained from the piloting were analysed and the questionnaire was finalized. The questionnaire included open-ended questions about whether or not the pre-service teachers had previously heard the concept of basic life skills, how they defined it, the importance they gave to life skills, how they should be gained and how they are exemplified. The questionnaire was administered by the researcher in the classrooms of the faculties, receiving the necessary permissions from the instructors of the courses. It took about 15 minutes for the participants to fill in the questionnaires. In the questionnaires, necessary instruction was given first and the questionnaire was administered on a volunteer basis.

Data Analysis

Content analysis method was used to analyse the data of the study. Content analysis is a technique that tries to identify the data and reveal the truth hidden in the data (Yıldırım and Şimşek, 2014; p. 259). In other words, content analysis is an inductive approach based on the examination of topics and themes and inferences derived from them (Zhang and Wildemuth, 2009; p.308). The main purpose of content analysis is to bring together similar data within the framework of certain concepts and themes, and to interpret them in a way that the reader can understand (Yıldırım and Şimşek, 2014; p. 259). In order to reveal content data, frequency analysis was performed in the study. Frequency analysis aims to reveal the frequency of units or items in numerical, percentage and proportional form (Bilgin, 2014; p. 18). Following the collection of the survey data, the responses of the participants to the open-ended questions were examined. After analysing the responses of the participants for each item, the frequency of the responses which are the same and which have the same meaning was taken. The frequency values were evaluated differently for each item when there were more than one response or when no response was given to any item.

Findings and Discussion

This section presents the findings of the open-ended questionnaire administered to the pre-service primary school teachers. In this research, which examined the opinions of the pre-service primary school teachers about the concept of basic life skills, the question of "have you ever heard the concept of basic life skills?" was asked to the pre-service teachers, and the responses received from the participants are given in Table 2.

Table 2. The Status of Having Heard the Concept of "Basic Life Skills"

Status of Having Heard	A	B	Total
	f	f	f
Yes	26	66	92
No	24	11	35
Total	50	77	127

According to Table 2, which shows the pre-service teachers' status of having heard of the concept of basic life skills before, the majority of the pre-service teachers (92) were found to have heard the concept before and the 35 pre-service teachers were found not to have heard the concept of basic life skills before. It was observed that the students who are studying at B University have heard about the concept of basic life skills more. However, some students were found to have left this item blank. In Table 3, the source of where / how the concept of basic life skills was heard by the pre-service primary school teachers was examined.

Table 3. The Environment Where the Concept of Basic Life Skills was Encountered

Environment	f
Social Sciences Program	31
Life Science Program	22
Educational Sciences Courses	7
School	5
Primary School Program	4
Special Education Course	4
Television and News	2
Turkish Course Program	1
First reading-writing program	1
Total	77

According to Table 3, in which the environments where pre-service teachers heard about the concept of basic life skills are given, 33 pre-service teachers stated that they encountered the term in the social sciences program and 22 pre-service teachers heard in the life science program. 92 participants stated that they heard about basic life skills; however, only 77 of them gave information about where they heard about the concept. In addition, although the pre-service teachers said that they had heard the concept in different environments, it could be said that they took the life skills course and that the course was not based on these skills.

The responses that pre-service primary school teachers gave to the question "According to you, what are the life skills?", "how do you define them?" are presented in Table 4.

Table 4. Definitions Presented by Pre-service Primary School Teachers Regarding Basic Life Skills

Definition	f
Maintaining daily life	66
Meeting own needs without any help from others	12
Meeting physiological and biological needs	9
The skills gained for life	8
Struggling to survive	8
The skills facilitating life	6
The skills for survival purpose	5
The skills to be gained after birth	2
Attitudes towards the problems encountered in life	1
The way of sense-making for life	1
The responsibilities are undertaken to exist in life	1
The skills gained for self-fulfilment	1
Succeeding in life and adjustment to life	1
The skills making us human	1

In Table 4 in which definitions of pre-service primary school teachers regarding the basic life skills are presented, the majority of pre-service teachers defined the skills as the ones gained in order to maintain daily life (66). For example, one participant's view is as follows; "They are the psychomotor/cognitive/ social and emotional skills of the individuals needed for social life". One of the pre-service teachers, who explained them as physiological-biological needs (9), went on to suggest that "there is a need to gain some basic life skills to lead a quality life in a certain standard. According to Maslow's theory, they are the first skills needed in life". 6. grade pre-service teachers defined them as the skills that make life easier. For example, the definition of a participant is as follows; "they are the skills that must be possessed for individuals for self-fulfilment. They are the skills making life easier" The primary school teachers who defined them as the skills gained to be successful in life and adapt to life, went on to suggest "they are the skills that children encounter in his daily life needed to continue his life in an easier and more comfortable way". The views of pre-service primary school teachers regarding what basic life skills are presented in Table 5.

Table 5. Life Skills According to Pre-service Primary School Teachers

Skill	f	Skills	f
Healthy and Balanced Nourishment	58	Self-fulfilment	3
Communication	28	Thinking	3
Accommodation	26	Self-management	3
Cleaning	19	To be able to say "no"	2
Self-care	15	Learning	2
Basic language skills	15	Psycho-Social Skill	2
Acting independently	14	Environmental literacy	2
Problem solving	14	Entrepreneurship	2
Decision-making	12	Knowing	2
Security	11	Getting to know National and Moral Values	2
Self-expression	11	To be able to produce	2
Critical thinking	10	Planning	2
Social adaptation skills	9	Cooperation	2
Dressing	9	Solving conflicts	2
Personal care	8	Cultural interaction	1
Social participation	8	Handling personal good with care	1
Responsibility	7	Self-regulation	1
Love	7	Managing Anger	1
Respect	6	Coping with stress	1
Empathy	6	Imitation	1
Cooperation	6	Making research	1
Money making	6	Using gesture coordination	1
Going to the toilet	6	Tolerance	1
Self-knowledge	5	Smiling/ Crying	1
Cooking	5	Succeeding at work	1
Observation	4	Sense of space	1
Creative thinking	4	Helping each other	1
Conducting basic arithmetical operations	3	Knowing right and liability	1
Psychomotor	3	Grasping	1
Self-reliance	3	Giving value	1

According to Table 5, which shows the life skills indicated by the pre-service teachers, many skills are suggested. In the 2004-2005 life science program, the skills of critical thinking, creative thinking, making research, communication, problem solving, using information technologies, entrepreneurship, using Turkish language effectively, making decisions, using resources effectively, providing security and protection, self-management, recognition of basic concepts of science skills were given place (MoNE, 2009). In the 2015 life science program, the skills given place are using research, information and communication technologies, perception and continuity of perception, balanced nutrition, conservation of nature, entrepreneurship, observation, communication, cooperation, decision-making, using the resources, self-protection, self-knowledge, personal care, obeying rules, sense of space, recognition of national and cultural values, self-management, health protection, problem solving, social participation, time management (MoNE, 2015). In 2017 life science program, besides the skills given place in the 2015 program, the skills of development of career awareness was added into the program. Some of the life skills suggested by the pre-service teachers were included in the life science program, while others were not included. In this case, it could be said that pre-service primary school teachers had incomplete knowledge about the basic life skills mentioned in the program.

The questions of "Is it important to have basic life skills?" "why" were asked to the participants to learn about the beliefs of pre-service primary school teachers about the necessity of helping to gain life skills, and the responses were presented in Table 6.

Table 6. The importance of helping to gain life skills according to top re-service teachers

Importance	f
To sustain life	50
To live independently	12
Necessary to a regular and healthy life	8
Adapting to life	7
To solve problems	6
For self-fulfilment	5
Helps us feel happier	3
For a more comfortable life	4
Making life meaningful	4
To make life ideal	2
Gaining self-confidence	2
For self-expression	2
Preparing for life	2
The skills needed for development and for the rest of life	2
For human relations	1
Helps self-knowledge	1
For effective communication	1
Helps to enjoy life	1
To know about how each student learns	1

According to Table 6 in which pre-service primary school teachers' views regarding the importance of helping to gain life skills are presented, the majority of the pre-service teachers were found to consider life skills necessary for the sustainability of life. The view in the literature that life skills are necessary for a healthy life (f:8) is in line with the view of WHO (1999); the view that they are necessary for adaptation to society (f:7) is in line with the view suggested by Campbell and Williams (1998) and with the view of Gilchrist and Schinke (1985) that suggests they are necessary for solving problems (f:6). In addition, the view suggesting that life skills are necessary for happiness (f:3) is in line with the views of Wurdinger (2011), Bickham (1993), Galagali (29010), Schinke and Gilchrist (1984; p.13); the view that they are necessary to support development (f:2) is in line with the views of Roodbari, Sahdipoor and Ghale (2013), WHO (1997); the view that they are necessary for human relations (f:1) is in line with the view of Gazda (1989); the view that they are necessary for effective communication (f:1) is in line with the view of UNICEF (2006). In this context, it could be said that the opinions of the participants who think that it is important to help pre-service primary school teachers to gain basic life skills are in line with the opinions in the literature.

The expressions of pre-service teachers about the importance of life skills are as follows: "they are important to raise students as self-confident individuals and to raise children as cooperative individuals", "they are important for us to be individuals because we live in a community and social setting". "Thinking about something, investigating and communicating about it is a part of our lives". "They are necessary to adapt to life and live a happy and effective life and to meet other people at a common ground". In addition to the importance of life skills, pre-service primary school teachers were asked about their views regarding where and how these skills should be taught and the responses are presented in Table 7.

Table 7. The environment in which life skills are taught according to the pre-service teachers

The environments where life skills are gained	f
School	45
Lifelong	45
Family	33
Primarily in a family then in school	26
Social environment	9
Life skills and social sciences courses	9
Peers	8
Interaction between school-family-peer	8
Cooperation between teacher and parent	7
Not gained at school	6
It is innate but improves lifelong	4
Changes depending on age groups	1
When needed	1
Of one's own volition	1
Public education centres	1
Workplace	1
Some by themselves and some through education	1

According to Table 7, in which the pre-service primary school teachers' opinions about the environments where life skills are gained are presented, the majority of the pre-service teachers think that they are gained at school (f: 45). A primary school teacher, for example, describes this situation as follows; "They are gained at schools, especially at primary schools. Keeping hands clean, cutting your nails, etc. are basic things. They could be taught with the course of life skills; they could be gained at the pre-school stage". The other opinion is that "Some skills such as hygiene are gained at school". A pre-service primary school teacher suggested regarding the view that they are gained at every corner of life (f:45) as follows: " they are earned out of school and at school. You can't learn everything at school. Daily life is quite effective in helping to gain these skills".

Indeed, according to the life skills model suggested by Gazda et al. (2005; p. 3), life skills are gained at home, school, work and in society. James (2010) and Mccollum (2014) based the acquisition of life skills on the ecological development theory of Bronfenbrenner, who stated that the acquisition of life skills had an indirect effect on children, including the family, caregivers, the environment, teachers, schools, and the macro system. In this context, it could be said that life skills are developed lifelong beginning from individuals to the environment where individuals live. The views of primary school teachers are in line with the relevant literature.

Some of the pre-service teachers claim that life skills cannot be gained at schools (f: 6). For example, one of the pre-service teachers said; "it is difficult. Schools exist for providing literacy and teaching children to read and write. Individuals should learn basic life skills in families, and then they should start school education". It is thought that this is due to the fact that pre-service primary school teachers lack enough knowledge about basic life skills. The opinions of the pre-service primary school teachers regarding the methods that teachers should use in helping students to gain life skills are presented in Table 8.

Table 8. Methods that can be used to help students to gain life skills according to pre-service teachers

Method	f
Through personal experience	19
Relating to the courses	14
Role modelling	16
Implementing and guiding	8
Through drama	8
Through teacher's attitudes and behaviours	7
Giving examples from real life	7
Organising activities	7
Through effective educational techniques	5
Making feel	5
Through activities requiring active students participation	4
Organizing the classroom setting	3
Getting videos watched	3
Implicitly	3

Narration	6
Observation	3
Through individual education programs	5
Conferring responsibilities	2
Through classroom activities and games	2
Group works	2
Visual techniques	2
Coping with problems single-handedly	1
Chatting	1
Through demonstration	2
Entertaining narration	1
Through positive feedbacks	1
Through observation and imitation within family	1
Seeing as a separate course and supporting with an outcome	1

According to Table 8, in which the methods which can be used in gaining life skills are presented as suggested by the pre-service teachers, the methods in which students are active generally come to the fore. Health and Family Life Education (HFLE) (UNICEF, 2009) recommends that class discussions in which students are active, brainstorming, role-playing, group work, play and simulation, situation analysis or case study, storytelling should be used. Ministry of Education of New Guyana (2013) recommends methods such as script writing, inviting field experts, panel discussions, interviews, conducting field researches, writing magazine/newspaper, keeping diary, project development, dance/drama/art/music as well as the ones in Health and Family Life Education program. In addition, WHO (1999) proposes classroom environments that are based on experience and supportive learning by providing active methods in gaining life skills. This is also stated in the UNESCO (2004) report. As can be seen, in order to gain life skills, pre-service teachers also emphasize active teaching methods. Some opinions relevant to this subject are as follows; "In theory, what these skills are and why they are necessary can be explained". "Partly yes partially no because these skills cannot be achieved through a planned teaching program like the one at school. However, students will gain these skills through experience with teachers and students in the school.

Conclusion

In this study, which examined the opinions of pre-service primary school teachers about basic life skills, a large number of pre-service teachers were found to have heard of basic life skills before. However, in the life science course, the rate of having heard of basic life skills is low. Although the concept of basic life skills has different definitions in the literature, they are close to the definitions of pre-service teachers. However, there are different definitions for the basic life skills in the relevant literature, and pre-service teachers' definitions are similar to them. The concept of life skills was found not to have been defined in the life sciences course. Pre-service primary school teachers emphasize the skills that are not included in the life science program as well as the skills which are not included in the life science program, especially self-care skills. In this situation, it could

be said that the pre-service teachers had incomplete and inadequate knowledge about the life skills that are a common ground for the life science program. However, pre-service teachers claim that life skills can be taught in different environments and can be explained using different techniques. However, there are also some pre-service teachers who think that life skills cannot be taught in the school environment. In summary, most of the pre-service teachers define basic life skills and have incomplete information about the skills and the teaching of the skills.

Based on these results, the following recommendations could be made

• The teaching of "basic life skills", which is the basis of life science course, should be given more importance. This concept may be emphasized more in the training given to the pre-service teachers.

• The teaching environment can be enriched in such a way by giving basic information to the pre-service teachers that they can use basic life skills.

• The opinions of pre-service teachers and life skills experts regarding the definition of basic life skills can be taken.

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Readability Characteristics of Texts in Middle School Turkish Textbooks[1]

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Abstract

Turkish textbooks are important tools for gaining skills and competencies identified in curriculum. Textbooks should be designed to contribute to students' basic language skills as well as high level thinking skills in alignment with curriculum. The texts to be selected for textbooks should be prepared in alignment with the targeted skills and learning outcomes in terms of visuals and content. Textbooks kids encounter during elementary education play an important role in their upbringing as individuals with reading habits in later phases of their education. Therefore, texts to be included in textbooks should be selected carefully to reflect the best examples of text types, to be compatible with the child's language and meaning universe, and should be understandable. In this study, the readibility levels of texts in Turkish course textbooks were analyzed. Readibility levels reveal the comprehensibleness of texts. Readability depends on the number of words in a sentence and syllables in a word. First the average word and sentence length were calculated and then the readibility scores of texts were calculated. Two formulas adapted to Turkish were used in identifying the readibility levels of texts. The findings were analyzed comparatively. The results showed that the readability levels of narrative texts are easier compared to informing texts.

Keywords: Turkish education, Turkish textbook, Readability, Text, Analysis.

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Introduction

The purpose of Turkish education is to improve communication skills of students and to internalize the language use rathen than the language within the scope of comprehension and narrative skills so that they can contribute in all kinds of written and oral communication environments competently (Dilidüzgün, 2017). In alignment with this goal, the purpose if to improve reading, listening, talking, and writing skills through learning outcomes and activities in educational environment.

Various materials are used in gaining basic language skills in Turkish education. Textbooks are among these materials as an essential component of education (Cemiloğlu, 2015, p. 221). However, one of the most important issues of Turkish education is to select a right and effective text, and to teach the text in class effectively and efficiently (Yalçın, 2018, p. 164). Without a doubt, texts presented to students in Turkish education are of high importance. In order to like a language, the need to learn it and the services provided in teaching it are very important (Baki & Karakuş, 2012, p. 6). One of the fundamental conditions of raising language awareness and sensitivity in students it to provide them with dfferent kinds of literary texts that are compatible with students' levels, prepared with an artistic sensitivity. Thus, the reflection, correct and effective use of Turkish word existence in texts should be adopted as a main principle. Texts should be able to give students the responsibility of hearing and thinking rather than the purpose of teaching (Sever, 2013, p. 22).

In selecting texts for Turkish textbooks, not only children's reality, but also literariness criteria should be considered. This is because regardless how much a text reflects children's reality, if children can't participate in the fictional world created in the text, or can't find appropriate clues for the meaning of the text, and if children pay attention to teachings and tenets rather than anticipation and perception, and can't fill in the semantic gaps between word values, then the text is not compatible for children as it can't meet the literariness criteria (Çer, 2016, p. 1403).

Texts in Turkish textbooks play an important role in developing an interest and habit of reading as well. Reading skills include a multi-dimensional and complex process such as seeing, perceiving, vocalizing, and structuring in the brain (Güneş, 2014, p. 128; Karatay, 2014, p. 8; Stauffer, 1969, p. 5; Sever, 2004, p. 14; Yalçın, 2018, pp. 119-130). Günay (2013, p. 13) evaluates reading within the frame of interaction with text and considers reading as an intellectual activity performed by the reader with the text. Akyol (2014, p. 33) defines reading as a dynamic meaning making process that requires an active and effective communication between the writer and the author. According to Demirel (1999, p. 50), reading is an activity of meaning making from written symbols through collaboration of cognitive behaviors and psychomotor skills. These definitions indicate that reading

has both physical and mental aspects and involves an activity based on an effective communication between the writer, reader, and the text.

The occurrence of reading activity is directly related to the readability of the text. Therefore, one of the important aspects to be carefully considered in text selection is the compatibility of readability levels of text with students' levels. According to Ateşman (1997, p. 71), readability is text quality of easy or difficult comprehension by the reader. Göğüş (1978) defines readibility as a comprehension of a text by a student at a certain level. Readability aims to identify the difficulty level of texts in consideration with quantitative characteristics such as sentence and word lengths, and the number of unknown words (Zorbaz, 2007, p. 89).

According to Karatay, Bolat and Güngör (2013), as children grow older, textbooks should include texts with longer sentences. Having texts, words and sentences that are shorter or longer than what is compatible with the age range is an obstacle for readers. The length of sentences used in texts included in Turkish textbooks should be taken into consideration as it is one of the main components that impact the readability of textbooks.

According to Ateşman (1997), there are certain differences between readability and comprehensibility. Comprehensibility depends on not only the quantitative characteristics of texts, but also qualitative characteristics. Content is more important in comprehensibility while quantitative characteristics such as grammatical characteristics and average of word and sentences are taken into consideration in readability (Temur, 2003, p. 171).

Studies on readability go a long way back. First studies on texts were conducted by men of God in the 9th century B.C. with the purpose of differentiating important words in sacred texts from unimportant words. The frequency dictionary consisting of around 11 million words that was written by F.W. Kaeding in 1898 has an important place in the literature. The first studies on readability in English were conducted by B. A. Lively and Pressey in 1923. However, the most renowned studies were done by R. Flesch (1943, 1948, 1950). Other important works were done by Dale/Chall, Farr/Jenkins?Paterson and Gunning (as cited in Ateşman, 1997, p. 72).

When related literature is examined, it is seen that there are multiple formulas used to select texts and to identify the compatibility of texts with the level of students. Frequently used formulas are Dale Cale formula, Gunning Fog Index, Flesch-Kincaid readability formula, Raygor formula, Fry readability graph, and Ateşman (1997) formula which is an adapted version of Flesch in Turkish (Temur, 2003, p. 174-178; Zorbaz, 2007, p. 89-90).

Studies on readability do not go a long way in Turkey. One of the earliest studies include Ateşman's (1997) work on adapting the Flesch readability formula to Turkish in order to calculate the

readability of Turkish texts and this study still holds an important place. Similarly, the formula developed by Çetinkaya-Uzun (2010) is used by researchers in identifying the readability level of Turkish texts.

The field literature includes studies on readabillity in Turkey. Temur (2002) compared the texts in 5th grade Turkish textbooks with student compositions from the aspect of readability levels. The calculations done by using formulas developed by Ateşman (1997) did not show a significant difference in the level of readability between textbook texts and student compositions.

Çiftçi, Çeçen, & Melanlıoğlu (2007) examined the texts in 6th grade Turkish textbooks by using Ateşman's (1997) formula. Significant differences were found between narrative texts and informative texts in readability levels. While 35% of informative texts were either "difficult" or "very difficult", only 3% of narrative texts were either "difficult" or "very difficult." 62% of narrative texts were "easy" or "very easy" while 18% of informative texts were "easy" or "very easy."

Zorbaz (2007) studied the readability of texts and the change of word or sentence lengths in tales in Turkish textbooks according to grades by using the Ateşman formula. The results of t-test performed showed a significant difference only between grades in sentence length and readability. Çetinkaya's (2010) study focused on identifying the relationships between the readability levels of texts and linguistic characteristics such as word difficulty and syntactic complexity. With this purpose, participants of the study engaged in an inductive reading activity and the relationship between inductive score and linguistic characteristics of the texts was analyzed. Statistical analysis revealed the readability score of Turkish texts and with the regression formula to determine the readability score of Turkish texts, the Çetinkaya- Uzun readability formula was developed which is an important scale to identify the structural difficulty of reading materials to be distributed to students in class and to match the readability level of the text with the reading level of targeted reader group.

Okur & Arı (2013) examined texts in 15 different Turkish texts books between 2010 and 2011 by using Ateşman (1997) and Çetinkaya- Uzun (2010) readability formula. The results showed that the narrative texts were easier than informative texts and as the grade level increased the readability level of texts increased. In a study focusing on readability of texts in 8th grade Turkish textbooks, Bağcı & Ünal (2013) found that the the difficulty level of texts was medium. In a study conducted by Durukan (2014) to identify the relationship between readability levels of texts in Turkish textbooks and students' reading speed and comprehension levels of these texts revealed a significant difference between readability levels and student's reading speed and comprehension levels. Baş & İnan Yıldız (2015) focused on the readability of texts in 2nd grade Turkish textbooks and found that the readability scores of narrative texts were higher than informative texts.

A study by Iskender (2013) focused on identifying the relationship between the word and sentence structures of texts in Turkish textbooks and readability levels. In order to identify the readability levels of texts, Ateşman's (1997) formula wsa used. The results showed that texts in 5th, 6th, 7th, and 8th grade Turkish textbooks have an average readability level of medium difficulty. There was no significant difference between the class levels and word and sentence length of texts in Turkish textbooks. The average length of word and sentence do not significantly differ from 5th grade through 8th.

Bolat (2016) examined the readability levels of texts in 5th-8th grade Turkish textbooks based on length of worda and the frequency of word use in texts. By using cloze readability test in texts, the readability of texts were identified based on text type, length of word and sentences, and grade and gender variables. The results indicated that 5th-8th grade students read narrative texts more easily than informative texts. When examined according to the grade levels, the texts in the 6th grade textbooks were found to be easier to read than other textbooks. A significant difference was found between the word frequency and readability level. Also, the texts consist of common words were easier to comprehend. Another finding was that when the sentence length of texts are more than 12 words, the readability score was significantly lower which indicated that the average sentence length was the variable that impacts the readability of texts the most.

In addition to these studies, there are also studies focusing on identification of readability levels of texts selected from different textbooks (Geçit, 2010; Hızarcı, 2009; Köse, 2009; Ulusoy, 2009) as well as in literary books (Bezirci & Yılmaz, 2010; Çeçen Aydemir, 2011; Gedizli, 2016; Güneş, 2000; Temizyürek, 2010).

When the studies in the literature were examined, it was found that the majority of the studies focused on different levels of textbooks and students. In today's information and technology world, Turkish curricula are being updated and improved in order to keep up with change and innovation. With this update and improvement, the contents of Turkish textbooks are being improved and updated as well. Within this scope, the current study aims to identify the readability levels of middle school Turkish textbooks prepared in alignment with the updated 2018 Turkish Course Curricula. This study is significant as it focuses on evaluating texts in Turkish textbooks that were prepared in alignment with the new curriculum, and provides an opportunity to compare with previous studies.

Purpose of the Study

The problem statement of this study was identified as "are readability characteristics of texts in middle school Turkish textbooks compatible with the student level?" With the purpose of

identifying readability characteristics of texts in middle school Turkish textbooks, this study is guided by the following research questions:

1. What is the average difficulty level of texts in 5th, 6th, 7th, and 8th grade Turkish textbooks?

2. What is the readability level of narrative texts in 5th, 6th, 7th, and 8th grade Turkish textbooks?

3. What is the readability level of informative texts in 5th, 6th, 7th, and 8th grade Turkish textbooks?

4. What is the average length of word and sentence in texts in 5th, 6th, 7th, and 8th grade Turkish textbooks?

Methodology

The current study with the purpose of identifiying readability levels of texts in middle school Turkish textbooks is a descriptive survey research. "Descriptive studies describe a given situation as accurate and comprehensive as possible" (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2015, p. 22).

This study is limited to informative and narrative texts in the Turkish textbook that was used during the 2018-2019 academic year. Listening/watching texts that are in themes and free reading texts were not included in the study. As readability formulas are based on syllable, word, and sentence count, comprehensiveness was not included in the scope of the study. There are differences in classification of text types in the literature. In the current study, the classification listed in the Turkish Course Curriculum for the year of 2018 was used in identifying the text types.

Data Collection and Analysis

Two formulas used in this study to identify the readability levels of texts in Turkish text books (Ateşman, 1997; Çetinkaya-Uzun, 2010). The researcher identified the numbers of syllables, words, and sentences of texts. Every component in between two gaps was considered as a word. Each unit that is thought to be independent of other sentence or objects grammatically was considered as a sentence. Period (.), question mark (?), colon (:), and two parantheses ( ) were considered as a finished sentence. Syllables were counted as they are phonated. Symbols and shapes were counted as they are phonated. Then, the average word length was calculated by dividing the total number of syllables by total number of words (X) and the average sentence length was calculated by dividing the total number of words by total number of sentences (Çetinkaya & Uzun, 2014, p. 148). Following the calculations of average word length and average sentence length, data were placed in the formula to calculate the readability scores. The formulas used in this study are explained in the next section.

Ateşman formula is applied as follows:

RS= 198,825- (40,175.AWL- 2,610.ASL)

Çetinkaya-Uzun formula is applied as follows:

RS= 118,823- 25,987 x AWL – 0,971 x ASL

RS= Readability score

ASL= Average sentence length

AWL= Average word length

Average sentence lengths and average word lengths were applied in the formula and the scored obtained were analyzed according to the classification shown in table 1.

Table 1. Readability scores and levels according to Ateşman & Çetinkaya-Uzun formulas

Ateşman Formula – Readability Levels			Çetinkaya-Uzun Formula – Readability Levels		
SCORE	**LEVEL OF READABILITY**		**SCORE**	**READING LEVEL**	**EDUCATION LEVEL**
90-100	Very easy		51+	Independent Reading	5th, 6th and 7th grades
70-89	Easy				
50-69	Medium Difficulty		35-50	Educational Level	8th and 9th grades
30-49	Difficult				
0-29	Very Difficult		0-34	Frustration Level	10th, 11th, and 12th grades

According to Flesch, average word length in English texts are around 1.4 syllables, and the average sentence length is 14-15 words. The length of words and sentences in German texts are longer than English texts. In their analysis on 23 texts, Fucks found that the average word length in German is 1.68 syllables and the sentence length is 17-18 words. The average word length in Turkish is 2.6 syllables while the sentence length is 9-10 sentences (as cited in Ateşman, 1997, p. 73). The characteristics of the most difficult and the easiest texts in Ateşman's (1997) readability formula are shown in table 2.

Table 2. Length of words and sentences based on difficulty level

	Word Length (syllable)	**(Sentence Length)**
The Easiest Text	2,2	4
The Most Difficult Text	3,0	30

Findings and Discussion

In this section, the findings related to the readability levels, average word and sentence lengths and sub-types of narrative and informative texts in Turkish textbooks are presented. 1 represents narrative texts and 2 represents informative texts in the tables provided. ASL= average sentence length, A RS = Ateşman readability score, ÇU RS= Çetinkaya-Uzun readability score and the findings listed in the level column represent readability scores according to two formulas (Ateşman, Çetinkaya-Uzun)

1. Readability Levels of Texts in 5th Grade Turkish Textbooks

Table 3. Average word-sentence lengths and readability levels of texts in 5th grade Turkish textbooks

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	Toy	1	Story	5,45	2,68	76,86	43,84	easy- educational
	I was a Plane Tree	1	Story	5,46	2,75	74,24	42,15	easy- educational
	Is There Anyone Who Doesn't Know?	1	Story	4,27	2,50	87,33	49,76	easy- educational
	15th of July	2	Essay	9,62	2,59	69,61	42,14	moderate-educational
	Dove	1	Fable	6,79	2,73	71,56	41,37	easy- educational
	Karagöz ile Hacivat- Kindness	1	Theatre	4,15	2,30	95,63	55,05	very easy-independent
	Tip	1	Story	5,27	2,58	81,57	46,76	easy- educational
	A Day in Space	2	Article	9,07	2,94	57,00	33,59	moderate-frustration
	Pasta with Garlic Sauce	2	Manuals	10,71	2,59	66,74	41,06	moderate-educational
	Talking to a Genius	2	Conversation	7,98	3,03	56,39	32,41	moderate-frustration
	Forsa	1	Story	4,54	2,50	86,58	49,48	easy- educational
	Tambour Player Mr. Cemil Explains Instruments	2	Manuals	8,81	2,45	77,54	46,68	easy- educational
	My Reading Books	2	Essay	6,20	2,88	67,13	38,09	moderate-educational
	Anatolia's Javelin Game	2	Essay	7,57	2,72	69,73	40,75	moderate-educational
	I'm Living Healthy	2	Brochure	4,07	2,55	85,75	48,60	easy- educational
	Prescription	2	Essay	6,20	2,81	69,57	39,67	moderate-educational
	The Journey of a Snowflake	1	Story	4,48	2,73	77,31	43,44	easy- educational

According to the findings shown in table 3, the average word length of narrative texts varies between 2.30 and 2.73. Similarly, the average sentence length varies between 4.15 and 6.79. According to Ateşman's formula, readability scores of narrative texts vary between 71.56 (easy) and

95.63 (very easy). The text titled "Karagöz & Hacivat-Kindness" is at the *very easy* level while texts titled "Toy", "I was a Plane Tree", "Is There Anyone who Doesn't Know?," "Dove", "Tip", "Forsa" and "The Journey of a Snowflake" are at the *easy* level. According to the Çetinkaya- Uzun formula, the scores range between 41.37 (educational) and 55.05 (independent). The text titled "Karagöz & Hacivat-Kindness" is at the *independent* level while "Toy"," "I was a Plane Tree," "Is There Anyone who Doesn't Know?", "Dove", "Tip", "Forsa" and "The Journey of a Snowflake" are at the *educational* level. According to both formulas, it was found that the "Karagöz & Hacivat-Kindness" text was easier than other texts.

According to the findings presented in the table, the average word length of informative texts in the related textbook varies between 2.45 and 3.03. Similarly, the average sentence length varies between 4.07 and 10.71. When the readability scores of informative texts are examined according to the Ateşman formula, the scores are found to vary between 56.39 (medium) and 95.63 (very easy) while the scores according to the Çetinkaya-Uzun formula vary between 32.41 (frustration) and 55.05 (independent). According to the Ateşman formula, texts titled "15th of July", " A Day in Space", "Pasta with Garlic Sauce", "Talking to a Genius", "My Reading Books", "Anatolia's Javelin Game" and "Prescription" are at the level of medium while the texts titled "Tambour Player Mr. Cemil Explains Instruments" and "I'm Living Healthy" are at the level of easy. According to the Çetinkaya-Uzun formula, texts titled " A Day in Space" and "Talking to a Genius" are at the frustration level while "15th of July", "Pasta with Garlic Sauce", "Tambour Player Mr. Cemil Explains Instruments", "My Reading Books", "Anatolia's Javelin Game", "I'm Living Healthy" and Prescription" are at the level of educational.

2. Readability Levels of Texts in 6th Grade Turkish Textbooks

Table 4. Average word-sentence lengths and readability levels of texts in 6th grade Turkish textbooks published by Eksen Publishers

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	Forsa	1	Story	5,13	2,69	77,44	43,99	easy-educational
	Boiled Seed	1	Tale	7,09	2,69	72,35	42,10	easy-educational
	Those who Helped the Gazelle	1	Fable	5,31	2,51	84,08	48,41	easy-educational
	Newruz	2	Article	17,82	2,95	33,95	24,95	difficult-frustration
	An Empty Coop, A Few Full Hearts	1	Story	7,42	2,59	75,43	44,33	easy-educational
	Atatürk Orman Çiftliği	1	Story	8,52	2,71	67,57	40,03	moderate-educational
	Ataturk Had Written A Geometry Book	2	Article	8,49	2,82	63,19	37,17	moderate-educational
	Nasreddin Hodja Jokes	1	Mizahi Fıkra	4,02	2,34	94,35	54,13	very easy-independent

Riddle	1	Theatre	3,14	2,28	99,06	56,55	very easy-independent
Who Am I?	1	Fable	5,95	2,61	78,41	45,20	easy-educational
Recycling	2	Article	11,65	2,99	48,38	29,86	difficult-frustration
Life-Draining	1	Story	5,26	2,72	75,89	43,08	easy-educational
On Smiling Face and Smiling	2	Conversation	8,53	2,63	71,03	42,27	easy-educational
Technological Celebrations of Holidays	2	Conversation	7,07	2,88	64,68	37,12	moderate-educational
Petition Without a Stamp	2	Letter	5,50	2,94	66,26	37,02	moderate-educational
Our Planet is Warming	2	Article	10,06	2,78	61,04	36,91	moderate-educational
Far Lands	2	Travel writing	9,77	2,74	63,08	38,03	moderate-educational
Energy with Robotics	1	Comic book	6,05	2,61	78,04	45,04	easy-educational
Newton's Apple	1	Theatre	4,10	2,61	83,27	47,02	easy-educational

According to the findings presented in table 4, the average word length of narrative texts in books varies between 2.28 and 2.72. Similarly, the average sentence lengths varies between 3.14 and 8.53. The readability scores of narrative texts in the 6th grade Turkish textbooks published by Eksen Publishers showed that the scores according to the Ateşman formula vary between 67.57 (medium) and 99.06 (very easy). The texts titled "Riddle" and "Nasreddin Hodja Jokes" are very easy, "Forsa," "Boiled Seed", "Those who Helped the Gazelle", "An Empty Coop, A Few Full Hearts", "Who Am I?", "Life-Draining", "Energy with Robotics" and "Newton's Apple" are easy, "Atatürk Forest Farm" are at the medium level. According to the Çetinkaya-Uzun formula, readability scores vary between 40.03 (educational) and 56.55 (independent). According to the Çetinkaya-Uzun formula, "Forsa", "Boiled Seed", "Those Who Help The Gazelle", "An Empty Coop, A Few Full Hearts", "Who Am I?" "Life-Draining", "Energy With Robotics" and "Newton's Apple" were found to be at the educational level. "Nasreddin Hodja Jokes" and "Riddle" texts were the easiest according to both formulas.

The findings presented in the table show that the average word length of informative texts vary between 2.34 and 2.63 and the average sentence length is between 5.50 and 17.82. According to the Ateşman formula, the readability scores of texts vary between 33.95 (difficult) and 71.03 (easy). According to this formula, "On Smiling Face and Smiling" text is wasy, "Ataturk Had Written A Geometry Book", "Technological Celebrations of Holidays", "Petition Without a Stamp", "Our Planet is Warming", "Far Lands" texts are medium, and the texts titled "Newruz" and "Recycling" are at the difficult level. According to the Çetinkaya-Uzun formula, the readability scores vary between 24.95 (frustration) and 42.27 (educational). According to this formula, "Ataturk Had Written A Geometry Book", "On Smiling Face and Smiling", "Technological Celebrations of Holidays", "Petition Without a Stamp", "Our Planet is Warming" and "Far Lands" are educational, while "Newruz" and

"Recycling" are at the frustration level. Texts titled "Newruz" and "Recycling" are found to be difficult according to both formulas.

Table 5. Average word-sentence length and readability levels of texts in 6th grade Turkish textbooks published by the Ministry of Education

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	This Is My Story	2	Memoir	6,50	2,82	68,73	39,33	moderate-educational
	My Dear Bookshelf	2	Conversation	5,40	2,63	79,02	45,20	easy-educational
	The Courage Of The Turkish Soldier	1	Story	6,19	2,78	70,84	40,48	easy-educational
	The Old Grandmother	2	Memoir	5,69	2,52	82,63	47,74	easy-educational
	15th of July	2	Essay	12,18	2,83	53,31	33,43	moderate-frustration
	Aziz Sancar	2	Autobiography	7,55	2,71	70,25	41,07	easy-educational
	How did People Use to Measure Time?	2	Article	8,74	2,72	66,64	39,59	moderate-educational
	Technology Addiction	2	Article	9,04	3,10	50,63	29,45	moderate-frustration
	Give To Multiply	1	Story	8,28	2,54	75,09	44,72	easy-educational
	Silver Wing	1	Story	6,17	2,59	78,52	45,43	easy-educational
	Things We Are Curious About	2	News text	9,85	2,73	63,54	38,38	moderate-educational
	Afyon	2	Travel writing	9,02	2,74	65,24	38,89	moderate-educational
	Water Pollution	2	News text	10,06	2,97	53,28	31,89	moderate-frustration
	The Story of Tarhana	2	Manuals	8,91	2,85	61,20	36,19	moderate-educational
	Time of Bicycle	2	Manuals	9,25	2,71	65,81	39,41	moderate-educational
	Eating, Drinking and Digesting	2	Essay	7,31	2,68	72,18	42,14	easy-educational
	10 Questions and 10 Answers About Obesity	2	Brochure	3,90	2,80	76,19	42,30	easy-educational
	Yes Sir	1	Theatre	4,45	2,46	88,35	50,55	easy-educational
	Do You A Favor	1	Story	5,48	2,66	77,61	44,35	easy-educational
	On Friendship	2	Essay	7,12	2,61	75,36	44,07	easy-educational

According to the findings presented in table 5, the average word length of narrative texts varies between 2.46 and 2.78 while the average sentence length varies between 4.45 and 8.28. The readability scores of these texts in the related book according to the Ateşman formula vary between 70.84 and 88.35. All of the narrative texts are at the easy level. According to the Çetinkaya-Uzun formula, their readability scores vary between 40.48 and 50.55. All of the texts were found to be at the educational level according to this formula.

When the table is examined, it is seen that the average word length of informative texts varies between 2.52 and 3.10 while the average sentence length varies between 3.90 and 12.18. According to the Ateşman formula, readability scores of the texts vary between 50.63 (medium) and 82.63 (easy). Texts titled "My Dear Bookshelf", "The Old Grandmother", "Aziz Sancar", "Eating, Drinking and Digesting", " 10 Questions and 10 Answers About Obesity", and "On Friendship" are easy, "This Is My Story", "15th of July", "How did People Use to Measure Time?", "Technology Addiction", "Things We Are Curious About", "Afyon", "Water Pollution", "The Story of Tarhana", "Time of Bicycle" texts are at the medium level. The readability scores according to the Çetinkaya-Uzun formula vary between 29.45 (frustration) and 47.74 (educational). According to this formula, "15h of July", "Technology Addiction" and "Water Pollution" are found to be at the frustration level while others are at the educational level.

3. Readability Levels of Texts in 7th Grade Turkish Textbooks

Table 6. Average word-sentence length and readability levels of texts in 7th grade Turkish textbooks published by Dersdestek Publishers

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	Purple Cluster House	1	Story	7,41	2,61	74,70	43,85	easy-educational
	Red Shoes	1	Story	5,70	2,78	72,33	41,09	easy-educational
	Life Without Gravity	2	Article	8,27	2,80	64,77	38,05	moderate-educational
	Snowman with Green Eyes	1	Story	5,04	2,42	88,64	51,16	easy-independent
	Coloured Map Of My Country	1	Story	5,98	2,64	77,02	44,32	easy-educational
	The Man Who Makes the World Laugh	2	Biography	11,19	2,76	58,78	36,27	moderate-educational
	Little Hasan from Istanbul High School	1	Story	7,06	2,75	69,91	40,50	moderate-educational
	The Personality and Characteristics of Ataturk	2	Article	10,02	2,91	55,91	33,56	moderate-frustration
	The Names of Martyrs of 15th of July Live in Schools	2	News text	26,14	3,00	10,07	15,48	very difficult-frustration
	White-bearded Wise Grandfather	1	Tale	5,85	2,53	82,05	47,48	easy-educational
	Our Responsibilities	2	Essay	6,58	2,75	71,28	41,04	easy-educational
	Goool!	1	Story	5,48	2,61	79,79	45,76	easy-educational
	My Name:Baby	1	Story	4,93	2,62	80,87	46,06	easy-

Candy							educational
Sufficient and Balanced Eating	2	Brochure	15,53	2,41	61,47	41,11	moderate-educational
Belkıs Theatre	1	Tale	6,83	2,56	78,22	45,70	easy-educational
Traditional Hand Crafts Bazaar	2	Travel writing	12,86	2,86	50,37	32,02	moderate-frustration
Towards Invention	2	Conversation	8,42	2,67	69,48	41,19	moderate-educational
The Media Does Not Consist of Only Television and Newspaper	2	Conversation	9,05	2,89	59,11	34,94	moderate-frustration

The findings presented in table 6 show that the average word length of narrative texts in the related textbook varies between 2.42 and 2.78 while the average sentence length varies between 4.93 and 7.41. According to the Ateşman formula the readability scores of narrative texts vary between 69.91 (medium) and 88.64 (easy) while the scores according to Çetinkaya-Uzun formula vary between 40.50 (educational) and 51.16 (independent). The text titled "Little Hasan from Istanbul High School" is at the medium level according to the Ateşman formula while other texts are at the easy level. According to Çetinkaya- Uzun formula, the text titled "Snowman with Green Eyes" is at the independent reading level while others are at the educational level. This text is also at an easier level according to both formulas compared to other texts.

The table shows that the average word length is between 2.41 and 3.00 while average sentence length is between 6.58 and 38.75 in informative texts. According to Ateşman formula, the readability score of informative texts are between -23.62 (very difficult) and 71.28 (easy) while they are in the range between 2.73 (frustration) and 41.19 (educational) according to Çetinkaya-Uzun formula. According to the Ateşman formula, the text titled "Our Responsibilities" is easy, "Life Without Gravity", "The Man Who Makes the World Laugh", "The Personality and Characteristics of Ataturk", "Sufficient and Balanced Eating", "Traditional Hand Crafts Bazaar", "Towards Invention" and "The Media Does Not Consist of Only Television and Newspaper" texts are at the medium level while "The Names of Martyrs of 15th of July Live in Schools" text is at the very difficult level. According to Çetinkaya-Uzun formula, "Life Without Gravity", "The Man Who Makes the World Laugh", "Our Responsibilities", "Sufficient and Balanced Eating" and "Towards Invention" texts are educational while "Traditional Hand Crafts Bazaar", "The Media Does Not Consist of Only Television and Newspaper", "The Personality and Characteristics of Ataturk", and "The Names of Martyrs of 15th of July Live in Schools" texts are at the frustration level. "The Names of Martyrs of 15th of July Live in Schools" text is a more difficult text according to both formulas.

Table 7. The average word-sentence lengths and readability levels of texts in 7th grade Turkish textbooks published by the Ministry of Education (a)

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	Inspiration of Bees	1	Tale	6,74	2,65	74,67	43,34	easy-educational
	Munise	1	Novel	6,99	2,62	75,27	43,91	easy-educational
	Friendship	1	Theatre	5,06	2,30	93,22	54,14	very easy-independent
	Armies! Your first Target	2	Memoir	6,58	2,58	78,09	45,44	easy-educational
	Ask for Forgiveness from Your Teacher	2	Memoir	7,60	2,68	71,44	41,88	easy-educational
	The Last Letter of a Martyr	2	Letter	8,88	2,42	78,57	47,41	easy-educational
	Barış Manço	2	Biography	10,34	2,63	66,23	40,48	moderate-educational
	My Left Foot	1	Story	7,55	2,59	75,16	44,25	easy-educational
	he Art of Getting Along with People	2	Essay	9,83	2,79	61,26	36,89	moderate-educational
	Coffee in the Turkish Cuisine Culture	2	Article	12,48	2,76	55,44	35,03	moderate-educational
	I, Mimar Sinan	1	Theatre	6,42	2,44	84,00	49,15	easy-educational
	Piri Reis	1	Comic book	6,60	2,95	62,90	35,63	moderate-educational
	New World	2	Essay	13,27	2,75	53,73	34,49	moderate-frustration
	A Day in the Life in 2100	2	Essay	7,74	2,85	63,94	37,13	moderate-educational
	On Reading	2	Conversation	8,53	2,79	64,47	38,03	moderate-educational
	The Story of Divanu Lügat-Türk	1	Story	6,56	2,55	79,46	46,31	easy-educational
	Reading is a Privilege, Not Everyone Can Read	2	Essay	7,19	2,61	75,10	43,95	easy-educational
	The Village Smelled Like Lavender	2	Article	17,95	2,83	38,29	27,86	Difficult-frustration
	First Snow	2	Journal	8,83	2,56	72,90	43,70	easy-educational
	An Elephant in Aksehir	1	Mizahi Fıkra	4,72	2,50	85,91	49,17	easy-educational
	Moena, A Turkish Village	2	Essay	10,34	2,74	61,64	37,51	moderate-educational

The findings presented in table 7 show that the average word length of narrative texts varies between 2.30 and 2.95 while the average sentence lengths varies between 4.72 and 7.55. According to the Ateşman formula, the readability scores of narrative texts are in the range of 62.90 (medium) and 93.22 while according to the Çetinkaya-Uzun formula the scores are between 35.63 (educational) and 54.14 (independent). When the Ateşman formula is applied, "Piri Reis" is found to be medium, "Inspiration of Bees", "Munise", "My Left Foot", "I, Mimar Sinan", "The Story of Divanu Lügat-Türk", "An Elephant in Aksehir" texts are found to be easy while "Friendship" text is very easy.

According to the Çetinkaya-Uzun formula, except for "Friendship" (independent) text, all the other texts are at the educational level.

According to the data presented in the table, the average word length of informative texts varies between 2.42 and 2.85 while the average sentence length is between 6.58 and 17.95. According to the Ateşman formula, the readability scores of informative texts vary between 38.29 (difficult) and 78.57 (easy). "Armies! Your first target", "Ask for Forgiveness from Your Teacher", "The Last Letter of a Martyr", "Reading is a Privilege, Not Everyone Can Read" and "First Snow" texts are easy while "Barış Manço", "The Art of Getting Along with People", "Coffee in the Turkish Cuisine Culture", "New World", "A Day in the Life in 2100", "On Reading" and "Moena, A Turkish Village" texts are at the medium level and the text title "The Village Smelled Like Lavender" is at the difficult level. According to the Çetinkaya-Uzun formula, "New World" and "The Village Smelled Like Lavender" texts are at the frutration level while other texts are at the educational level. The text "The Village Smelled Like Lavender" is a at the difficult level according to both formulas.

Table 8. Average word-sentence length and readability levels of texts in 7th grade Turkish textbook published by the Ministry of Education(b)

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	Kaleidoscope	2	Essay	7,47	2,84	65,29	37,81	moderate-educational
	Mother Unemployed	1	Story	5,04	2,63	80,16	45,68	easy-educational
	Women of the Mürefte and Emin Petty Officer	1	Story	5,40	2,64	78,59	44,92	easy-educational
	The Story of Cowman Mustafa	1	Story	5,24	2,59	81,12	46,44	easy-educational
	The Function of Reading	2	Essay	8,60	2,81	63,45	37,42	moderate-educational
	Reading is for Thinking	2	Conversation	6,43	2,25	91,56	54,05	very easy-independent
	Wooden Bicycle	2	Letter	4,94	2,56	82,97	47,43	easy-educational
	Two Ducks With Turtle	1	Fable	6,78	2,69	72,92	42,25	easy-educational
	Angry Pounds	1	Story	5,90	2,60	78,92	45,49	easy-educational
	The Kid Whose Name Is Written in the Sky	2	Biography	5,11	3,71	36,44	17,45	difficult-frustration
	Pushing Towards Success or Pulling Success?	2	Conversation	6,25	2,43	84,96	49,65	easy-educational
	The Letter "A"	1	Story	7,43	2,60	75,02	44,07	easy-educational
	Yusufçuk	1	Legend	5,78	2,39	87,65	51,05	easy-independent
	Rug in Anatolia	2	Essay	7,48	2,66	72,29	42,34	easy-

							educational
What is Karagöz?	2	Article	8,85	2,66	69,02	41,21	moderate-educational
Two-wheel Freedom	2	Essay	12,08	2,71	58,27	36,57	moderate-educational
I had Decided to Become a Soccer Player	2	Memoir	7,89	2,53	76,55	45,39	easy-educational
Be A Friend of Snowy Mountains	2	Conversation	10,31	2,61	66,97	40,93	moderate-educational
Âşık Veysel Şatıroğlu	2	Biography	9,03	2,48	75,75	45,69	easy-educational
Ebru: A Traditional Turkish Art	2	Article	11,00	2,70	61,57	37,93	moderate-educational
Dipper Carved Out of Tree	2	Memoir	5,54	2,46	85,53	49,51	easy-educational

Table 8 shows that the average word length of narrative texts in the related textbook is between 2.39 and 2.69. Similarly, the average sentence length of texts varies between 5.04 and 7.43. According to the Ateşman formula, the readability scores of texts are between 72.92 and 87.65. According to this formula, all the narrative texts are at the easy level. According to the Çetinkaya-Uzun formula, readability scores are between 42.25 (educational) and 51.05 (independent). The text titled "Yusufçuk" is at the independent reading level while other texts are at the educational level.

The data presented in the table show that the average word length of informative texts varies between 2.25 and 3.71 while the average sentence length is between 4.94 and 12.08. According to the Ateşman formula, the readability scores are between 36.44 (difficult) and 91.56 (very easy) while according to the Çetinkaya- Uzun formula the scores vary between 17.45 (frustration) and 54.05 (independent). According to the Ateşman formula, the text titled "Reading is for Thinking" is at the easy level; "Wooden Bicycle", "Pushing Towards Success or Pulling Success?", "Rug in Anatolia", "I had Decided to Become a Soccer Player", "Âşık Veysel Şatıroğlu" and "Dipper Carved Out of Tree" are easy level. "Kaleidoscope", "The Function of Reading", "What is Karagöz", "Two-wheel Freedom", "Be A Friend of Snowy Mountains" and "Ebru: A Traditional Turkish Art" texts are at the medium level while "The Kid Whose Name Is Written in the Sky" text is at the difficult level. The text "Reading is for Thinking" is independent and "The Kid Whose Name Is Written in the Sky" is at the frustration level according to the Çetinkaya-Uzun formula. Other texts are found to be at the educational level. According to both formulas, the text titled "Reading is for Thinking" is at the level easy and the text titled "The Kid Whose Name Is Written in the Sky" is at the difficult level.

4. Readability Levels of Texts in 8th Grade Turkish Textbooks

Table 9. The average word-sentence lengths and readability levels of texts in 8th grade Turkish textbooks

No	Title of The text	Type	Subtype	ASL	AWL	A-RS	ÇU-RS	Readability Level
	On The Self	2	Essay	8,45	2,82	63,47	37,33	moderate-educational
	Seagull	1	Story	7,66	2,60	74,20	43,70	easy-educational
	Do not Decide to Hurry	1	Tale	6,54	2,49	81,59	47,68	easy-educational
	Motherland or Silistra	1	Theatre	6,10	2,40	86,29	50,41	easy-educational
	Independence Medal	2	Essay	11,81	2,54	66,10	41,45	moderate-educational
	Pleasure To See A Useful Job	2	Conversation	14,42	2,64	55,23	36,28	moderate-educational
	Beauty Of Turkish	2	Essay	10,33	2,65	65,59	40,05	moderate-educational
	Micro Miniature	2	Article	12,28	2,76	56,08	35,29	moderate-educational
	Selimiye Mosque	2	Article	13,80	2,68	55,04	35,72	moderate-educational
	Stop Here	1	Legend	5,90	2,60	78,78	45,41	easy-educational
	Ergenekon Epic	1	Destan	7,07	2,51	79,69	46,83	easy-educational
	The Voice of the Heart	2	Essay	7,06	2,57	77,07	45,13	easy-educational
	Rolling Stone In The Mill	1	Story	5,71	2,70	75,42	43,09	easy-educational
	The Graves of Yunus Emre	2	Essay	8,68	2,50	75,93	45,55	easy-educational
	Aunt Emine Strawberry Jam	1	Story	6,35	2,65	75,71	43,74	easy-educational
	The Wise Man's Path	1	Tale	10,39	2,72	62,58	38,15	moderate-educational
	Aliya Izzetbegovic and Fight For Freedom	2	Biography	12,08	2,80	54,90	34,39	moderate-frustration

According to the findings presented in table 9, the average word length of narrative texts in related textbook varies between 2.40 and 2.72 while the average sentence length is between 5.71 and 10.39. According to the Ateşman formula, the radability scores of narrative texts vary between 62.59 and 86.29. "The Wise Man's Path" text is at a medium level while all other texts are at the easy level. According to the Çetinkaya-Uzun formula, the readability scores vary between 38.15 and 50.41, and all the narrative texts are at the educational level.

According to the data in the table, the average word length of informative narratives varies between 2.50 and 2.82 while the average sentence length ranges between 7.06 and 14.41. According to the Ateşman formula, the readability scores of informative texts range between 54.90 (medium) and

77.07 (easy) while according to the Çetinkaya- Uzun formula, the scores range between 34.39 (frustration) and 45.55 (educational). The texts titled "The Voice of the Heart" and "The Graves of Yunus Emre" are at the easy level while the rest of the informative texts are at the medium difficulty level according to the Ateşman formula. The texts titled "Aliya Izzetbegovic and Fight For Freedom" is at the frustration level while the others are at the educational level according to the Çetinkaya- Uzun formula.

5. Findings on the Readability Level of Informative Texts

Table 10. Readability levels of informative texts according to the Ateşman formula

Grade	Very easy		Easy		Moderate		Difficult		Very difficult		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
5 th Grade	0	0,00	2	22,22	7	77,78	0	0,00	0	0,00	9	100
6 th Grade	0	0,00	7	30,43	14	60,87	2	8,70	0	0,00	23	100
7 th Grade	1	2,78	12	33,33	20	55,56	2	5,56	1	2,78	36	100
8 th Grade	0	0,00	2	22,22	7	77,78	0	0,00	0	0,00	9	100

Table 10 shows that two of the narratives in the 5th grade Turkish textbooks are easy (22%), 7 of them are medium (77.78%) according to the Ateşman formula. No texts were identified at the levels of very easy, difficult and very difficult. 7 easy (30.43%), 14 medium (60.87%), 2 difficult (8.70%) texts were identified in the 6th grade textbooks while no texts were identified at the very easy or very difficult levels. There were 1very easy level (2.78%), 12 easy (33.33%), 20 medium (55.56%), 2 difficult (5.56%), and 1 very difficult (2.78%) level texts were identified in the 7th grade textbooks. Among the texts in 8th grade Turkish textbooks, 2 easy (22.22%) and 7 medium (77.78%) level texts were identified. There were no very easy, difficult and very difficult level texts were found. The table shows that only 1 text was very easy and 1 text was very difficult in the 7th grade Turkish textbooks amonf all grade levels. From a readability level perspective, the table shows that the most accumulation is at the level of medium while the least amount of accumulation is at the very easy and very difficult levels.

Table 11. Readability levels of informative texts according to the Çetinkaya-Uzun formula

Grade	Independent		Educational		Frustration		Total	
	f	%	f	%	f	%	f	%
5 th Grade	0	0,00	7	77,78	2	22,22	9	100
6 th Grade	0	0,00	18	78,26	5	21,74	23	100
7 th Grade	1	2,78	28	77,78	7	19,44	36	100
8 th Grade	0	0,00	8	88,89	1	11,11	9	100

Table 11 shows that there are 7 educational (77.78%), 2 frustration levels of texts were identified in the informative texts in the 5th grade Turkish textbooks while 18 educational level (78.26%) and 5 frustration (21.74%) texts were identified in the 6th grade textbooks. Among the 7th grade Turkish textbooks, 1 independent (2.78%), 28 educational (77.78%) and 7 engelli (19.44%) level texts were identified while 8 educational (88.89%) and 1 engelli (11.11%) level of texts were identified in the 8th grade Turkish textbooks. The highest level of accumulation was at the educational level while the lowest accumulation was at the independent level. From an all grade levels perspective, only 1 text was identified as independent level.

6. Findings on the Readability Levels of Narrative Texts

Table 12. Readability levels of narrative texts according to the Ateşman formula

Grade	Very easy		Easy		Moderate		Difficult		Very difficult		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
5 th Grade	1	12,50	7	87,50	0	0,00	0	0,00	0	0,00	8	100
6 th Grade	2	12,50	13	81,25	1	6,25	0	0,00	0	0,00	16	100
7 th Grade	1	4,17	21	87,50	2	8,33	0	0,00	0	0,00	24	100
8 th Grade	0	0,00	7	87,50	1	12,50	0	0,00	0	0,00	8	100

In table 12, according to the Ateşman formula, 1 very easy (12.50%), 7 easy (87.50%) texts in 5th grade Turkish textbooks were identified while 2 very easy (12.50%), 12 easy (81.25%) and 1 medium level (6.25%) texts were identified in the 6th grade textbooks. Among the 7th grade Turkish textbooks, 1 very easy (4.17%), 21 easy (87.50%), 2 medium (8.33%) level texts were identified while 7 easy (87.50%) and 1 medium (12.50%) level narrative texts were identified in the 8th grade Turkish textbooks. When all levels are considered, there were no texts identified at the difficult or very difficult levels. It's seen that the texts are accumulated at the easy level.

Table 13. Readability levels of narrative texts according to the Çetinkaya-Uzun formula

Grade	Independent		Educational		Frustration		Total	
	f	%	f	%	f	%	f	%
5 th Grade	1	12,50	7	87,50	0	0,00	8	100
6 th Grade	2	12,50	14	87,50	0	0,00	16	100
7 th Grade	3	12,50	21	87,50	0	0,00	24	100
8 th Grade	0	0,00	8	100,00	0	0,00	8	100

The finding presented in table 13 show that there are 1 independent (12.50%) and 7 educational (87.50%) level narrative texts in 5th grade Turkish textbooks, 2 independent (12.50%) and

14 educational (87.50%) narrative texts in 6th grade Turkish textbooks, 3 independent (12.50%) and 21 (87.50%) educational level narrative texts in 7th grade Turkish textbooks according to the Çetinkaya-Uzun formula. All the narrative texts in 8th grade Turkish textbooks are at the educational level while no texts at the frustration level were identified. The accumulation at the educational level is the highest.

7. General Readability Levels of Texts in Turkish Textbooks

Table 14. Readability levels of texts in Turkish textbooks according to the Ateşman formula.

Grade	Independent		Educational		Frustration		Total	
	f	%	f	%	f	%	f	%
5 th Grade	1	12,50	7	87,50	0	0,00	8	100
6 th Grade	2	12,50	14	87,50	0	0,00	16	100
7 th Grade	3	12,50	21	87,50	0	0,00	24	100
8 th Grade	0	0,00	8	100,00	0	0,00	8	100

In table 14, according to the Ateşman formula, the highest accumulation among all grade levels was seen at the easy level. 1 very easy (5.88%), 9 easy (52.94%), 7 medium (41.18%) level texts were identified in the 5th grade Turkish textbooks while no difficult or very difficult level texts were identified. Among the 6th grade Turkish textbooks, 2 very easy (5.13%), 20 easy (51.28%), 15 medium (38.46%), 2 difficult (5.13%) level texts were identified while no texts at the very difficult level were identified. 2 very easy (3.33%), 33 easy (55%), 22 medium (36.67%), 2 difficult (3.33%) and 1 very difficult (1.67%) level texts were identified in the 7th grade Turkish textbooks. There were 9 easy (52.94%) and 8 medium (47.06%) level texts in the 8th grade textbooks while there were no texts identified at the levels of very easy, difficult, and very difficult.
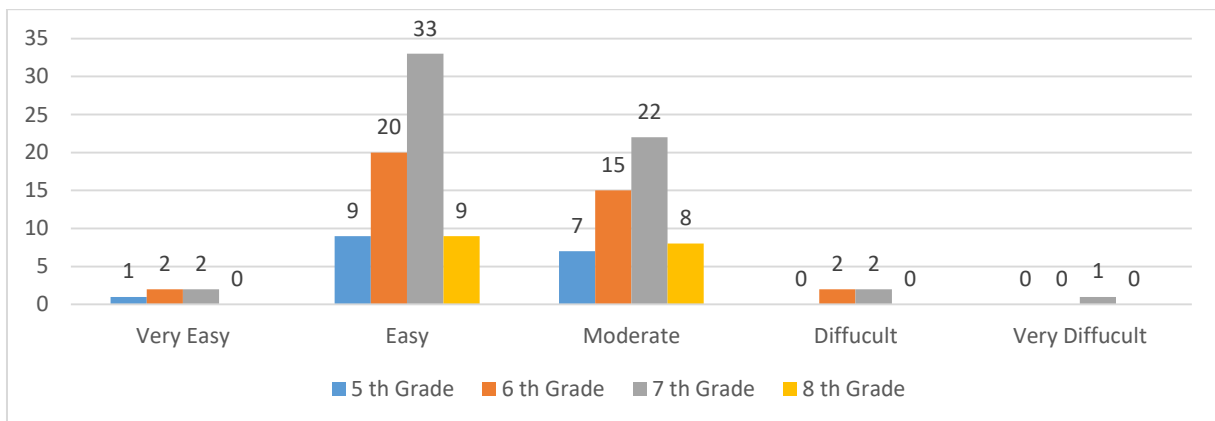

Figure 1. Readability levels of texts in Turkish textbooks according to the Ateşman formula

Table 15. Readability levels of texts in Turkish textbooks according to the Çetinkaya-Uzun formula

Grade	Independent		Educational		Frustration		Total	
	f	%	f	%	f	%	f	%
5 th Grade	1	5,88	14	82,35	2	11,76	17	100
6 th Grade	2	5,13	32	82,05	5	12,82	39	100
7 th Grade	4	6,67	49	81,67	7	11,67	60	100
8 th Grade	0	0,00	16	94,12	1	5,88	17	100

When the table 15 is examined, according to the Çetinkaya-Uzun formula, 1 independent (5.88%), 14 educational (82.35%), 2 frustration (11.76) level texts were identified in the 5th grade Turkish textbooks while 2 independent (5.13%), 32 educational (82.05%), 5 frustration (12.82%) level texts were identified in the 6th grade Turkish textbooks. Among the 7th grade textbooks, 4 independent (6.67%), 49 educational (81.67%), 7 frustration (11.67%) texts were identified while 16 educational (94.12%) and 1 frustration (5.88%) level texts were identified in the 8th grade Turkish textbooks. The highest accumulation was seen at the educational level while the lowest accumulation was seen at the independent level.
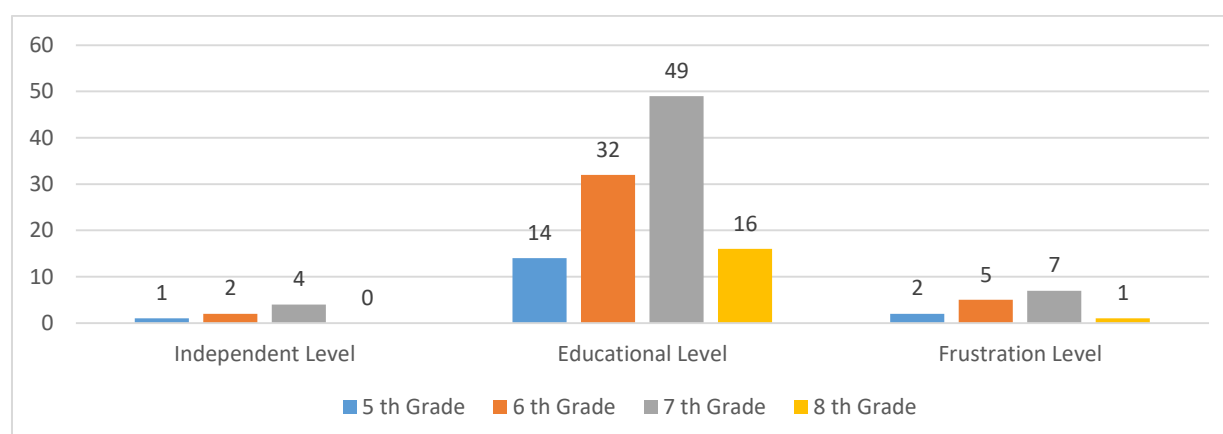
Figure 2. Readability levels of texts in Turkish textbooks according to the Çetinkaya-Uzun formula

Findings and Discussion

Turkish textbooks consist mainly of texts and activities related to these texts. Texts play an important role in reaching the identified goals in a Turkish education program. Texts to be selected for Turkish textbooks should be compatible with children's reality and literariness criteria. Readability levels of texts should be compatible with the students' levels. In this study, readability levels of texts in middle school Turkish textbooks were identified.

The average word length of narrative texts studied ranged between 2.30 and 2.73 in the 5th grade textbooks, between 2.28 and 2.78 in the 6th grade textbooks, between 2.30 and 2.95 in the 7th grade textbooks, and between 2.40 and 2.72 in the 8th grade Turkish textbooks. The average word

length of informative texts were within the range of 2.45 and 3.03 in the 5th grade textbooks, between 2.34 and 3.10 in the 6th grade textbooks, between 2.25 and 3.71 in 8th grade textbooks. The average Turkish word length is 2.6 syllables (Ateşman, 1997, p.73). The average word lengths of the texts analyzed in this study are close to this statistical rate. However, it was seen that the average word lengths of some informative texts were above this rate.

The average sentence lengths of narrative texts analyzed were found to be between 4.15 and 6.79 in 5th grade textbooks, between 3.14 and 8.53 in 6th grade textbooks, between 4.72 and 7.55 in 7th grade textbooks and between 5.71 and 10.30 in 8th grade textbooks. The average sentence lengths of informative texts ranged between 4.07 and 10.71 in 5th grade textbooks, between 3.90 and 17.82 in 6th grade Turkish textbooks, between 4.94 and 26.14 in 7th grade textbooks and between 7.06 and 14.41 in 8th grade textbooks. The average sentence length in Turkish texts is 9-10 words (Ateşman, 1997, p.73). According to the findings, the average sentence lengths of certain informative texts are above this number.

The findings show that the word and sentence lengths of informative texts are higher than narrative texts. Similar results are seen in other studies (Bağcı & Ünal, 2013; Baş & Yıldız, 2015; Çiftçi, Çeçen, & Melanlıoğlu 2007, Okur & Arı, 2013, Özdemir, 2016).

It is seen that the majority of the texts analyzed in Turkish textbooks are at the level of easy. According to the Ateşman readability formula, 52.94% of the texts in 5th grade textbooks, 51.28% of the texts in 6th grade books, 55% in 7th grade books and 52.94% of the texts in 8th grade books are at the easy level. According to the Çetinkaya-Uzun forumla, the accumulation occurs at the educational level. The lowest accumulation according to the Ateşman formula is at the level of very difficult while according to the Çetinkaya-Uzun formula, the accumulation occurs at the independent level.

Okur and Arı (2013) identified in their study that the highest accumulation at the medium level and the lowest accumulation at the very difficult level in 6th and 7th grade while at the very easy level in the 8th grade. Bağcı and Ünal (2013) conducted a study on 8th grade Turkish textbooks and identified that the majority of the texts are at the medium level. When compared to the current study, the texts analyzed in the current study are compatible with the students' level in terms of readability.

When the examined Turkish textbooks are analyzed in terms of text types, informative texts are accumulated at the medium level while narratie texts are accumulated at the easy level. When analyzed across all grade levels, only 1 text was found at the very easy level in informative texts while there are 4 texts in narrative texts. There are 4 difficult and 1 very difficult level texts found in informative texts while there are no texts identified at these levels in narrative texts. When the data obtained through the Çetinkaya-Uzun formula, the accumulation is at the educational level. There are 15 texts at the frustration level in informative texts while there are no texts found at the same level in

narrative texts. In light of the findings obtained through both formulas, informative texts are more difficult than narrative texts. There are similar results found in the literature (Bağcı & Ünal, 2013; Okur & Arı, 2013; Özdemir, 2016).

In a study conducted on 5th grade Turkish textbooks by Mirzaoğlu & Akın (2015), the readability scores of narrative texts were 74.86 (easy) while informative texts had a score of 71 (easy). In a study conducted by Özdemir (2016), 71.4% of narrative texts are easy level and 28.6% are medium level while 16.7% of informative texts are easy, 58.3% are medium and 25% are at the difficult level. 46% of all the texts are easy, 42.3% are medium and 11.5% are at the difficult level. In the current study, 12.50% of narrative texts are very easy, 87/50% are easy level. 5.88% of all the texts are easy, 52.94% are easy and 41.18% are medium level. While there are differences between the findings of the current study and the findings of the study conducted by Özdemir (2016), there is a similarity as well.

Departing from the current study and the literature in the field, a few recommendations can be made:

1. It is seen that the average word and sentence lengths of informative texts in Turkish textbooks are longer than narrative texts. This needs to be taken into consideration when selecting texts for textbooks in terms of comprehensibility of texts.

2. In selecting texts for Turkish textbooks, texts that are created with an artist's sensitivity and are compatible with children's meaning universe should be preferred.

3. Readability levels of texts should be compatible with the students' levels. Thus, necessary examinations should be performed in selecting texts for textbooks.

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Effect of Gender on Teachers' Organizational Citizenship Behavior: A Meta-Analysis

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Abstract

The purpose of this study is to determine the varying effect sizes of teachers' perception and opinions about organizational citizenship behavior in accordance with gender. All quantitative studies dealing with the organizational citizenship behaviors (OCB) of teachers in Turkey is taken into the scope of the meta-analysis. 38 studies included in this review were collected from the National Thesis Archive, ULAKBIM, Google Academic, ERIC and EBSCO databases. Total number of samples in this study composed of 18954 (teachers); 9622 of which are female teachers whereas 9322 of which are male teachers. In addition, several variables such as publication type, publication year, the region used for the research and educational level, instruction level, scale type and researcher's gender that could not be included in the evaluation as a moderator in primary researches were analyzed. In accordance with the results of this study, an effect size with statistical significance at an insignificant level was determined on the part of female teachers according to fixed effect model (d=0.02) and random effect model (d=0.03). In the consequence of the moderator analysis conducted, and educational level (p=0.75) were determined to be moderators. Moreover, effect sizes obtained from the studies showed that gender difference has a tendency to decrease by year. No effect of the region in which the research was conducted (p=0.31) the scale type used for the study (set or developed) (p=0.90) publication type (p=0.29) and the researcher's gender (p=0.97) as a moderator was determined. As a result, gender may not be recommended to be used as a significant variable for the future studies dealing with teachers' opinions about OCB. Apart from the gender variable, meta-analysis studies can be conducted using personal and professional traits, which are expected to affect teachers' OCB perceptions.

Keywords: Organizational citizenship, Meta-analysis, Teacher, Gender, Organizational Commitment

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Introduction

Looking at those employees working for successful organizations, it may be said that they perform tasks other than and go beyond those tasks, roles and responsibilities written in their job description. In recent years during which competition among education organizations and particularly among schools has been rapidly increasing, there existed a strong need for managers and teachers with the above-mentioned qualities.

Recently, teachers are expected to perform voluntary tasks aimed at improving schools moving beyond their function as teachers in classes as officially prescribed in their job descriptions (Harper & College, 2015; Somech & Bogler, 2002) Within this context, creating organizational citizenship behavior (OCB) and ensuring the sustainability of this behavior has increasingly been of vital importance in increasing the efficiency of schools (Demir, 2015; Bostanci, 2013; Ozdemir, 2010). However, there are various obstacles in teachers' way to exhibit OCB. Various factors such as over competitive climate in schools (DiPaola & Tschannen-Moran, 2001), non-effective management of organization (Oğuz, 2010), unsuccessful leadership (Sagnak, 2016; Belenkuyu, 2015), negative effects of psychosocial working environment on communication and cooperation processes (Uçanok & Karabatı, 2013), excessive frequency of inspection on teachers and the existence of a structure of an over autocratic nature preclude teachers from exhibiting OCB (Çevik, 2018). Within this scope, the contribution of OCB to the efficiency of a school, which is a social organization with strong informal aspects, where activities based on cooperation could be conducted, may be regarded as obvious.

Organizational Citizenship Behaviors

The concept of organizational citizenship behavior (OCB), which was first mentioned by Bateman and Organ (1983), has recently attracted the attention of academia in literature on organization and its management and it has been used to refer to the behavior characterized as extra role behavior during examination of relations concerning job satisfaction. OCB refers to extra role behavior, which is not included in official job descriptions (Belogolovsky & Somech, 2012); is beyond the job requirements and exceeding the job expectations; and exhibited voluntarily to contribute to the efficient operation of the organization (Karaman & Aylan, 2012; Podsakoff et. al., 2000; Robbins & Judge, 2012; Sezgin, 2005). In other words, OCB is the behavior that is exhibited by employees voluntarily regardless of orders without any pressure and that contributes to the organization (Yılmaz & Çokluk-Bokeoglu 2008). In different studies, OCB is described through different names such as surplus behavior (Yaylacı 2004), extra role behavior (Belogolovsky & Somech, 2012; Robbins & Judge, 2012), social organization behavior (Çevik, 2018), good soldier syndrome (Kidder & McLean, 1999; Podsakoff et.al. 2000), organizational spontaneity or civil organizational behavior (Turnispeed & Murkison 2000).

OCB contributes to the social and psychological atmosphere of the organization as a personal behavior performed on a voluntary basis, which also helps the organization with the attainment of its goals (Organ 1997; Aydoğan & Dinçer, 2017). Robbins & Judge (2012) state that those employees, who exhibit the behavior of a "good citizen", support their colleagues in their team; share the extra work load voluntarily; avoid unnecessary arguments; respect both the soul of the work and written instructions and rules regarding it; and welcome the obstacles they face during performance of their tasks.

In a number of studies, dimensions of OCB are classified as positive behavior (courtesy) exhibited by members who are affected by each other's work and decisions; providing other employees who face problems with unreturned and voluntary help (Altruism-generosity) (Moorman & Blakely, 1995); welcoming, willing to accept the problems, disturbances and pressures and maintain the positive position (gentlemanliness) (Organ, 1997); perform role behaviors concerning the internal order of the organization such as sustain work, punctuality and protecting the resources in a better manner than that is expected from them (scrupulosity) (Sezgin, 2005); commitment to the organization, active and accountable participation in the political life of the organization and developing new ideas (organizational and civil virtue). Podsakoff et.al. (2000) deal with OCB through seven dimensions: helping; fairness, organizational loyalty, organizational obedience, personal initiative, civil virtue and self-development.

Teachers' Organizational Citizenship Behaviors

Considering the positive effects of OCB on school organization, it may be said that it increases teachers' organizational attachment and commitment, their sense of justice, and their motivation while it decreases the labor turnover. A low level of OCB exhibited by teachers and managers in schools has a negative influence on the performance of employees and it undermines the school's efficiency (Buluç, 2008; Christine, 2011). Behaviors such as helping colleagues, providing proposals aimed at developing the work and processes; being careful about being at work on time; making the best of working time; helping the new-comers with their socialization (Demir, 2015; DiPaola & Tschannen-Moran 2001); attending the workplace more than that is necessary (i.e. take leave less than officially deserved); informing the management of absence in advance (Othman, 2018); helping the inspectors or managers with their works; supporting them; and providing new and creative proposals which would contribute to the organization (Podsakof et. al., 2000) are significant indicators of organizational citizenship (DiPaola et. al., 2005). Those teachers who have strong OCB help their new colleagues voluntarily; take part in councils and committees; participate in extra activities not included on the schedule; help students during their leisure times; work efficiently in cooperation with their counterparts and attach priority to professional activities (Yancı & Saglam, 2014. They use their

personal and professional skills to ensure that students and the school achieve their goals (Demir, 2015).

OCB is known to be in a positive relationship with personal and organizational performance and make contributions to organizational efficiency. OCB makes the school more appealing and it therefore increases the organization's ability to attract the attention of and maintain qualified managers and teachers (Ozdemir, 2010; Yucel & Kalaycı, 2009). There is a close relationship between the students' success and their teachers' OCB. Teachers' efficiency depends on their exhibition of OCB (DiPaola & Neves, 2009). Teachers' OCB in schools is influenced by their personality (Moorman 1991), job requirements and managers' leadership behaviors (Ozdemir, 2010; Podsakof et. al., 2000; Sagnak,, 2016). In the consequence of various researches made, teachers who exhibit OCB have been found to have higher performance. Students' success and teachers' OCB have also been stated to have a close relationship and teachers' efficiency to depend on teachers' exhibition of OCB in school (Bogler & Somech, 2005; DiPaola & Neves, 2009; Moorman, 1991). OCB is also affected by attitude towards the school, behaviors and perception. Creating a strong organizational climate to support teachers' exhibition of OCB facilitates the cooperation, information exchange, help and sharing between the teachers (Demir, 2015; Sezgin, 2005). OCB is vital both for information transfer and bringing positive behaviors. OCB behaviors which influence teachers' relationship with managers, other teachers and parents have been recently put on the agenda frequently.

Organizational Citizenship Behaviors within the Context of Various Variables

Significance of OCB stems from its relationship with a number of variables such as job satisfaction, organizational justice, organizational commitment, organizational confidence, organization culture. Recent researches on OCB accept and suggest the positive effects of OCB on the employee and its organization; however, there are also researches which suggest that OCB has negative effects. In majority of researches conducted home and abroad, it is concluded that strong OCB of the employees has positive effects on the variable studied (Karaman & Aylan 2012; Moorman & Blakely 1995; Sezgin, 2005; Vey & Campbell 2004).

Along with researches putting forward the fact that there are relationships between the demographic characteristics (gender, marital status) of the employees and OCB (Organ &Ryan 1995) there are a number of researches suggesting that there is not any relationship between these two factors (Dogan, 2013, Podsakoff et. al., 2000).

The number of studies on the relationship between OCB and gender is not sufficient (Lin 2008; Yucel & Taşçı 2008). In the context of gender variable, male-female roles and stereotypes can affect the OCB behaviors and perception of employees. In particular, while the relationship between OCB and teachers' job satisfaction, organizational commitment and performance is explained, gender seems to be an important moderator (Allen, 2006; Kidder 2002). In this context, it is important to

determine whether women employees have an impact on gender roles in OCB (Kidder & McLean, 1999; Miao & Kim, 2009; Organ & Ryan, 1995; Piercy et. al., 2001; Blackwell, 2010). The patriarchal paradigm, which determines attitudes and behaviors in every aspect of social and organizational life, expects women to accept male supremacy (Karabacak & Akın, 2014). The question of whether there is a gender dimension of the organizational citizenship behaviors that can be seen in every institution in the work life which is part of the system, designed to ensure the acceptance and continuity of this superiority, has been sought with this meta-analysis study.

OCB is one of the commonly studied research topics particularly in the field of education in Turkey and it has been discussed with its different aspects. Relationships between OCB and student achievement (Demiröz, 2014), organizational commitment (Gürbüz, Sert,& Ayhan, 2014), organizational health, organizational justice, job satisfaction and exhaustion have been considered in terms of various education levels and variables (Buluç, 2008; Çelik, 2007; Donder 2006; Karaman et. al., 2008; Keskin, 2005; Polat, 2007; Polat & Celep, 2008; Yaylacı 2004; Yılmaz 2010). Various researches conducted in Turkey teachers have been determined to have a mid-level positive opinion about OCB (Donder, 2006; Keskin, 2005; Mercan, 2006; Yaylacı, 2004; Yılmaz & Taşdan, 2009). Researchers conducted by Aktaş (2008), Altunbaş (2009) and Yancı and Saglam (2014) on high school teachers suggest that they exhibit OCB at a high level.

Research conducted by Yucel and Kalaycı (2009) suggests that those teachers who are working in a reliable working environment have a tendency to exhibit OCB. The most influential variable on OCB has been determined as teachers' term of office in their school. In the meta-analysis of Organ and Ryan (1995) determiners of OCB have been determined as job satisfaction, perceived organizational justice, organizational commitment and leader support. Research made by Sezgin (2005) shows that there is a significant relationship between emotional commitment and OCB and emotional commitment of the employees is one of the factors leading to exhibition of OCB.

Even though no evidence has been found indicating that gender (male or female) is effective upon teachers' OCB in school, demographic variables have been used and interpreted in majority of researches. Teachers' OCB may be affected by factors such as their personal and professional qualities; particularly by their gender, age, term of office, marital status, socio-economic situation and the region where they work. In terms of variables determining OCB, along with demographic and behavioral qualities of the employees, their gender may also be influential. Various researches show that teachers' gender is a significant predictor of teachers' OCB (Bogler & Somech, 2005; DiPaola & Tschannen-Moran, 2001; Dogan, 2013; Ipek, 2012; Kidder, 2002; Martinez 2012; Kidder 2002; Suresh & Venkatammal, 2010; Yener & Akyol, 2009; Yucel et. al., 2009).

Different researches in which OCB perceptions are compared in terms of gender in literature have different conclusions. Some of these researches (Celep et. al., 2004; Olçüm-Çetin, 2004; Polat

2007; Yılmaz, 2010) reveal that teachers' perception and opinions vary depending upon their gender. Others (Allen & Rush, 2001; Altınkurt & Yılmaz, 2012; Aquino & Bommer, 2003; Ayatse & Ikanyon, 2012; Çetin, 2011; Donder, 2006; Yancı, 2011; Gokmen 2011; Yarım, 2009; Yılmaz & Taşdan, 2009) suggest that teachers' gender does not have any significant role in their exhibition of OCB; and that they exhibit OCB at same levels. Number of quantitative and qualitative researches made on OCB in the field of education in Turkey has been increasing in recent years. In general, various scales and different independent variables (gender, branch, marital status, education level, faculty from which teachers graduate, seniority etc.) have been used in researches conducted on OCB in schools through quantitative and qualitative methods. As a result of these researches, some results have been obtained which are both statistically significant and insignificant; and varying in terms of subgroups of independent variables. Meta-analyses are required to synthesize the results of all these researches and to pave the way for new researches on teachers' opinions about OCB.

Increase in the studies on teachers' opinions about OBC in schools witnessed recently led to a necessity to draw a common conclusion through considering the number of samples and synthesizing the results of these studies. These research findings on OBC differ from each other. Therefore, the synthesis of the studies conducted with the same variables related to the subject of OCB will contribute to the employees working in the field with education administrators and politicians. Therefore, it is important to conduct a meta-analysis study on OBC studies.

Since there are few meta-analysis studies on teachers' opinions about OCB has been found, this study would be an original one in both domestic and international sense and it would pave the way for new researches in this field in terms of different variables. Within this context, this study will examine the effect sizes of organizational citizenship and whether there is a difference between the effect sizes obtained through various variables ignored in primary researches. In this context, the relationships between teachers' gender and OCB behaviors and perceptions in educational organizations are important in interpreting and evaluating the roles and behaviors of the school organization. In this study, a meta-analysis study was conducted with the assumption that gender is an important variable in explaining teachers' OCB behaviors and perceptions.

Objective

The aim of this study is to determine the effect of gender on teachers' organizational citizenship behavior. To this end, the effect size of teachers' perceptions and opinions regarding to organizational citizenship behavior is determined.

Methodology

Research Model

Meta-analysis method, which is one of the methods used for synthesizing the research results, constitutes this research's model. The process including analysis, synthesis and interpretation of quantitative findings obtained from independent studies through advanced statistical techniques is called meta-analysis. The aim of meta-analysis is to combine the findings of various studies conducted at different times in different places on the same subject so as to reveal the facts about this subject and to achieve the most reliable fact in quantitative terms through increasing the number of samples (Cumming, 2012; Ellis, 2012; Hartung, 2008). In this study, CMA ver. 2.2.064 [Comprehensive Meta-Analysis], Statistical Package Software for Meta-Analysis was used for measurement of the effect sizes, variances and comparisons of the groups included in each study. SSPS ver. 20.0 package software was used for the rater reliability test.

Data Collection

MA theses and PhD dissertations with research articles on teachers' perception and opinions about OCB in Turkey are the basic data sources of this study. The keywords "organizational citizenship" and "organizational allegiance" were used to find the related material and researches in the National Thesis Archive of the Council of Higher Education, EBCSHO, Tubitak ULAKBIM, ERIC and Google Academic etc. data base (2019 year). 38 studies included in this review were collected from this databases. Following the browsing process, 38 of 52 studies on the subject of this study were found convenient for inclusion criteria. In choosing the studies to be included in this study, the following criteria were used:

(i) *Criterion 1*: Published or unpublished references: MA, PhD theses and research articles.

(ii) *Criterion 2*: Convenience of the research method of the study: the requirement for being an empirical study and use of tenure of office as an independent variable to obtain the effect size during the meta-analysis.

(iii) *Criterion 3*: Existence of sufficient numeric data: Sample size, mean, standard deviation, F value, t value, X2 value, Kruskal Wallis value, Mann Whitney U data and p value were considered for male and female teacher groups to determine the effect sizes necessary for a meta-analysis.

13 studies were not included in the study on the grounds that they used different variables (managers, academic members) and they lacked the data necessary for a meta-analysis. The sample of this study is limited to 38 studies and MA theses and PhD dissertations on this subject written in Turkey between the years 2006 and 2019.

Research Reliability: A coding protocol which includes the name, content and data of this study has been created. A secondary researcher who has an in-depth knowledge on the "Study Content" section of the Rating Protocol and on what to do has rated using an inter-rater reliability form in order to ensure the inter-rater reliability. The first rater is the first researcher himself. Cohen's Kappa statistics was used to ensure the inter-rater reliability and it was found to be 0.94. This result indicated almost a perfect compliance between the raters.

Research validity: The validity and reliability of meta-analysis depends on the validity and reliability of the studies included in the research. Also, screening and including all related studies which meet the criteria of meta-analysis increases the validity of the study. As Decoster (2004) and Petitti (2000) pointed out, the combined effect size in meta-analysis as valid as the validity of the studies included. It has seen that, all the thesis and articles included in this study have carried out with valid and reliable research instruments. The researchers reached all the thesis and research articles meeting the criteria of the study. In this context, it was determined that the validity of data collection instruments had been ensured in all of 38 studies included in the meta-analysis.

Analysis of Data

During the analysis of data, one of the methods of meta-analysis comparing group (fixed and random-effects models) Group differences method was used. During this study, the effect sizes, variances and comparisons of the groups included in each study was measured through CMA ver. 2.2.064 [Comprehensive Meta-Analysis], Statistical Package Software for Meta-Analysis (Borenstein et. al., 2009; Card, 2012). This study includes female teachers as sample group and male teachers as control group. Thus, positive status of the effect size is interpreted as being in favor of female teachers while its negative status is interpreted as being in favor of male teachers. SSPS ver. 20.0 package software was used for rater reliability test. Since the significance level was taken as 0.05 in the studies included in this study, the significance level of statistical analyses to be used in this study was determined as 0.05.

Results

The related data covered in the studies included in this study were analyzed so as to find an answer to the question of the study. Findings concerning the publication bias, descriptive statistics, forest plot, fixed effect model findings, homogeneity test, random effect model findings and moderator analysis findings obtained from these analyses are given in this part.

Publication Bias

As reflected in Figure 1, majority of 38 studies that were included in this study is located at upper side of the figure and very close to the conjoined effect size. In case there is no publication bias, studies are expected to expand symmetrically on both sides of vertical line showing the effect size

(Pigott, 2012). If there was a publication bias in 38 studies that were included in this study, then, the majority of the studies will be located at the bottom of the figure or only at a single part of the vertical line. In this sense, this cone graphic is one of the indicators of the absence of a publication bias in terms of the studies included in this study.
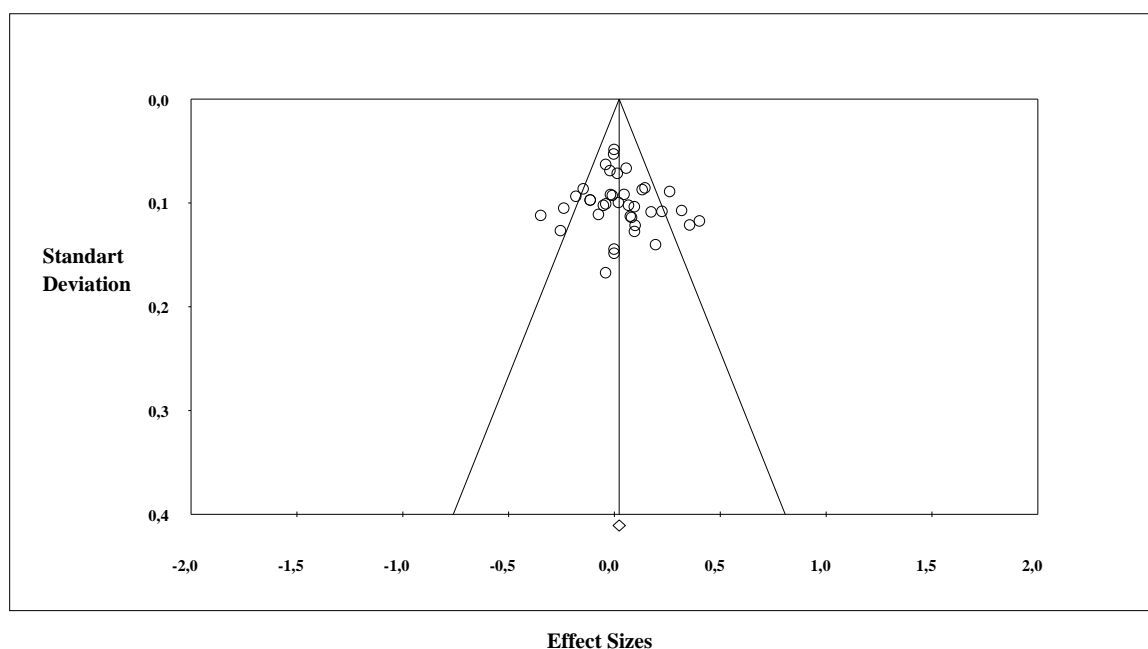
Figure 1. Cone Dispersion Graphic of the Studies with Effect Size Data on Differences among Teachers' Perceptions about OCB in accordance with their Gender

Orwin's Fail-Safe N Evaluation was also conducted to test the publication bias. Orwin's Fail-Safe N calculates the number of studies that are likely to be excluded from the meta-analysis (Borenstein et. al., 2009; Pigott, 2012).). In the consequence of this analysis, Orwin's Fail-Safe N was found to be 48. The necessary number of study for the average effect size found as 0.030 in the consequence of the meta-analysis to reach 0.01 (trivial) level, in other words, almost to zero effect size is 51. However, 48 studies which were included in this study are the total number of studies which meet the inclusion criteria and which are available among all the studies conducted on this subject in Turkey (qualitative, quantitative, theoretical etc.). Impossibility to attain 48 other studies may be accepted as another indicator of the absence of publication bias in this meta-analysis.

Conjoined Findings of Effect Size Analysis Based on Teacher Gender

The effect sizes of male and female teachers' perception about OCB, standard error and its upper and lower limits based on a reliability level of 95% are given in an order from positive to the negative values on Table 1.

Table 1. Effect Sizes of Teachers' Opinions about OCB Based on Their Gender

Model	Research Name	Effect size (d)	Standard error	Variance	Lower limit	Upper Limit	Z-Value	p-Value	Number Female	Of Samples Male
	Aktay, 2008	0,096	0,128	0,016	-0,154	0,347	0,754	0,451	113	134
	Altunbaş, 2009	-0,347	0,112	0,013	-0,567	-0,127	-3,086	0,002	133	203
	Bulut, 2011	-0,181	0,094	0,009	-0,365	0,003	-1,925	0,054	276	194
	Büyüközkan, 2012	0,000	0,049	0,002	-0,096	0,096	0,000	1,000	930	769
	Dönder, 2006	-0,113	0,097	0,010	-0,304	0,078	1,158	0,247	218	204
	Gökmen, 2011	0,076	0,113	0,013	-0,145	0,298	0,675	0,499	142	174
	Karagöz, 2007	-0,074	0,111	0,012	-0,292	0,144	-0,663	0,508	176	149
	Kepenek, 2008	0,262	0,089	0,008	0,087	0,437	2,938	0,003	295	222
	Korkmaz, 2011	0,057	0,067	0,004	-0,074	0,188	0,855	0,393	378	549
	Köprülü, 2011	0,226	0,108	0,012	0,013	0,438	2,082	0,037	332	115
	Özer, 2009	0,175	0,109	0,012	-0,039	0,388	1,603	0,109	144	205
	Öztürk, 2009	-0,055	0,212	0,045	-0,471	0,361	-0,258	0,796	30	85
	Polat, 2007	-0,020	0,069	0,005	-0,155	0,116	-0,284	0,776	407	429
	Uslu, 2011	-0,146	0,087	0,008	-0,316	0,024	-1,683	0,092	320	228
	Yancı, 2011	0,486	0,120	0,014	0,252	0,721	4,061	0,000	116	188
	Yarım, 2009	0,099	0,122	0,015	-0,140	0,338	0,815	0,415	141	129
	Zengin, 2011	-0,040	0,101	0,010	-0,238	0,159	0,393	0,694	168	233
	Titrek, Bayrakçı ve Zafer, 2009	0,015	0,072	0,005	-0,126	0,155	0,206	0,837	394	383
	Karacaoğlu ve Güney,2010	0,000	0,145	0,021	-0,284	0,284	0,000	1,000	75	131
	Karaman, Yücelve Dönder, 2008	-0,113	0,097	0,010	-0,304	0,078	-1,158	0,247	218	204
	Baş ve Şentürk,2011	0,021	0,100	0,010	-0,175	0,216	0,205	0,837	204	197
	Oğuz,2011	0,040	0,140	0,020	-0,235	0,315	0,284	0,776	107	97
	Çetin,Yeşilbağ ve Akdağ,2003	0,074	0,075	0,006	-0,074	0,221	0,979	0,328	350	359
	İpek, 2012	0,143	0,121	0,015	-0,094	0,381	1,185	0,236	110	181
	Argonve Alğan, 2013	0,319	0,108	0,012	0,108	0,530	2,967	0,003	233	140
	Çevik, 2018	0,068	0,103	0,011	-0,133	0,269	0,661	0,508	195	186
	Burulday,2018	0,146	0,086	0,007	-0,023	0,314	1,698	0,090	259	287
	Bozkurt,2018	-0,040	0,063	0,004	-0,164	0,084	-0,632	0,527	587	438
	Aydın,2017	-0,009	0,093	0,009	-0,191	0,174	-0,093	0,926	444	156
	Göksal,2017	-0,238	0,105	0,011	-0,445	-0,032	-2,260	0,024	157	215
	Yıldırım,2017	-0,017	0,092	0,009	-0,198	0,164	-0,185	0,853	274	206
	Tezer,2015	-0,303	0,127	0,016	-0,553	-0,054	-2,382	0,017	174	97
	Ülger,2015	-0,051	0,103	0,011	-0,252	0,150	-0,496	0,620	181	200
	Akgüney,2014	0,133	0,088	0,008	-0,039	0,304	1,515	0,130	302	231
	Duyurucu,2014	0,000	0,149	0,022	-0,292	0,292	0,000	1,000	131	69
	Demiröz,2014	0,047	0,092	0,008	-0,134	0,228	0,510	0,610	357	176
	Özdemirve Orhan,2018	0,096	0,104	0,011	-0,108	0,299	0,921	0,357	228	156
	Avcı,2015	-0,002	0,053	0,003	-0,107	0,102	0,046	0,963	496	1227
	ÖzdemirveOrhan,2018	0,083	0,114	0,013	-0,142	0,307	0,722	0,470	177	135
Random		0,030	0,025	0,001	-0,018	0,078	1,210	0,226	9622	9322

In accordance with Table 1, the standardized mean difference (SMD=SOF) based on gender in these 38 studies, varies from -0.567 in favor of male teachers to 0.721 in favor of female teachers. A statistically significant difference (p <0.05) was found in 8 studies while no significant difference was determined in 30 studies. The confidence interval of 38 studies was also found to vary from -0.567 to 0.721.

Forest Plot of the Studies Including Data on Gender

The forest plot of 26 studies included in this study and consisting of the data concerning gender is given in Figure 2.
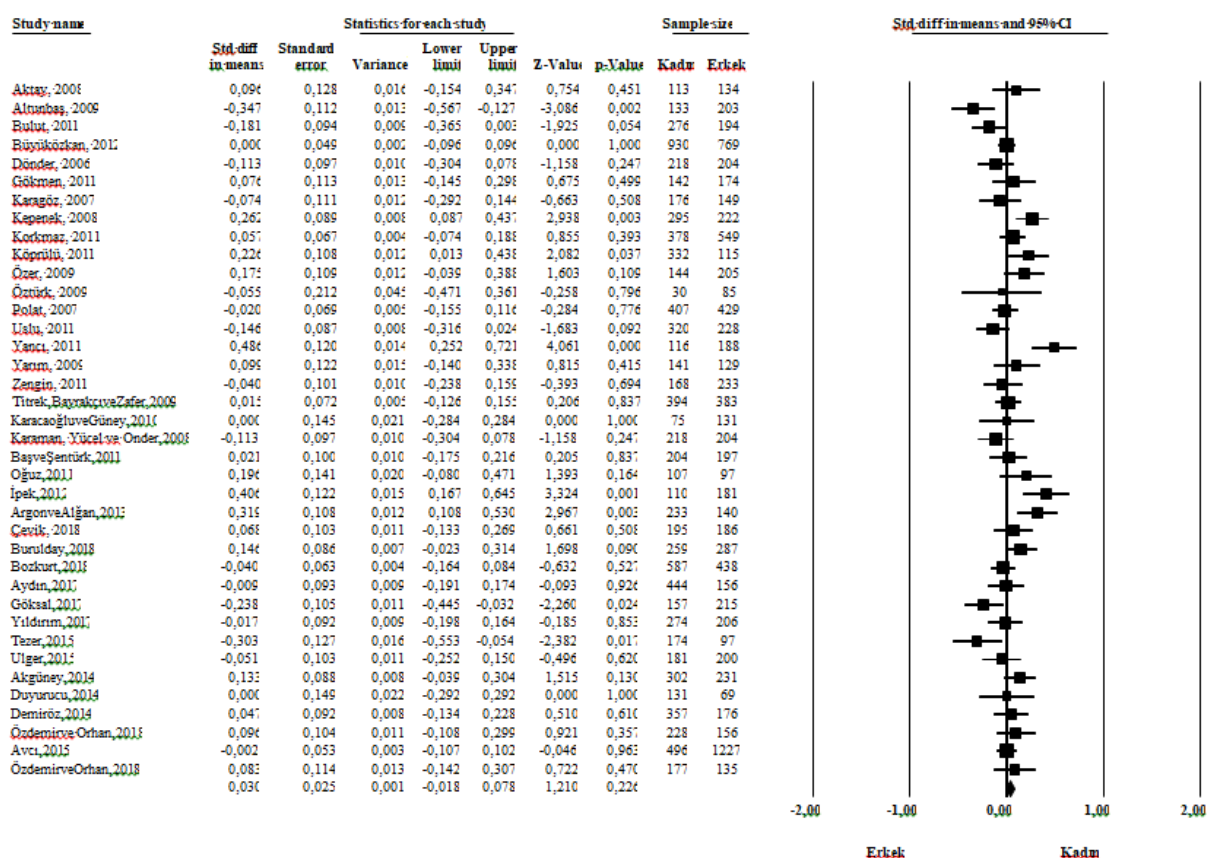
Study name	Std diff in means	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	Kadın	Erkek
Aktay, 2008	0,096	0,128	0,016	-0,154	0,347	0,754	0,451	113	134
Altınbaş, 2009	-0,347	0,112	0,013	-0,567	-0,127	-3,086	0,002	133	203
Bulut, 2011	-0,181	0,094	0,009	-0,365	0,003	-1,925	0,054	276	194
Büyükörkan, 2012	0,000	0,049	0,002	-0,096	0,096	0,000	1,000	930	769
Dönder, 2006	-0,113	0,097	0,010	-0,304	0,078	-1,158	0,247	218	204
Gökmen, 2011	0,076	0,113	0,013	-0,145	0,298	0,675	0,499	142	174
Karagöz, 2007	-0,074	0,111	0,012	-0,292	0,144	-0,663	0,508	176	149
Kepenek, 2008	0,262	0,089	0,008	0,087	0,437	2,938	0,003	295	222
Korkmaz, 2011	0,057	0,067	0,004	-0,074	0,188	0,855	0,393	378	549
Köprülü, 2011	0,226	0,108	0,012	0,013	0,438	2,082	0,037	332	115
Özer, 2009	0,175	0,109	0,012	-0,039	0,388	1,603	0,109	144	205
Öztürk, 2009	-0,055	0,212	0,045	-0,471	0,361	-0,258	0,796	30	85
Polat, 2007	-0,020	0,069	0,005	-0,155	0,116	-0,284	0,776	407	429
Uslu, 2011	-0,146	0,087	0,008	-0,316	0,024	-1,683	0,092	320	228
Yancı, 2011	0,486	0,120	0,014	0,252	0,721	4,061	0,000	116	188
Yarım, 2006	0,099	0,122	0,015	-0,140	0,338	0,815	0,415	141	129
Zengin, 2011	-0,040	0,101	0,010	-0,238	0,159	-0,393	0,694	168	233
Titrek,BayrakçıveZafer,2009	0,015	0,072	0,005	-0,126	0,155	0,206	0,837	394	383
KaracaoğluveGüney,2010	0,000	0,145	0,021	-0,284	0,284	0,000	1,000	75	131
Karaman, Yücel ve Onder,2008	-0,113	0,097	0,010	-0,304	0,078	-1,158	0,247	218	204
BaşveŞentürk,2011	0,021	0,100	0,010	-0,175	0,216	0,205	0,837	204	197
Oğuz,2011	0,196	0,141	0,020	-0,080	0,471	1,393	0,164	107	97
İpek,2011	0,406	0,122	0,015	0,167	0,645	3,324	0,001	110	181
ArgonveAlğan,2013	0,319	0,108	0,012	0,108	0,530	2,967	0,003	233	140
Çevik, 2018	0,068	0,103	0,011	-0,133	0,269	0,661	0,508	195	186
Burulday,2018	0,146	0,086	0,007	-0,023	0,314	1,698	0,090	259	287
Bozkurt,2018	-0,040	0,063	0,004	-0,164	0,084	-0,632	0,527	587	438
Aydın,2017	-0,009	0,093	0,009	-0,191	0,174	-0,093	0,926	444	156
Göksal,2017	-0,238	0,105	0,011	-0,445	-0,032	-2,260	0,024	157	215
Yıldırım,2017	-0,017	0,092	0,009	-0,198	0,164	-0,185	0,853	274	206
Tezer,2015	-0,303	0,127	0,016	-0,553	-0,054	-2,382	0,017	174	97
Ulger,2015	-0,051	0,103	0,011	-0,252	0,150	-0,496	0,620	181	200
Akgüney,2014	0,133	0,088	0,008	-0,039	0,304	1,515	0,130	302	231
Duyurucu,2014	0,000	0,149	0,022	-0,292	0,292	0,000	1,000	131	69
Demiröz,2014	0,047	0,092	0,008	-0,134	0,228	0,510	0,610	357	176
ÖzdemirveOrhan,2018	0,096	0,104	0,011	-0,108	0,299	0,921	0,357	228	156
Avcı,2015	-0,002	0,053	0,003	-0,107	0,102	-0,046	0,963	496	1227
ÖzdemirveOrhan,2018	0,083	0,114	0,013	-0,142	0,307	0,722	0,470	177	135
	0,030	0,025	0,001	-0,018	0,078	1,210	0,226		

Figure. 2. Forest plot of the effect sizes of teachers' perception about OCB based on gender

When Figure 2 is examined, a difference higher than zero in favor of female teachers is observed. The fact that there is a difference in favor of female may be interpreted as a sign of the fact that they perceive and encounter OCB more in proportion to male teachers.

Findings of Effect size Meta-Analysis of Teachers' Term of Office Conjoined in accordance with fixed and random effect models

The average effect size of the perception of male and female teachers about intimidation they face in schools conjoined in accordance with fixed and random effect models (without subtracting the outliers), standard error and its upper and lower limits based on a confidence interval of 95% are given on Table 2.

Table 2. Findings of Effect Size Meta-Analysis Based on Gender Variable Conjoined in accordance with the fixed effect model and random effect model and Homogeneity Test

Model	Effect size and confidence interval of 95%						Heterogenity			
	Number of studies	Point estimate	Standard error	Variance	Lower limit	Upper limit	Z-value	Q-value	df (Q)	I^2
Fixed effect	38	0,022	0,015	0,000	-0,007	0,052	1,506	92,261	37	59,896
Random effect	38	0,030	0,025	0,001	-0,018	0,078	1,210			

The average effect size value obtained from the effect size values of the studies included in this study based on gender variable in accordance with random effect model was calculated as d=0.030 whereas the standard error of the average effect size, the upper limit and lower limit of confidence interval of the average effect size was calculated as SE=0.025; 0.078; and -0.018, respectively (Table 2). Data obtained from 38 studies included in this study based on the calculations showed that female teachers experience OCB more than male teachers in accordance with fixed effect model. However, since the effect size value is lower than 0.20, it was determined as an effect even less than the lower level in accordance with Cohen's classification (Cohen 1988). According to Lipsey's classification, there is an effect even less than the lower level when the effect size is lower than 0.15. The classification of Thalheimer and Cook (2002) shows that there is an insignificant difference (-0.15-0.15).

When statistical significance is calculated according to Z test, Z=1.210 was found. The obtained result was found to have statistical significance with p=0.226. Only 18 of the 38 studies included in this study based on gender variable have remained within the upper and lower limits of effect size and reached a result close to the existent effect size whereas the remaining 20 studies have remained over or below these limits.

The data were tested for homogeneity/heterogeneity (Borenstein et. al., 2009). In this sense, the Q (df=37) statistic was found to be 92.261 (p < .05). the Q-value must be found and compared to the degree of freedom value (df=n-1) in the χ2 table. If Q < χ2 (p>.05), the effect sizes of studies are interpreted as homogeneous and the combination process is applied according to the fixed effects model. If Q > χ2 (p< .05), the effect size is interpreted as heterogeneous and the random effects model

is employed (Cooper et. al. 2010; Pigott, 2012). Q statistic value exceeding the 37 degrees of freedom and .05 confidence interval (df=37, χ2 (.05) =25.552) in the chi-square distribution table showed that the data were heterogeneous. Thus, effect sizes distribution was determined to be heterogeneous in accordance with fixed effect model. I^2, which was developed as a supplement to Q statistics, put forth a clearer result concerning heterogeneity (Petticrew and Roberts 2006). I^2 shows the rate of total variance about the effect size. As opposed to Q-statistics, I^2 Statistics are not affected by the number of study. During the interpretation of I^2 25% indicates a low-level heterogeneity, 50% indicates a mid-level heterogeneity and 75% shows a high-level heterogeneity (Cooper et. al. 2009; Higgins & Thompson, 2002). The I^2,computed from the data was 59.89%, which indicated high heterogeneity. Since a level of heterogeneity close to medium-level heterogeneity was found in the consequence of the homogeneity for the purpose of gender variable (Q and I^2) the model to be used for conjoining process was transformed into a random model. The results of the moderator analysis made to put forth the reasons for this heterogeneity are given on Table 3.

Table 3. Categorical Moderator Results about the Effect of Gender on OCB

Moderator	k	d	SE	%95 CI	Q
Education level					0,552
Primary	23	0,017	0,032	[-0,045; 0,079]	
High School	12	0,060	0,055	[-0,047; 0,167]	
Primary/High school	3	0,013	0,039	[-0,064; 0,090]	
Region of the study					29,065
Mediterranean	2	-0,007	0,040	[-0,085; 0,072]	
Eastern Anatolia	7	0,058	0,003	[0,216; 1,763]	
Aegean	3	-0,126	0,054	[-0,232; 0,020]	
Central Anatolia	6	-0,003	0,072	[-0,144; 0,139]	
Black Sea	3	0,317	0,070	[0,180; 0,454]	
Marmara	13	0,021	0,042	[-0,061; 0,103]	
Southeastern	3	-0,065	0,077	[-0,216; 0,087]	
Aegean, Central Anatolia and Eastern Anatolia	1	0,015	0,072	[-0,126; 0,155]	
Scale Type					0,002
Ready	33	0,027	0,029	[-0,030; 0,084]	
Developed	5	0,029	0,031	[-0,033; 0,090]	
Publication Type					2,463
Article	10	0,087	0,047	[-0,005; 0,178]	
Master Thesis	26	0,010	0,032	[-0,052; 0,073]	
PhD	2	-0,012	0,052	[-0,114; 0,090]	
Researcher's gender					0,057
Male	20	0,027	0,034	[-0,039; 0,094]	

Female	17	0,034	0,040	[-0,045; 0,113]
Male/Female	1	0,015	0,072	[-0,126; 0,155]

Note: k=number of studies, d=Cohen's d, SE= Standard Error, CI= Confidence Interval, Q=heterogeneity among the studies

Comparison analyses were made for those studies whose number of subgroups is 2 and more.

*p<.05

In the consequence of the moderator analysis conducted, the effect sizes weren't found to vary depending on the education level (p=0.075) and region (p=0.31). Researches made in Eastern Anatolia, Black Sea and Marmara regions had results in favor of female teachers whereas the effect sizes of the researches, the sample groups of which resided in Mediterranean, Southeastern Anatolia and Aegean regions, varied in favor of male teachers. Moderator effect of the scale used in the studies (ready or developed) (p=0.90), publication type (p=0.29) and of the researcher's gender was not determined (p=0.97).
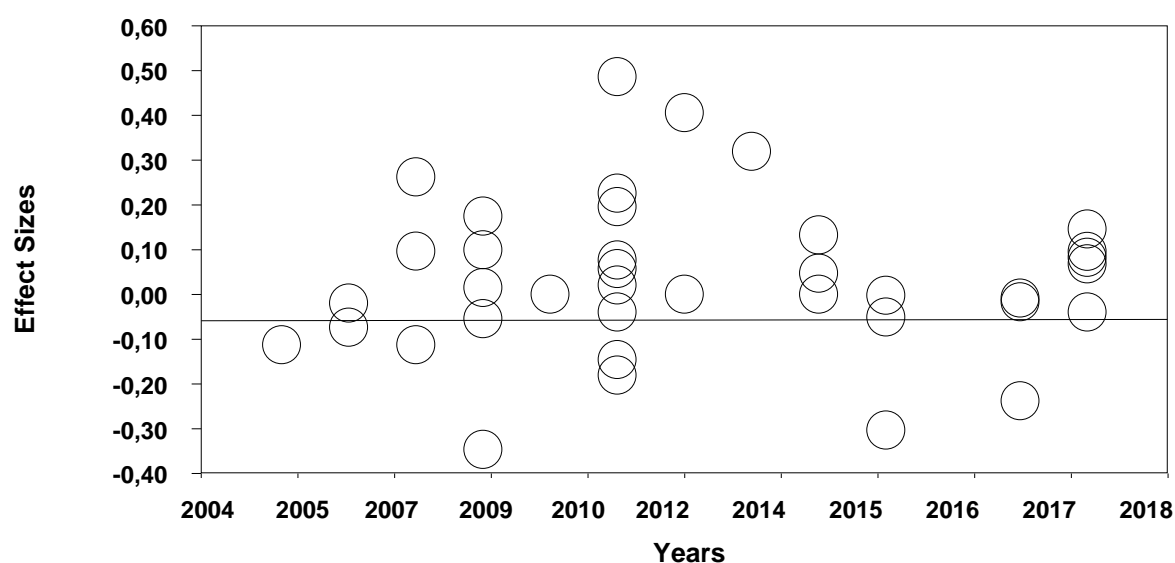
Figure 3. Effect Sizes Meta-Regression Results based on the Years in Which the Research Was Conducted.

As highlighted in Figure 3, a decrease tendency in female difference by years in terms of the effect sizes of the studies is observed.

Discussion and Conclusion

In this study, 38 effect sizes related to 38 studies constituting a sample of 18954 people were calculated. A statistically significant difference was detected in 5 studies while no significant

difference was found in 33 studies. In random effect model, as a result of the conjoining process, a statistically significant effect size of 0.03 in favor of female teachers was found. In random effect model, as a result of the conjoining process, a statistically significant effect size of 0.03 in favor of female teachers was found. This result may also be regarded as low and insignificant in accordance with the classification of Cohen (1988) and Thalheimer and Cook (2002). When these results are evaluated together, they show that there is a difference which may be regarded as insignificant among teachers' perceptions about OCB in schools in terms of gender variable. Thus, not using gender as a variable in future studies may be brought to the agenda. The results of this study are consistent with the results of a meta-analysis study on the effect of gender of teachers conducted by Yılmaz, Altınkurt and Yıldırım (2015).

Results of the studies conducted by Uçanok ve Karabatı (2013), Altınkurt and Yılmaz (2012), Fournier (2008), Karakuş (2008), Koprulu (2011), Ozsaker et. al. (2012), Polat (2007), Sokmen and Boylu (2011), Titrek, Bayrakcı and Zafer (2009), Blackwell (2010) and Yıldırım et. al. (2012) indicating that there is an insignificant difference among teachers' opinions about OCB based on their gender in favor of female teachers are in compliance with the results of this study. According to these results, it may be said that female teachers probably have more time to work for the benefit of their school than male teachers, that they are more willing to help with the tasks concerning the organization; and that they do extra work more willingly. Within the context of the findings of this study, as Erturk also states (2013), the fact that male teachers experience mobbing more frequently even if it is at an insignificant level, common perception that teaching profession is more convenient for women; and a more protective attitude towards women existent in schools in Turkey may be regarded as reasons for the fact that female teachers have more OCB than their male counterparts in Turkey. Research conducted by Ipek (2012) the findings of which show that OCB perception of female teachers who work at high school level is statistically higher than OCB perception of their male counterparts may be regarded as consistent with this research the results of which indicate that OCB perception of female teachers at high school level is higher than male teachers in proportion to other education levels (primary and primary/secondary schools) based on education level moderator variable (p=0.013). In contrast, researches made by Aktay and Ekşi (2009), Ayatse and Ikanyon (2012), Celep et. al. (2004), Çetin (2011), Yancı (2011), Gokmen (2011), Yancı (2009) Yılmaz and Taşdan (2009) suggest that there is no significant differences between teachers' perceptions based on their gender. In various researches, significant differences are claimed to occur among teachers' OCB perceptions based on gender variable in favor of male teachers (Altunbaş, 2009; Eres, 2010; Polat a& Celep, 2008). In some researches self-development and voluntariness sub-dimensions of OCB subgroups are observed to be in favor of male teachers based on gender variable (Aktaş, 2008; Çimli-Gok, 2010; Bulut, 2011). Within the context of the results of this study, a decrease tendency in teachers' gender difference in terms of effect sizes of researches based on the year of the research moderator is

observed. One of the findings of this study reflecting the fact that there is not any significant difference among teachers' perception about OCB depending on gender variable may suggest that it will not be possible to use this variable as a significant independent one in future studies. Results obtained from recent studies support this finding as well.

It may be finally said that school managements should create an environment which ensures that the highest priority is attached to qualities such as confidence, cooperation, conscience and courtesy regardless of gender and which is supporting in terms of OCB exhibition. Rewarding those teachers who exhibit OCB may be helpful in ensuring the efficiency of both teachers and schools. Further studies to reveal and discuss the reasons for the low level of difference among teachers' perceptions about OCB based on gender variable in schools and for the fact that women exhibit more OCB than their male counterparts even if it is at a low level may be recommended. Further meta-analyses may be conducted various variables predicting OCB such as marital status, school type and seniority.

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(The symbol of * refers to the studies included in the meta-analysis).

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An Examination of Educational Inputs with the Data Envelopment Analysis: The Example of ICILS 2013*

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Abstract

The aim of this study was to determine how efficiently different countries, comparatively, use educational inputs, which are considered to affect information and communication technology literacy. The study was designed using the survey model. The study was conducted with data belonging to 21 countries participating in the International Computer and Information Literacy Study (ICIL) 2013. The data of this study were grouped as educational inputs and educational outputs. The educational inputs were the ratio of school size and teachers, the ratio of school size and number of computers, the ratio of school size and number of computers available for students, the ratio of school size and number of computers with access to internet/World Wide Web, and the ratio of school size and number of smartboards. The educational outputs were determined by the average student grades obtained in ICILS 2013. The data were analysed with data envelopment analysis. The research results revealed that relatively, Australia, Canada (Newfoundland and Labrador, Ontario), Denmark, Korea, and Norway were the countries with total efficiencies. It was determined that with the exception of the Czech Republic, all the countries without total efficiencies had the characteristic of increasing returns to scale. According to the projections that were put forward for countries to become totally efficient, the most reduction recommendations were received for the inputs for ratio of school size and teachers by Argentina (Buenos Aires); for ratio of school size and number of computers, ratio of school size and number of computers available for students, and ratio of school size and number of computers with access to internet/World Wide Web by Turkey; and for ratio of school size and smartboards by Thailand. That is to say, these countries were the ones least able to use these inputs efficiently.

Keywords: Educational inputs, educational outputs, data envelopment analysis, computer and information literacy

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Introduction

Education can be considered as a system that individuals can access throughout their lives to be able to make changes to human behaviour in the desired direction. Tyler (1950, p. 4) defined education as "the process of changing people's behaviour". Ertürk (1972), however, approached education as "the process by which individuals change their behaviour in the desired direction through their own experiences and in a purposeful way." In this context, education can be discussed as a change and integration in the desired direction within the process. Especially with the development in information technologies, new facilities and opportunities have become one of the most important issues for developed countries.

The correct use of these technologies can contribute to (Kıncal, 2006):

a. Individuals' lifelong self-development, thereby increasing their qualities,

b. Developing automation systems by transferring trade and production onto information systems,

c. Developing individuals' creativity in a universal rather than a local sense, thereby creating opportunities for their knowledge to benefit not only their immediate environment but also different areas in a broad perspective.

Scientific and technological improvements lead to the development of education by allowing it to keep pace with the times and also with the many changes that accompany it. With the information age, education has ceased to be local and has become global and more easily accessible. This also requires a universal point of view. This universal view, however, requires a healthy education system, and social solidarity and cooperation (Ministry of National Education's 2023 vision, 2018). One of these universal qualities is undoubtedly students' level of knowledge and skill in information and communication technologies.

Just as they affect all areas, developments in Information and Communication Technologies (ICT)undoubtedly have an effect on the areas of education and training and provide opportunities to develop up-to-date technological teaching materials and for learners to carry out learning independently of time and place (Roblyer, 2006; Usluel, 2007). Especially during the last 15 years, technological and economic developments have made it essential for countries to follow these innovations and changes closely (Eryılmaz, 2018,). It can be accepted that the strong relationships between countries' information and communication technology development indices and their social and economic development (EMO, 2017) also indicate that there is a tight connection between technology and development. In an index study made of ICT skills in Information and Communication Technologies, a report was prepared by discussing variables such as individuals' average years in education, their rates of registration in secondary education, and rates of registration in higher

education. According to this report, for the assessment made in the area of ICT skills, it was determined that while the USA obtained the highest score of 9.18, the African countries received the lowest score of 1.01. The first ten countries in this ranking were the United States, Australia, South Korea, Greece, Belarus, Denmark, Slovenia, New Zealand, Norway and Finland, respectively. Turkey, however, was placed 39th in this list with a score of 7.72 (EMO, 2017). Considering that according to this assessment, the average score was 5.74, it can be said that Turkey performed above average.

When discussing performance in a broad sense as all learning outputs, it is not necessary to include all the variables and factors related to a learning product in order to measure performance. The basic principle in measuring performance is to show the real states (Turgut and Baykul, 2010). Therefore, for an effective performance measurement, it is necessary to select each of the criteria to be used with the same care. In other words, the selected criteria or the inputs to be used in measuring performance should have the necessary quality to reveal the true state of performance.

Examining what kind of effect educational inputs have on obtaining a product or what kind of impact the inputs have on the outputs is an important factor in deciding whether the inputs used are correct or incorrect. In this context, the data envelopment method occupies an important place, since this method creates a mechanism for presenting information about the returns from converting a large number of inputs into an output or outputs.

Data envelopment analysis (DEA) is a non-parametric statistical technique developed by Charnes et al., based on Farrell's (1957) study (Charnes, Cooper and Rhodes, 1978). Enabling the comparison of a large number of inputs and outputs obtained from different scales, DEA is a linear program-based analysis aimed at measuring the comparative performances of decision-making units. By determining the weights of the inputs and outputs in production relationships that include multiple inputs and multiple outputs, the DEA method makes it possible for performance to be compared (Mirzapour, 2014). DEA is used effectively in many areas such as management, tourism, aviation, meteorology and the effectiveness of public expenditure (Banker, Charnes and Cooper, 1984: 1078; Doğan, 2015: 187; Golany and Roll, 1989: 237; Gökgöz, 2009; Karahan and Özgür, 2009; Kıran, 2008; Kutlar and Babacan, 2008; Önsoy, 2013; Ray, 2004; Seyrek and Ata, 2010; Taheri and Ansari, 2013; Ulucan, 2002; Yu and Wen, 2010; Zhu, 2009). However, the number of studies that reveal the interaction between the inputs and outputs and how the inputs are converted into outputs is limited. Large-scale examinations such as TIMSS, PISA, PIRLS and ICILS, which allow for comparison of educational quality on an international level, are carried out, but only a limited number of studies have examined educational inputs with regard to Turkey. In one of these studies, Yalçın (2011) examined the changes in the answers given to the questionnaire and cognitive skills test by students participating in the PISA implementation, and their relative efficiencies with regard to school type, during the years 2003, 2006 and 2009. The results of this study revealed that the difference in quality among high

schools continued from 2003 to 2009, that the low socio-economic and cultural indices of students attending primary schools did not change over the years, and that students attending vocational schools did not set aside enough time for studying outside school. According to study that was conducted by Depren (2008), the relationships between students' mathematics, science and reading skills and their ability to solve problems that they might encounter in their daily lives were investigated. In this study, the changes and relative efficiency levels in schools, countries and regions between 2003 and 2006 were examined.

Conducting studies that can reveal the relationships between educational inputs and success rates in large-scale examinations that measure students' skills in subjects such as science, mathematics, reading comprehension and ICT in certain years, and examining the relative efficiency levels of variables that can be named outputs, are of great importance. This is because it is very important to know or reveal the extent to which variables that can be educational inputs affect the outputs expected of students or to which they affect the product, in order to be able to make correct decisions for investments in education. In this context, the research problem consists of an examination of the efficient and effective use of educational inputs based on the data of 21 countries, including Turkey, on the basis of the inputs in the International Computer and Information Literacy Study's (ICILS) 2013 examination, with the aim of measuring students' ICT skills. With regard to this, in the study, answers were sought to the following questions:

1. What are the total relative efficiency levels among the countries that participated in ICILS 2013?

2. Which of the countries that participated in ICILS 2013 and were relatively inefficient are the countries that need take references?

3. What are the returns to scale situations of the countries that participated in ICILS 2013 and were relatively inefficient?

4. What projection, that is, what value/level of inputs do the countries that participated in ICILS 2013 and were relatively inefficient need to have?

5. What are the relative levels of technical efficiency among the countries that participated in ICILS 2013?

6. What are the relative levels of scale efficiency among the countries that participated in ICILS 2013?

The first four questions making up the research problem investigate total efficiencies and what countries need to do in order to achieve total efficiency. The last two sub-problems attempt to reveal two efficiencies (technical and scale) that make up total efficiency and that determine why a Decision-making Unit (DMU) is or is not efficient.

Method

Research Model

This research, which was designed as a quantitative study, was carried out with data obtained from the ICILS 2013 study. Therefore, the study uses the survey model. The general aim of studies conducted with the survey model is to reveal the existing situation as it is (Fraenkel and Wallen, 2006). Within the framework of this study, a data envelopment analysis was carried out to determine the extent to which countries participating in ICILS 2013 used educational inputs in order to be efficient in computer and information literacies.

Universe and Sample

The study universe was made up of 21 countries that participated in the ICILS 2013 study. In this study, answers given by students participating in the ICILS 2013 study were used. The numbers of participants from the countries that took part in the study are given in Table 1.

Table 1. Numbers of participants from countries included in the study.

	Frequency	Percent
Argentina*	302	,6
Australia	4420	9,2
Switzerland	1982	4,1
Chile	2962	6,2
NL**	1092	2,3
Ontario***	2072	4,3
Czech Republic	3046	6,3
Germany	1660	3,4
Denmark	1194	2,5
Hong Kong, SAR****	1589	3,3
Croatia	2752	5,7
Korea	2888	6,0
Lithuania	2417	5,0
Netherlands	704	1,5
Norway	1564	3,2
Poland	2640	5,5
Russian Federation	3383	7,0
Slovak Republic	2945	6,1
Slovenia	3381	7,0
Thailand	2739	5,7
Turkey	2404	5,0
Total	48136	100,0

*Buenos Aires, Argentina

**Newfoundland and Labrador, Canada

***Ontario, Canada

**** Hong Kong SAR

Data Collection Tool

The ICILS 2013 questionnaire was used as the data collection tool in the study. As inputs, "the ratio of school size and teachers", "the ratio of school size and number of computers", "the ratio of school size and number of computers available for students", "the ratio of school size and number of computers with access to internet", and "the ratio of school size and number of smartboards" included in this questionnaire were used, while the average grades obtained by students in ICILS 2013 were used as outputs. These inputs are explained in the ICILS 2013 study as follows (ICILS 2013 Technical Report):

Ratio of school size and teachers (P_RATTCH): These data were obtained by dividing the number of teachers by the number of students in the school. The number of teachers was determined by summing the number of full-time teachers (IP1G06A) with the number of part-time teachers weighted at 50 percent (0.5 x IP1G06B) in the school. This data source was obtained from the questionnaire applied to the school principals. The other variables used in the study were:

Ratio of school size and number of computers (C_RATCOM): These data were obtained by dividing the number of students in the school (P_NUMSTD) by the number of computers in the school altogether (IIG07A). This data source was obtained from the scales collected by the ICT coordinators.

Ratio of school size and number of computers available for students (C_RATSTD): These data were obtained by dividing the number of students in the school (P_NUMSTD) by the number of computers in the school available to students (IIG07B). This data source was obtained from the scales collected by the ICT coordinators.

Ratio of school size and number of computers with access to internet/World Wide Web (C_RATWWW): These data were obtained by dividing the number of students in the school (P_NUMSTD) by the number of computers in the school connected to the internet/World Wide Web (IIG07C). This data source was obtained from the scales collected by the ICT coordinators.

Ratio of school size and smartboards (C_RATSMB): These data were obtained by dividing the number of students in the school (P_NUMSTD) by the number of smartboards or interactive white boards available (IIG08). This data source was obtained from the scales collected by the ICT coordinators.

Data Analysis

The aim of this study was to determine whether or not the inputs considered to have an impact on computer and information literacy were managed in an efficient manner by the countries that participated in ICILS 2013. In this direction, data envelopment analysis was carried out. Data envelopment analysis is able to evaluate multiple input-output factors at the same time (Lorcu, 2008). In this analysis approach, the relative performances according to decision-making unit (DMU) of multiple inputs and outputs obtained with different scales are examined on a linear programming database. Decision-making units are defined as "homogeneous structures operating in a similar environment, having the same inputs and outputs, in the same production process, and directed at the same aim, even if their amounts and ratios are different" (Lorcu, 2008, p. 10). The DMUs included in this study are the countries that participated in ICILS 2013.

Data envelopment analysis (DEA) is one of the statistical techniques frequently used in operations and management science. DEA brings together similar decision-making units and provides information about the efficiency levels of inputs in the decision-making process (Deveci Kocakoç, 2003). The most important difference between DEA and other performance evaluation methods is that many inputs and outputs are formed and that the inputs and outputs can be compared following analysis.

The following formula is used in evaluating efficiency/performance with DEA (Charnes, Cooper, Rhodes, 1978):

$$efficiency\ of\ unit\ j = \frac{u_1 y_{1j} + u_2 y_{2j} + \cdots + u_s y_{sj}}{v_1 x_{1j} + v_2 x_{2j} + \cdots + v_m x_{mj}} \qquad (1)$$

u_s : weight given to output s

v_m : weight given to input m

y_{sj} : amount of output s from unit j

x_{mj} : amount of output m from unit j

The u and v weight coefficients included in Formula 1 are weighted by the analysis with the linear programming method during the calculation depending on the data set, and intervention by the person conducting the analysis is out of the question. Therefore, the weights of the inputs and outputs cannot be known before the analysis, or can be different for each data set (Deveci Kocakoç, 2003).

With DEA, the weights of the inputs and outputs are determined during the analysis, and what kind of output is from which input can be learnt following the analysis. Moreover, to maximise

decomposition ability with DEA, it is necessary for a large number of inputs and outputs to be used in the decision-making unit. What is important here is that the chosen input and output should be able to be used for the decision-making unit. To express this mathematically, for a "k" number of decision-making units, an "x" number of inputs and a number of outputs that is "y" can be calculated with at least k≥x+y+1. Accordingly, let it be assumed that for a k number of decision-making units, a y number of outputs is produced by using an x number of input elements. In this context, the relative efficiency of any decision-making unit is found from the values obtained as a result of weighting the inputs and outputs by proportioning the outputs to the inputs. If this operation is carried out for a k number of decision-making units that perform a similar task, the efficiency of every unit can be calculated. In DEA, two basic orientations can be mentioned. These are the input-oriented approach and the output-oriented approach. In the output-oriented approach, the aim is to obtain the maximum output from the inputs available. In the input-oriented approach, however, the aim is for analysis to be carried out with a minimum number of inputs. In other words, it concentrates on what the minimum number of inputs should be (Mirzapour, 2014). The number of x inputs and y outputs that will maximise the decision-making units and the output/input ratio in which a k number of units will be maximised in DEA analysis can be expressed as follows (Charnes et al., 1978):

$$Maxh_k = \frac{\sum_{s=1}^{y} u_{sk} y_{sk}}{\sum_{i=1}^{x} v_{ik} X_{ik}} \tag{2}$$

According to Formula 2 given above, $X_{ik}>0$ expresses the ith amount of inputs used by the kth decision-making unit, while $y_{rk}>0$ expresses the rth amount of outputs used by the kth decision-making unit. In this decision formula, u_{sk} and v_{ik} show the weights that decision unit k will give for the sth output and ith input, respectively.

Different models (the CCR, BCC and Additive models) have been developed within the scope of DEA. Of these models, the CCR model was developed by Charnes, Cooper and Rhodes (1978) and is one of the basic DEA models. This model was developed to measure the relative efficiency values of decision-making units and is a linear programming-based method (Mirzapour, 2014). Accordingly, the relative efficiency of any unit can be measured with the formula below (Cooper et al.,2000):

FP_0 max $\quad\quad \frac{u_1 y_{1o} + u_2 y_{2o} + \cdots + u_s y_{so}}{v_1 x_{1o} + v_1 x_{1o} + \cdots + v_m x_{mo}}$ (3)

$Constraints \quad\quad \frac{u_1 y_{1j} + u_2 y_{2j} + \cdots + u_s y_{sj}}{v_1 x_{1j} + v_1 x_{1j} + \cdots + v_m x_{mj}} \leq 1 \ (j = 1,\ldots,n)$ (4)

$$v_1, v_2,\ldots, v_m \geq 0$$

$$u_1, u_2,\ldots, u_s \geq 0$$

With the FP_0max function, the basic aim is to be able to determine the input and output weights that will make the decision-making unit 0. Accordingly, as the input/output ratio is at least 1, the efficiency ratio is expected to range between [0,1] (Deveci Kocakoç, 2003).

In the BCC model developed by Banker, Charnes and Cooper, the technical inefficiencies and scale inefficiencies are separated. The BCC is one of the DEA models, and was obtained by making changes to the hypotheses in the CCR model (Yıldız, 2014). The BCC frontier is generally below the CCR frontier. The reason for this is that a type of yield can be created that can vary from scale to scale (Kale, 2009). The results obtained in this model make it possible for analyses to be performed in future studies for increasing, decreasing and constant returns to scale situations (Tokpunar, 2015).

Another model used in DEA is the Additive model, in which the CCR and BCC models are evaluated together. In this model, the main aim is to deal with an excess of inputs and a shortfall of outputs at the same time in arriving at a point that is most distant on the efficiency frontier from an inefficient decision-making unit. In cases where the input and output variables are inefficient, this means that the slack variables are different from zero (Charnes et al.,1994). In other words, the state of whether the decision-making units are efficient or not is determined according to the slack variables. If both slack variables are zero, this can express that the decision-making unit is efficient (Mirzapour, 2014: 46).

Another approach included in this study is scale efficiency. Scale efficiency is expressed as "the success of productivity on an optimum scale" (Aslan, 2017; Günay, 2015). In other words, it is the capacity for high productivity with low input. Moreover, since this study is concerned with the field of education, and since direct intervention in outputs in the field of education cannot be made and it is necessary to change the inputs in order to change the outputs, the input-based approach has been adopted in the analyses.

To determine which of the countries participating in ICIL 2013 were relatively efficient or not, the CCR technique was used. Therefore, by calculating total efficiency, it will be possible to determine the countries which had characteristics of technical and scale efficiency. Moreover, with the information obtained with the input-based CCR model, it will also be possible to examine the input states under constant returns by totalling the reference coefficients (lambda) of the referenced countries.

Besides total efficiencies, the countries' technical and scale efficiency states were examined. A decision-making unit that is technically efficient means using its inputs in such a way as to generate maximum output. To determine this, the BCC technique was used.

Another type of efficiency used in the study is scale efficiency. This efficiency expresses the capacity of a decision-making unit to generate maximum output with low inputs. For this study, the scale efficient countries are those having higher computer and information literacy scores with low inputs. The scale efficiency of a decision-making unit can be calculated with the ratio of total efficiency (i.e. CCR) to technical efficiency (i.e. BCC).

The analyses in this study were carried out in the following stages:

1. In the first stage of DEA, it is first of all necessary to determine which decision-making units are suitable and need to be included in the study. Moreover, decision-making units' performing of similar tasks can affect the reliability of the analysis (Gökgöz, 2009). In this study, based on the ICIL 2013 data, the decision-making units used consist of Australia, Newfoundland and Labrador (Canada), Ontario (Canada), Denmark, Korea, Norway, the Czech Republic, Germany, Hong Kong SAR, Chile, the Netherlands, Russian, Turkey, Slovakia, Thailand, Switzerland, Croatia, Lithuania, Slovenia, Poland, and Buenos Aires (Argentina) that participated in the study.

2. Next, an attempt was made to determine whether the number of decision-making units was sufficient or not when considering the inputs and outputs. Dyson, Allen, Camanho, Podinovski, Sarrico, and Shale (2001) stated that the number of decision-making units (DMU) should be twice the number of inputs and outputs. Since the study was conducted with 5 inputs and 1 output, 21 countries were, therefore, enough as DMUs.

Cooper, Li, Seiford, Tone, Thrall, and Zhu (2001) however, state that for m inputs and s outputs, there should be an N number of DMUs, where $N \geq \{m \times s; 3 \times (m + s)\}$. According to this view, since $21 \geq \{5 \times 1; 3 \times (5 + 1)\} = 21 \geq \{6; 18\}$, the number of DMUs was sufficient.

3. Selection of inputs and outputs. In order for reliability not to be low, the inputs and outputs used in the DMU should be fit for the purpose. The input and output units dealt with in the scope of this study were chosen to suit the purpose. The inputs of the study were "ratio of school size and teachers", "ratio of school size and number of computers", "ratio of school size and number of computers available for students", "ratio of school size and number of computers with access to internet/World Wide Web", and "ratio of school size and smartboards". The outputs of the study were determined as the average grades obtained by students in ICILS 2013.

4. In the process of determining the model for data envelopment analysis, total efficiencies were calculated with CCR. The CCR model is the most suitable model to be used for obtaining the most outputs in the most efficient way under the assumption of constant returns.

5. Based on the reference coefficients obtained in the total efficiency model, the returns to scale situations were determined.

6. The technical efficiencies were calculated with the BCC model.

7. Based on the CCR/BCC ratios, the scale efficiencies were calculated.

Findings

Total efficiencies were calculated with the CCR model and are presented in Table 2.

Table 2. Total efficiencies according to CCR model

DMU	Score	Rank	1. Reference Country Name	λ	2. Reference Country Name	λ	3. Reference Country Name	λ	Total λ	Returns to Scale
Australia	1	1	Australia	1					1	
NL**	1	1	NL**	1					1	
Ontario***	1	1	Ontario	1					1	
Denmark	1	1	Denmark	1					1	
Korea	1	1	Korea	1					1	
Norway	1	1	Norway	1					1	
Czech	0,9923	7	Ontario***	1,005	Korea	0,036			1,041	Decreasing
Germany	0,9494	8	Ontario***	0,72	Korea	0,269			0,989	Increasing
Hong Kong****	0,9438	9	Australia	0,377	Ontario***	0,303	Korea	0,276	0,956	Increasing
Chile	0,9421	10	Ontario***	0,266	Korea	0,659			0,925	Increasing
Netherlands	0,9125	11	Australia	0,372	Ontario***	0,165	Denmark	0,429	0,966	Increasing
Russian	0,8607	12	Ontario***	0,884	Korea	0,08			0,964	Increasing
Turkey	0,8285	13	Korea	0,678					0,678	Increasing
Slovak	0,7704	14	Ontario***	0,94	Korea	0,023			0,963	Increasing
Thailand	0,7508	15	Ontario***	0,282	Korea	0,44			0,722	Increasing
Switzerland	0,7236	16	Ontario***	0,949	Korea	0,003			0,952	Increasing
Croatia	0,719	17	Ontario***	0,516	Korea	0,445			0,961	Increasing
Lithuania	0,626	18	Australia	0,077	Ontario***	0,741	Korea	0,102	0,92	Increasing
Slovenia	0,5751	19	Australia	0,102	Ontario***	0,174	Denmark	0,667	0,943	Increasing
Poland	0,5714	20	Australia	0,121	Ontario***	0,422	Denmark	0,442	0,985	Increasing
Argentina*	0,5125	21	Ontario***	0,323	Korea	0,572			0,895	Increasing

*Buenos Aires, Argentina

**Newfoundland and Labrador, Canada

***Ontario, Canada

**** Hong Kong, SAR

Examining Table 2, it is seen that respectively, Australia, Newfoundland and Labrador (Canada), Ontario (Canada), Denmark, Korea, and Norway were the relatively efficient countries.

Accordingly, 6 countries were totally efficient, while 15 countries were not totally efficient. In DEA, total efficiency is an expression used for situations where inputs are used efficiently and outputs also operate on a suitable scale (Lorcu, 2008). Accordingly, it can be said that these 15 countries both used their resources efficiently and operated on a suitable scale. Moreover, according to Table 2, while Ontario was a reference for 15 countries, Australia for 6, Korea for 13 and Denmark for 4, neither Norway nor NL** was able to be a reference for any countries. It can be said that while the Czech Republic was closest to total efficiency, Argentina* was the furthest from it.

With total efficiency analysis, returns to scale situations can also be determined. The value obtained when the reference coefficients **(λ)** of the countries suggested to be totally efficient are added up (∑λ), gives a value for us to interpret the returns to scale situation. If this value is greater than 1, this shows decreasing returns to scale, if it is equal, it shows constant returns, while if it is less than 1, it shows increasing returns to scale (Lorcu, 2008). For example, for the Czech Republic, which was the country closest to total efficiency (0.9923), ∑λ=1.005Ontario + 0.036 Korea =1.005+0.036=1.041 and had decreasing returns to scale. For Germany, which was the second closest country to total efficiency and took Ontario and Korea as references, ∑λ=0.72Ontario + 0.239 Korea =0.72+0.239=0.989 and had increasing returns to scale. In this study, it was determined that all countries that were not totally efficient had increasing returns to scale except for the Czech Republic. When an increase occurs in the inputs of a decision-making unit that has increasing returns to scale, this will also cause an increase in its outputs.

The levels of inputs necessary (projections) for countries that were not totally efficient to be able to become efficient were determined and these are presented in Tables 3, 4, 5, 6 and 7.

Table 3. Data for ratio of school size and teachers

| DMU | Score | Rank | Ratio of school size and teachers | | | |
			Raw Value	Slack Variable	Hypothetic Value	Difference (%)
Czech	0,9923	7	0,071	0,000	0,070	-0,774
Germany	0,9494	8	0,067	0,000	0,064	-5,062
Hong Kong****	0,9438	9	0,069	0,000	0,065	-5,617
Chile	0,9421	10	0,057	0,000	0,054	-5,791
Netherlands	0,9125	11	0,080	0,000	0,073	-8,745
Russian	0,8607	12	0,075	0,000	0,064	-13,930
Turkey	0,8285	13	0,045	0,000	0,037	-17,155
Slovak	0,7704	14	0,085	0,000	0,065	-22,963
Thailand	0,7508	15	0,058	0,000	0,043	-24,917
Switzerland	0,7236	16	0,089	0,000	0,065	-27,635
Croatia	0,719	17	0,083	0,000	0,059	-28,101
Lithuania	0,626	18	0,099	0,000	0,062	-37,395
Slovenia	0,5751	19	0,124	0,000	0,071	-42,488
Poland	0,5714	20	0,126	0,000	0,072	-42,859
Argentina*	**0,5125**	**21**	**0,104**	**0,000**	**0,053**	**-48,751**

*Buenos Aires, Argentina

**** Hong Kong SAR

The most important input for carrying out teaching programmes and for the education system is the teacher. This input expresses the ratio of a lot of students with few teachers. This ratio was lowest in Turkey, but it can be said that this ratio also needed to be reduced for Turkey, in other words, that this input was not used efficiently. It was recommended that the Czech Republic should reduce this input by the least amount. The Czech Republic was, at the same time, the country closest to total efficiency. On the other hand, the country least able to use this input efficiently, that is, the country recommended to decrease it by the greatest amount, was Argentina. At the same time, Argentina was the country with the third highest amount of this input. It was recommended that Argentina reduce this input by almost 50%. Although Argentina was recommended to reduce this input by a high amount, it can be said that Poland and Slovenia were close to this country, with rates of almost 43%.

Table 4. Data for ratio of school size and number of computers

| DMU | Score | Rank | Ratio of school size and number of computers | | | |
			Raw Value	Slack Variable	Hypothetic Value	Difference (%)
Czech	0,9923	7	5,606	0,788	4,775	-14,826
Germany	0,9494	8	8,562	3,209	4,920	-42,538
Hong Kong****	0,9438	9	4,117	0,183	3,702	-10,071
Chile	0,9421	10	10,720	4,838	5,261	-50,923
Netherlands	0,9125	11	3,054	0,058	2,729	-10,643
Russian	0,8607	12	8,954	3,207	4,500	-49,748
Turkey	0,8285	13	48,783	36,242	4,172	-91,448
Slovak	0,7704	14	6,339	0,478	4,406	-30,500
Thailand	0,7508	15	10,598	3,972	3,986	-62,392
Switzerland	0,7236	16	6,101	0,091	4,323	-29,134
Croatia	0,719	17	13,297	4,483	5,077	-61,819
Lithuania	0,626	18	6,572	0,000	4,114	-37,395
Slovenia	0,5751	19	5,335	0,000	3,068	-42,488
Poland	0,5714	20	6,145	0,000	3,512	-42,859
Argentina*	0,5125	21	12,699	1,527	4,981	-60,778

*Buenos Aires, Argentina

**** Hong Kong SAR

Computers or devices that can process data are the basic tools of information and communication literacy. The quantity of these tools in schools can have an effect on computer and information literacies. Examining the efficiencies in using these tools for computer and information literacies, it is seen that Hong Kong was given the lowest recommendation for reduction, with 10.07%. This country had the second lowest raw value regarding input. At the same time, it was the third

closest country to total efficiency. The Netherlands came in second place with a reduction recommendation of 10.643%. At the same time, the Netherlands had the lowest raw value.

The country with the highest recommendation for reduction of this input was Turkey, and this rate was calculated as about 90%. This value indicates that the input was wasted or that it was used incorrectly. At the same time, Turkey had the highest raw value for this input. The country with the second highest rate was Thailand with 62.932%. It can be said that this value is a long way from Turkey's. When the inputs of Turkey (48.783) and Thailand (10.598) are compared, it is revealed that Turkey wasted a very high quantity of this input.

Table 5. Data for ratio of school size and number of computers available for students

DMU	Score	Rank	Ratio of school size and number of computers available for students			
			Raw Value	Slack Variable	Hypothetic Value	Difference (%)
Czech	0,9923	7	10,076	1,875	8,123	-19,381
Germany	0,9494	8	11,195	0,000	10,628	-5,062
Hong Kong****	0,9438	9	9,017	0,000	8,511	-5,617
Chile	0,9421	10	18,611	2,563	14,971	-19,562
Netherlands	0,9125	11	4,914	0,592	3,892	-20,787
Russian	0,8607	12	17,144	6,647	8,108	-52,704
Turkey	0,8285	13	78,923	52,002	13,382	-83,044
Slovak	0,7704	14	9,609	0,000	7,402	-22,963
Thailand	0,7508	15	14,337	0,000	10,765	-24,917
Switzerland	0,7236	16	9,774	0,000	7,073	-27,635
Croatia	0,719	17	25,104	5,455	12,594	-49,832
Lithuania	0,626	18	13,098	0,553	7,647	-41,618
Slovenia	0,5751	19	14,439	3,914	4,390	-69,594
Poland	0,5714	20	9,606	0,200	5,289	-44,943
Argentina*	0,5125	21	31,977	2,721	13,667	-57,261

*Buenos Aires, Argentina

**** Hong Kong, SAR

Another variable related to computers at school is that of availability of computers for use by students. The country given the lowest reduction recommendation for this variable was Germany, the country second closest to total efficiency. The country with the closest value to that country was the country third closest to total efficiency, Hong Kong. Hong Kong was, at the same time, the country that received the lowest reduction recommendation for the "ratio of school size and number of computers" input.

Just as with the "ratio of school size and number of computers" input, the country given the highest reduction recommendation was Turkey. At the same time, Turkey was again the country with the highest raw value. In other words, Turkey either used this input incorrectly or wasted it. After

Turkey, the country receiving the second highest recommendation rate was Slovenia. However, when the inputs for Turkey (78.923) and Slovenya (14.439) are compared, it is revealed that Turkey wasted a very high quantity of this input.

Table 6. Data for ratio of school size and number of computers with access to internet

| DMU | Score | Rank | Ratio of school size and number of computers with access to internet | | | |
			Raw Value	Slack Variable	Hypothetic Value	Difference (%)
Czech	0,9923	7	5,748	0,873	4,830	-15,967
Germany	0,9494	8	9,043	3,474	5,111	-43,483
Hong Kong****	0,9438	9	4,162	0,000	3,928	-5,617
Chile	0,9421	10	13,425	6,970	5,678	-57,706
Netherlands	0,9125	11	3,066	0,000	2,798	-8,745
Russian	0,8607	12	16,848	9,922	4,579	-72,822
Turkey	0,8285	13	66,361	50,385	4,592	-93,080
Slovak	0,7704	14	6,856	0,830	4,451	-35,071
Thailand	0,7508	15	12,440	5,073	4,268	-65,694
Switzerland	0,7236	16	6,291	0,195	4,357	-30,739
Croatia	0,719	17	15,928	6,083	5,370	-66,289
Lithuania	0,626	18	7,108	0,239	4,211	-40,754
Slovenia	0,5751	19	5,474	0,032	3,116	-43,071
Poland	0,5714	20	6,400	0,097	3,560	-44,369
Argentina*	0,5125	21	14,668	2,171	5,346	-63,554

*Buenos Aires, Argentina

**** Hong Kong, SAR

For the inputs for the ratio of school size and number of computers with access to internet, Hong Kong was given the lowest recommendation for reduction. Hong Kong was the country third closest to total efficiency. At the same time, Hong Kong was the country with the second lowest amount of inputs. Following Hong Kong, the country receiving the second lowest recommendation was the Netherlands. At the same time, the Netherlands had the lowest raw value with regard to this input.

Once again, the country given the highest reduction recommendation for this input was Turkey. At the same time, Turkey was again the country with the highest raw value. When the raw value and reduction rate are examined, it can again be stated that Turkey used this input incorrectly or wasted it. Croatia received the second highest recommendation for this input.

Table 7. Data for ratio of school size and number of smartboards

| DMU | Score | Rank | Ratio of school size and number of smartboards | | | |
			Raw Value	Slack Variable	Hypothetic Value	Difference (%)
Czech	0,9923	7	105,684	0,000	104,866	-0,774
Germany	0,9494	8	260,565	57,518	189,859	-27,136
Hong Kong****	0,9438	9	528,600	296,861	202,049	-61,777
Chile	0,9421	10	354,171	0,000	333,660	-5,791
Netherlands	0,9125	11	84,739	0,000	77,329	-8,745
Russian	0,8607	12	133,884	0,000	115,234	-13,930
Turkey	0,8285	13	785,835	331,723	319,306	-59,367
Slovak	0,7704	14	147,861	20,520	93,388	-36,841
Thailand	0,7508	15	871,742	422,659	231,875	-73,401
Switzerland	0,7236	16	119,517	1,757	84,732	-29,105
Croatia	0,719	17	354,477	0,000	254,864	-28,101
Lithuania	0,626	18	195,018	0,000	122,091	-37,395
Slovenia	0,5751	19	96,198	0,000	55,326	-42,488
Poland	0,5714	20	122,380	0,000	69,930	-42,859
Argentina*	0,5125	21	580,562	0,000	297,533	-48,751

*Buenos Aires, Argentina

**** Hong Kong SAR

The Czech Republic was given the lowest recommendation for reducing input for the ratio of school size and the number of smartboards. The Czech Republic was, at the same time, the country closest to total efficiency. This country also occupied third lowest position for this input in terms of raw value. It was followed by Chile in second place. In terms of size of input amount, Chile occupied sixth place. This country was also the fourth closest country to total efficiency.

The country given the highest recommendation for reduction of this input was Thailand. This country also had the highest raw value for this input. Hong Kong followed Thailand in receiving the second highest reduction recommendation. What is striking here is that although Hong Kong was the third closest country to total efficiency, it was given the fourth highest reduction recommendation for this input; in other words, it was not able to use it efficiently.

To examine the countries' technical efficiencies, analysis was carried out with the BCC model, and the results are presented in Table 8.

Table 8. Technical efficiency results according to BCC model

| DMU | Score | Rank | 1. Reference Country | | 2. Reference Country | | 3. Reference Country | |
			Name	λ	Name	λ	Name	λ
Australia	1	1	Australia	1				
Chile	1	1	Chile	1				
NL**	1	1	NL**	1				
Ontario***	1	1	Ontario***	1				
Czech	1	1	Czech	1				
Denmark	1	1	Denmark	1				
Korea	1	1	Korea	1				
Norway	1	1	Norway	1				
Thailand	1	1	Thailand	1				
Turkey	1	1	Turkey	1				
Hong Kong****	0,9874	11	Australia	0,395	Ontario***	0,317	Korea	0,288
Germany	0,9583	12	Ontario***	0,712	Korea	0,249	Thailand	0,039
Netherlands	0,9445	13	Australia	0,385	Ontario***	0,17	Denmark	0,444
Russian	0,8907	14	Chile	0,119	Ontario***	0,881		
Slovak	0,7982	15	Ontario***	0,96	Korea	0,002	Thailand	0,038
Switzerland	0,7594	16	Ontario***	0,995	Korea	0,002	Thailand	0,003
Croatia	0,7412	17	Chile	0,523	Ontario***	0,384	Korea	0,093
Lithuania	0,6805	18	Australia	0,084	Ontario***	0,806	Korea	0,11
Slovenia	0,6103	19	Australia	0,108	Ontario***	0,184	Denmark	0,707
Poland	0,5805	20	Australia	0,123	Ontario***	0,428	Denmark	0,449
Argentina*	0,5696	21	Chile	0,326	Ontario***	0,267	Korea	0,407

*Buenos Aires, Argentina

**Newfoundland and Labrador, Canada

***Ontario, Canada

**** Hong Kong, SAR

According to the BCC analysis, 10 countries were technically efficient, while 11 countries were not technically efficient. Among the countries that were not totally efficient, Chile, the Czech Republic, Thailand and Turkey appeared as technically efficient. Technical efficiency is "the process by which production inputs are converted into outputs" by a decision-making unit (Lorcu, 2008, p. 7). For example, let us assume that a software company, with the facilities it possesses, has the facility to produce 100 programmes, while it produces 90 programmes. In that case, this firm can be evaluated as being 90/100=0.90=90% technically efficient. Technical efficiency is, at the same time, an indicator that inputs have not been managed well or that the resources have been wasted. According to these results, Poland and Argentina, at rates of around 50%, were least able to manage their inputs or else they wasted their resources.

Finally, scale efficiency was examined. At the same time, this examination is in the form of a summary evaluation, and the results are presented in Table 9.

Table 9. Scale efficiency results

DMU	CCR	BBC	CCR/BBCC (Ölçek Etkinliği)
Australia	1	1	1
NL**	1	1	1
Ontario***	1	1	1
Denmark	1	1	1
Korea	1	1	1
Norway	1	1	1
Czech	0,9923	1	0,9923
Germany	0,9494	0,9583	0,9907
Poland	0,5714	0,5805	0,9843
Croatia	0,719	0,7412	0,9700
Russian	0,8607	0,8907	0,9663
Netherlands	0,9125	0,9445	0,9661
Slovak	0,7704	0,7982	0,9652
Hong Kong****	0,9438	0,9874	0,9558
Switzerland	0,7236	0,7594	0,9529
Slovenia	0,5751	0,6103	0,9423
Chile	0,9421	1	0,9421
Lithuania	0,626	0,6805	0,9199
Argentina*	0,5125	0,5696	0,8998
Turkey	0,8285	1	0,8285
Thailand	0,7508	1	0,7508

*Buenos Aires, Argentina
**Newfoundland and Labrador, Canada
***Ontario, Canada
**** Hong Kong SAR

Scale efficiency is succeeding in producing maximum outputs with a minimum of inputs. The Czech Republic (99.239%) and Germany (99.07%) were the closest countries to total scale efficiency. The Czech Republic was also technically efficient. That is, it can be said that for ICILS success, this country used its inputs completely, but that it could not achieve maximum ICILS success with minimum inputs. Thailand (77.08%) was the most distant country from this efficiency. Turkey was one place higher, with 82.85%. On the other hand, like the Czech Republic, Thailand and Turkey were technically efficient countries. When the tables regarding recommendations made for total efficiency are examined, it was determined that Turkey received input reduction recommendations in several areas, and that Thailand also received high reduction recommendations. According to these findings, it

can be said that Thailand and Turkey were not able to use their inputs efficiently enough to affect their ICILS success.

Discussion and Conclusion

In the age of information, access to information and communication technologies is becoming easier every day. In this context, products suitable for the information age (robotic coding, VR applications, software development, etc.) that are available due to nations' investments in ICT are undoubtedly also becoming more challenging for countries day by day. In other words, nowadays, ICT skills are becoming much easier due to the ease of access to technology at a basic level in almost all countries. When this is the case, the products that countries plan to obtain in their ICT-related investments need to be much more complex and of the highest order.

In this study, in which ICT skills were measured based on ICILS data, the aim was to reveal the relationship between inputs and outputs by using DEA. Accordingly, one of the findings obtained in the study was that according to total efficiency analysis, all countries within the scope of the study were at levels of increasing efficiency except for the Czech Republic. Consequently, it can be stated that in case of a new ICT-related input that can be added to these countries, it will be efficient as an output, that is, with regard to ICT skill, the product can be taken. According to the 2009 PISA results, it was reported that at least 50% of students in European countries had computers. In the report, it is recommended that the number of students with computers or the students' access to computers should be increased even further (Eurydice, 2011). At this point, the finding obtained in the study is in parallel with the increase in the number of computers. Accordingly, an important way to improve students' ICT skills is also to increase the number of computers so that all students have one. In this way, it can be expected that by increasing students' ICT skills, total efficiency levels will also attain ideal values.

Another significant finding of the study is related to the ratio of school size and teachers. According to this finding, the country with the lowest teacher input was Argentina, while that with the highest was Poland. According to the results for the ratio of school size and teachers input, it was concluded that in a number of countries, there was a difference between school size and the number of teachers, and that in almost all the countries participating in the ICILS 2013 study, there was a need for teacher numbers to be reduced. Especially when the ratios of school size and teachers are evaluated in the context of inputs and outputs, it should be stated that there was a need for reduction according to the DEA results. With the thought that it may be effective in improving the quality of education, it can be said that school size occupies an important place in determining education policies (Karakütük et al., 2012). Although it can be argued that large schools can be more efficient in an economic sense (Kenny, 1982), there are also researchers who defend the exact opposite of this idea (Walberg, 1993). In the study made by Kılıç (2015), it was determined that increasing the number of teachers was

effective in reducing the number of punishments. In this context, it can be said that the number of teachers in schools being proportionate to school size is an important factor with regard to not only quality, curriculum diversity and but also reducing disciplinary punishments, etc. With regard to this, according to the relationship between school size and teacher numbers revealed in the study, it can be said that bringing the ratio of school size and teacher numbers to an ideal and efficient standard will be of benefit to schools in several respects listed above.

According to the results of the evaluation made on the relationship between inputs and outputs related to school size and technological tools (computer use, internet, smartboards), it was calculated that the country that least needed a reduction in the number of computers compared to school size was Hong Kong, while the country most in need of a reduction was Turkey. This finding reveals that computers were used more efficiently in Hong Kong than they were in Turkey. Various studies have been made related to the use and effect of computers in school environments (Noll, Older-Aguilar, Ross, and Rosston, 2001; Kirkpatrick and Cuban, 1998). Although a number of studies have been made on this subject, a clear conclusion has still not been drawn regarding the effect of computer use in schools. For example, according to a study conducted in schools in Israel, it was argued that computer use in school did not have a significant effect on mathematics grades (Angrist & Lavy, 1999), whereas the US Department of Education has conducted studies aimed at improving teachers' and school managers' skills related to technology use (SRI, 2002). In this context, considering the results obtained in the study, it is considered that since computers also bring an additional cost to schools, the efficient use of computers is important. For this reason, it can be said that countries like Turkey, Thailand and Hungary need to either reduce their computer numbers or use them more efficiently. According to the results of the BCC analysis, it was calculated that 11 of the countries that participated in ICILS 2013 were inefficient, while 10 of them were efficient. Accordingly, it can be said that the inputs in the decision-making units of almost half of the countries were able to generate a large number of outputs. However, it can be said that the other half of the countries had problems with regard to efficiency between their inputs and outputs. In other words, it can be stated that these countries were not efficient enough in their decision-making processes regarding the outputs from their inputs, and that they were not able to convert their inputs into outputs in an efficient way.

In the study, as well as technical efficiency, scale efficiency, which is part of total efficiency, and returns to scale situations were also examined. In most of the countries, it was determined that in the event of an increase in inputs, their success would increase, yet scale efficiency revealed that there was no maximum output with unit input. Furthermore, considering that half of the countries were technically efficient, it can be stated that the majority of ICT-related inputs were not used efficiently by countries. This also meant that the input expenditures did not achieve their targets. Therefore, rather than trainings and expenditures made with regard to communication and information literacy, other factors that cannot be controlled come into play. This situation is similar to the one stated by

Coleman et al. (1966) in their famous *Equality of Educational Opportunity* report. According to this report, rather than students' schools and the facilities that their schools have, their families and backgrounds are effective in their school success. This situation reveals that the facilities in schools are not used efficiently. In this case, it is considered that facilities for ICILS are not used efficiently, and that in ICILS success, rather than educational inputs, the socio-economic characteristics that students bring to school and their backgrounds may have an effect on ICILS scores. In this situation, the fact that countries' educational inputs related to ICILS fall short reveals that education is "left to chance".

ICILS depends heavily upon computer technology. Many of the countries that participated in ICILS 2013 generally import their computer technologies. Inefficient use of imported products results in the creation of unnecessary costs and therefore in the creation of current account deficits. Considering that ICILS is related to the economy (EMO, 2017), it is considered that in countries where inputs are used inefficiently, development will be weak, current account deficits will further increase and bad economic situations will arise.

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Determining the Effect of Cooperative Learning and Models on the Conceptual Understanding of the Chemical Reactions[1]

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Abstract

The aim of this study was to determine the effects of cooperative learning and models on the conceptual understanding of the chemical reactions. The sample of study was comprised of 71 preservice science teachers from the first grade of science teacher education program. Quasi-experimental method with pre-and post-test of quantitative research was used. This study was carried out at General Chemistry Laboratory I course and was applied to two experimental and one control group. At the first experimental group (CMG, n=25), cooperative learning and models were implemented together, and cooperative learning was implemented on the second group (COG, n=23). On the other hand, there was no intervention on the control group (CG, n=23), in which traditional laboratory model was used. To collect data, Chemical Reactions Concept Test (CRCT) was utilized. It was found that cooperative learning with models increased the conceptual understanding about chemical reactions in this study.

Keywords: Cooperative learning; model; chemical reactions; particulate nature of matter.

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Introduction

Science is a difficult course for students since it is comprehensible and the phenomena, situations or concepts in abstract and micro level are involved in all of the branches of physics, chemistry and biology (Adadan, 2013; Mumba, Chabalengula & Banda, 2014). Chemistry which is one of the branches of science can be said to be more abstract than other fields because it focuses on atoms, molecules, and compounds. This situation can make it difficult for the students to understand chemistry (Kingir & Geban, 2014) and cause the students to have negative attitudes towards learning chemistry (Ercan, Ural & Ozates, 2015).

Micro, macro, and symbolic levels are correctly correlated in order to learn chemistry effectively (Jaber & Boujaoude, 2012; Johnstone, 1982). Micro level includes invisible relations of events, phenomena, situations, or concepts and is the most difficult level for students to learn (Jaber & Boujaoude, 2012; Talanquer, 2011). Macro level refers to visible and sensate phenomena and situations. The symbolic level implies that concepts or concept relations are represented by symbols and formulas (Jaber & Boujaoude, 2012; Philipp et al., 2014; Talanquer, 2011). Literature has indicated that students have misconceptions and misunderstanding resulting from the fact that they cannot correctly associate these three levels (Adadan, 2013, Talanquer, 2011). Research on the association of the three levels have been carried out with the aim of increasing the conceptual meaning of the students through dismissing misconceptions and misunderstandings (Adadan, 2013; Jaber & Boujaoude, 2012; Okumus, Cavdar, Alyar & Doymus, 2017a; Smith & Villarreal, 2015; Talanquer, 2011). In these studies, it has been revealed that the conceptual understandings increase through associating micro, macro, and symbolic levels effectively (Okumus et al., 2017a). In this vein, Jaber and Boujaoude (2012) applied a teaching by associating micro, macro, and symbolic levels to increase 10th grade students' conceptual understanding of chemical reactions in their research. The findings have reported that conceptual understanding of students increased and they started to establish more accurate relations among the concepts.

Chemical reactions, which is one of the basic subjects of the chemistry, are a comprehensive issue because they involve many reactions such as analysis, synthesis, combustion, acid-base, and redox reactions. In this regard, learning chemical reactions may allow students to understand other chemistry subjects better. Therefore, various investigations have been carried out on the understanding of chemical reactions (Ahtee & Varjola, 1998; Andersson, 1986; Barker & Millar, 1999; Boo, 1998; Chandrasegaran, Treagust, & Mocerino, 2009; Chang, Quintana, & Krajcik, 2014; Griffiths & Preston, 1992; Novick & Nussbaum, 1978; Okumus et al., 2017a; Yan & Talanquer, 2015). In these studies, it has been reported that students have many misconceptions about the subject (Jaber & Boujaoude, 2012). These misconceptions are based on changes of the subject in the micro level. Misconceptions take place at students who are unable to relate micro and macro levels effectively (Johnstone, 1982). It

has been determined such misconceptions on the subject as "*explaining chemical reaction as the effect of the active phase on the passive substance*" (Andersson, 1986), "*disappearance of the chemical reaction-causing substance*" (Barker & Millar, 1999; Okumus et al., 2017a), "*little or no mass of chemical reaction-causing gases*" (Griffiths & Preston, 1992; Okumus et al., 2017a), "*chemical reactions will always occur with external factors such as heating*" (Boo, 1998; Novick & Nussbaum, 1978), "*the tendency to describe physical changes like change of state as chemical changes*" (Ahtee & Varjola, 1998). In addition, research has revealed that not only secondary school and high school students but also preservice science and chemistry teachers, and science and chemistry teachers have various misconceptions about the chemical reactions (Chang et al., 2014; Yan & Talanquer, 2015). The fact that teachers have misconceptions reveals the importance of in-service training given to teachers because these teachers mislead students, as well. Another important issue is that preservice teachers have misconceptions. It is important to eliminate and reduce these misconceptions in their undergraduate education with the aim of preventing preservice teachers from misinforming their students when they start to practice their professions.

Much research has been conducted to eliminate misconceptions about chemical reactions (Chandrasegaran et al., 2009; Chang et al., 2014; Cheng & Gilbert, 2017; Chiu & Lin, 2014; Jaber & Boujaoude, 2012; Okumuş et al, 2017a; Ryoo, Bedell & Swearingen, 2018). In these studies, methods and techniques such as animation, computer assisted teaching and modeling which allow the visualization of the subject of chemical reactions are utilized. Therefore, micro, macro and symbolic levels are tried to be associated by students. In that regard, correlating micro, macro, and symbolic levels in their research using multiple presentations Chandrasegaran et al. (2009) enhanced the conceptual understanding of the formation of chemical reactions at ninth grade students. Chang et al. (2014) studied with seventh grade students, in there students learn about the subject of chemical reactions with a computer-aided chemistry teaching program (Chemation), and then they have learned through the interviews conducted with students to find out about their understanding of the subject. According to this, there is a relationship between drawings and conceptual understanding, and the use of drawings has been found to be effective in the understanding of subject. Chiu & Lin (2014) determined the effect of inquiry-oriented on-line curriculum to improve high school students' understanding of chemical reactions. This curriculum was taken advantage of dynamic molecular visualizations. They found that visualization-enhanced inquiry designed increased students' understandings. Cheng & Gilbert (2017) investigated the effect of model-based notion to understanding the sub-micro representations of chemical reactions of 10-11 grade students. They suggested two models of reactions: simple rearrangements of particles and interactions of chemical species with electrons and protons. They analyzed the students' visualizing the reaction between magnesium and hydrochloric acid. It was found that students progressed from the simple model to the more sophisticated model with visualizations.

Research reveals that students gain experiences from the first hand by participating in their learning process, leading their own learning, and establishing a relationship between prior knowledges and new information which have positive effects on providing effective chemistry learning (Ultay, Durukan & Ultay, 2015). However, it is stated that the misconceptions of the students cannot be dismissed completely and that they are resistant to change (Adadan, 2014, Ozmen, 2011). This situation is considered to cause from preliminary learning. In literature, various methods and techniques which supports constructivist approach and provides active learning such as problem-based learning, cooperative learning, computer-assisted learning, predicting-observing-explaining with the aim of providing effective chemistry teaching, dismissing misconceptions, and increasing students' academic achievements and conceptual understandings have been applied (Wang, Cheng, Chen, Mercer & Kirschner, 2017; Ultay et al., 2015).

Cooperative learning is one of the models which provides active learning and appropriate for the constructivist approach. In the cooperative learning process, students work together in heterogeneous groups. In this respect, cooperative learning is an effective way that can be applied together with other methods. Because, in most countries, the class sizes are above 20 students in primary, secondary and high school levels. Likewise, the number of preservice teachers studying in the same classes at university level is generally crowded. Cooperative learning can be more effective for students to work together to ensure active learning. Because, through cooperative learning, students participate actively in their learning process by working in collaboration with each other in a way to help each other to learn. Cooperative learning aims at allowing students to achieve their social and academic success with face-to-face interaction by studying cooperatively with heterogeneous groups, being responsible for their own and group's learning (Doymus, 2007; Karacop & Doymus, 2013; Okumus et al., 2017a). In this regard, cooperative learning aiming to increase both individual and group achievement can be effective to ease the understanding of chemistry course. It is stated in the literature that cooperative learning has a positive effect on the conceptual understanding of the chemistry course and enhances academic achievement (Belge Can & Boz, 2016; Doymus, 2007; Eymur & Geban, 2017; Karacop & Doymus, 2013; Warfa, 2016). In their research on determining the effects of cooperative jigsaw technique through animations on the understanding of the particulate nature of matter, Karacop and Doymus (2013) found that the implementation of cooperative learning method through animations improved the conceptual understandings of preservice science teachers (PSTs) on the target subject. The use of cooperative learning in understanding the concepts of chemistry is an effective way in the crowded classrooms. Because it is time consuming to follow an individual teaching path for each student and can be boring for successful students. However, in cooperative learning, it is ensured that the students who are successful in heterogeneous groups provide guidance to the less successful students, and also peer learning takes place. In this regard,

cooperative learning will be utilized in the conceptual understanding of chemical reactions in this research.

Chemistry concepts are abstract and difficult for students to understand correctly. In this regard, using such techniques that enable the concretization and visualization of abstract situations together with active learning methods will be effective. The first strategy when thinking about visualizations is the modelling. This includes models, simulations, three-dimensional models, pedagogical-analogical models, and it has a wide range. Okumus (2017) reports that models applied to enhance the effectiveness of learning through embodying abstract concepts can be defined as "*a simplified representation of a complex object or process*" (Harrison, 2001), "*a simplified representation of the system that draws attention to the typical characteristics of the system*" (Ingham & Gilbert, 1991), and "*mental constructs that individuals shape in their minds and question through mental components*" (Johnson-Laird, 1983). Models help embody and visualize abstract situations in mind (Gobert & Buckley, 2000; Okumus, 2017). Various studies have been carried out to determine the effects of models on the understanding of chemical concepts. These studies revealed that the models had a positive effect on the learning process since they provided students the opportunity to experience from the firsthand, allowed the students to visualize the events more accurately in their minds (Develaki, 2017; Okumus et al., 2017a; Wang, Chi, Hu & Chen, 2014). It also stated that the models provide solution to problems, allow to fill the information gaps in mind, facilitate constructing and transferring of information (Evagorou, Erduran & Mantyla, 2015).

Regarding the studies conducted through models, models are implemented in various parts of the lesson as an aid to a teaching approach, method, or technique (Kimberlin & Yezierski, 2016; Warfa, Roehrig, Schneider & Nyachwaya, 2014). In this vein, it is considered that the implementation of models, which help embody abstract situations, together with active learning methods encourages learners not only to be active in their learning process but to construct accurate relations between micro and macro levels, as well. Cooperative learning, which helps to provide active learning in crowded groups and which is appropriate to different learning levels, can be effective with the models. Various studies on applying cooperative learning from the active learning methods together with models exist in the literature (Cavdar & Doymus, 2016, 2018; Cavdar, Okumus, Alyar & Doymus, 2017a; Okumus et al., 2017a; Wang et al., 2017; Warfa et al., 2014). Accordingly, it has been reported that model studies conducted with cooperative learning offer students the opportunity to better associate macro-micro and symbolic dimensions. In this study, the effect of application of cooperative learning alone and with models on the conceptual understanding of the subject of chemical reactions will be examined. It is known that models alone are generally not sufficient in learning and are recommended to be applied together with active learning methods. Therefore, this study was conducted with two experimental groups as cooperative learning group and cooperative-model group.

In addition, the combined use of different methods and techniques helped students with different learning styles. For this reason, cooperative learning was chosen as an active learning method that supports models. Unlike other studies, this study attempts to determine the effects of cooperative learning together with models on conceptual understanding of gas discharge in chemical reactions in laboratory environment. In this way, the conceptual understanding of the PSTs before and after the implementation and the effectiveness of the research were determined. The research problem of the study is as follows:

- What is the effect of cooperative learning method and models on conceptual understanding of the subject of gas discharge in chemical reactions?

Sub-Problems:

o What is the understandings of the PSTs in regard to the subject of gas discharge in chemical reactions before the implementation?

o What is the understandings of the PSTs in regard to the subject of gas discharge in chemical reactions after the implementation?

Regarding the research problems and sub-problems, the study aims to determine the effects of cooperative learning and models on conceptual understanding of gas discharge in chemical reactions.

Methods

A quasi-experimental design with pre-test post-test, which is one of the quantitative designs, was utilized in this research. Quasi-experimental design is implemented in situations where all patterns of the experimental design cannot be applied (Buyukozturk, Kilic Cakmak, Akgun, Karadeniz & Demirel, 2012). The quasi-experimental design is preferred, especially because the educational studies deal with human factor and cannot be intervened with all variables. It cannot be intervened in research groups beforehand in quasi-experimental design, but it can be randomly determined which groups will be the control and which groups will be the experimental group (Cepni, 2009). In this study, regarding the fact that all patterns of experimental design cannot be applied, a quasi-experimental design was utilized.

Sample

71 freshman PSTs who were studying at the Department of Science Teacher Education Program of Ataturk University were participated in the study. The study was conducted with two experimental groups and a control group. Cooperative learning together with model was applied in the first experimental group, The Cooperative Model Group (CMG, n = 25, 6 male, 19 female). Cooperative learning method was applied in the second experimental group, Cooperative Group (COG, n=23, 2 male, 21 female). Traditional laboratory teaching method was implemented to control

group, the Control Group (CG, n=23, 7 male, 16 female). The research was carried out at General Chemistry Laboratory-I course. Student teams achievement divisions (STAD) of cooperative learning method was used. In the random sampling method, the probability of the selection of groups participating in the study as experimental and control groups is equal. Research groups were assigned randomly as experimental and control groups.

Data Collection Tool

Chemical Reactions Concept Test (CRCT) was implemented as the data collection tool in the research. The CRCT was implemented as a pre-test to determine levels of groups and to present alternative concepts that already exist before the implementation, and as a post-test to determine if there were any significant differences among the groups and whether alternative concepts persisted after the implementation.

The CRCT was developed to be understood the gas discharge during chemical reactions involving acid and base titrations and contains two open-ended drawing questions. In order to ensure the validity of the questions, three experts working at the department of science education were consulted. The necessary changes had been made in line with the opinions of the experts and the clarity of the questions had been increased. For the reliability of the questions, the consistency of experts' answers to the questions were examined and found as .92. The implementations conducted in the research groups and sampling are given in Table 1.

Table 1. The Sampling of the Research and the Implementations

Groups	CRCT	Implementations
CMG (n = 25)	Pre-test	Cooperative STAD + Model
COG (n = 23)	Pre-test	Cooperative STAD
CG (n = 23)	Pre-test	Traditional Laboratory Teaching Method
Total (N = 71)		

Implementation

The CRCT was implemented as a pre-test to all groups before the implementation. After each group was taught to chemical reactions through its own method, all groups did the experiment of acid-bas reaction with gas discharge. The application was implemented for two weeks. At the last stage, the CRCT was applied as a post-test to all groups. In both of the experimental groups, the STAD method from the cooperative learning methods was applied as a main teaching method. In the experiment done in this research, a chemical reaction takes place between an acid (CH_3COOH) and a base ($NaHCO_3$). In this experiment, it is aimed to understand whether the amount of the reactant in the experiment affects the amount of product formed. Accordingly, the PSTs were asked to compare the amount of CO_2 gas in the reaction between 10mL CH_3COOH and 5g $NaHCO_3$ and the amount of CO_2

gas in the reaction between 10mL CH_3COOH and 10g $NaHCO_3$. A plastic balloon is attached to the end of the reaction containers to monitor the amount of gas formed. The experiment of acid-bas reaction with gas discharge was given at Figure 1.

Experiment: Gas Discharge

Aim: Understanding the relationship between the amount of the reactant and the amount of the product, comprehend the particulate nature of matter based on the change in balloon

Equipment/ Chemicals:
- Plastic balloon (2 pieces)
- Volumetric flask (100mL, 2 pieces)
- Spatula
- Pipet
- Analytical balance
- CH_3COOH
- $NaHCO_3$

Experimental Procedure:
- 10mL of acetic acid is filled into a 100mL volumetric flask, 5g of sodium bicarbonate are added.
- A plastic balloon is attached to the head of the volumetric flask. Wait a while. Changes in the balloon are observed.
- 10mL of acetic acid is filled into another 100mL volumetric flask, 10 g of sodium bicarbonate is added.
- A plastic balloon is attached to the head of the volumetric flask. Wait a while. Changes in the balloon are observed.
- The changes in plastic balloons attached to volumetric flask are compared.

The reaction between acetic acid and sodium bicarbonate is as follows:

$$CH_3COOH_{aq} + NaHCO_{3(s)} \longrightarrow NaCH_3COO_{(aq)} + H_2O + CO_{2(g)}$$

Questions:
1. Does adding different amounts of sodium bicarbonate to acetic acid cause a change in the amount of gas generated? How?
2. What kind of change did you observe in the plastic balloons? What would be the reason?
3. How do you relate the change in plastic balloons to the amount of matter?
4. Show the gas in the plastic balloons in particular form (CO_2: ●●○)

Figure 1. *The Experiment which Used the Research*

Before beginning the course at which COG was applied, the PSTs were assigned to study groups as to be heterogeneous regarding the scores obtained from the CRCT as a pre-test. Then, the researcher briefly described the chemical reactions and type of chemical reactions to whole class and the PSTs studied the target subject with their study groups. The PSTs worked together on the same paper during the group work. Thus, in addition to individual responsibility, "positive commitment" and "face-to-face interaction" were tried to be provided. Later, each cooperative group conducted a "gas discharge" experiment. After the implementation, the CRCT was implemented as the post-test. In traditional laboratory approaches, students conduct their experiments and note the results. In cooperative learning applications, there are learning from group members, questioning and discussion among the group members. In this way, group spirit is tried to be gained. In this respect, COG differs

from the traditional laboratory approach. The researcher has played a guiding role in the cooperative learning process and assisted them in the parts which the PSTs did not understand. In Figure 2, an example is given from experimental studies of the PSTs (this experiment was done in all studying groups- COG, CMG and CG).
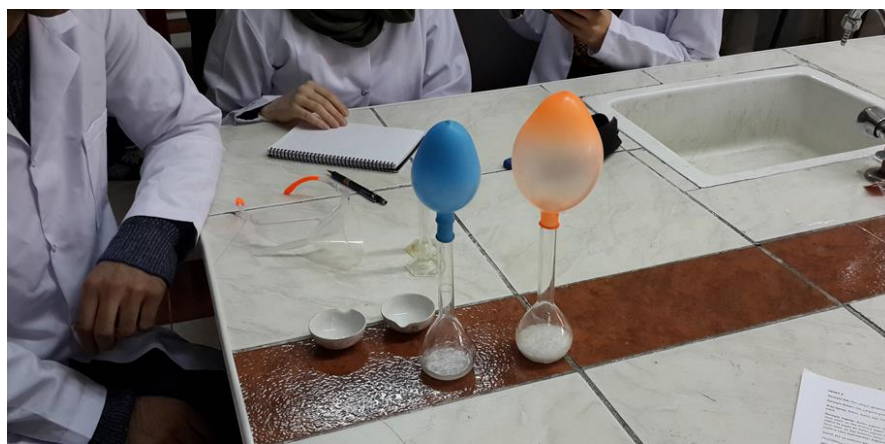

Figure 2. *An Example from Experimental Studies*

In CMG, cooperative learning was implemented as in COG. In addition, after the experiment was completed, the PSTs were asked to model the phenomena they observed in the experiment with the help of play dough and molecular model sets given to them. During the learning process, each group member was given the opportunity to work in the process of conducting experiment and creating a model, thus the principle of "individual responsibility" was tried to be fulfilled. Following the model study, the CRCT was applied as the post-test. The conceptual understanding of the PSTs has been tried to be increased as the model practices and abstract situations are materialized with concrete materials. In this sense, applications in CMG differ from traditional laboratory practices. Figure 3 presents some examples of models designed by the PSTs.

Figure 3. *Examples of Models Designed by the PSTs*

The traditional laboratory teaching method was implemented in CG. In line with the traditional laboratory teaching method, the PSTs formed groups following the list order. It was not paid attention to forming groups homogeneously or heterogeneously. The PSTs carried out their

experiments by reading experimental sheet given about the chemical reactions. In the control group, the PSTs do not have to work together as in cooperative learning. Accordingly, there is no principle of "positive commitment". At the end of the experiment, the CRCT was applied as a post-test.

Data Analysis

For the analysis of the data, whether the data obtained from the pre-test and post-test of the CRCT were parametric was determined. Shapiro-Wilk test was implemented for this purpose. Then descriptive statistics and one-way ANOVA were implemented for the analysis of the data. In addition, descriptive analyzes were carried out to pre and post-tests in order to determine the understandings the PSTs had. In this regard, the answers of the PSTs were classified as *'Correct Drawings'*, *'Incorrect Drawings'* and *'No Drawings'*, frequency and percentage values were calculated, and incorrect drawings were exemplified.

Findings

Findings were presented in two parts as findings obtained from the implementation of the CRCT as a pre-test and post-test and descriptive analysis of the CRCT.

Findings Obtained from the Implementation of the CRCT as a Pre-test and Post-test

The normality test was applied to determine the appropriate test to be utilized in analyzing the data obtained from the implementation of the CRCT as a pre-test. The Shapiro-Wilk normality test was applied considering the fact that the number of samples was less than 30 in all groups participating in the study. The results of the Shapiro-Wilk test in regard to the CRCT are given in Table 2.

Table 2. The results of the Shapiro-Wilk test in regard to the CRCT

Groups	Statistic	SD	p
CMG	.96	25	.38
COG	.65	23	.25
CG	.97	23	.59

Regarding Table 2, it was determined that data had normal distribution in all groups [CMG (p=.38; p>.05); COG (p=.25; p> .05) and CG (p=.59; p>.05)] in the implementation of the CRCT as pre-test. Therefore, one-way ANOVA from the parametric tests was applied to data obtained from the implementation of the CRCT as a pre-test regarding the fact that the number of groups were three. The descriptive statistics of the data obtained from the implementation of the CRCT as a pre-test is presented in Table 3, and the ANOVA results are presented in Table 4.

Table 3. The Descriptive Statistics of the Data from the CRCT as Pre-Test

Groups	N	X	SD
CMG	25	37.40	18.15
COG	23	42.83	19.88
CG	23	32.83	15.06
Total	71	37.68	18.02

Considering Table 3, it is seen that the group with the highest mean is COG (X=42.83) and the group with the lowest mean is CG (X=32.83).

Table 4. The ANOVA results of the CRCT as Pre-Test

Groups	Sum of squares	df	Mean of squares	F	p
Between groups	1152.94	2	576.47	1.82	.17
Within groups	21588.61	68	317.48		
Total	22741.55	70			

Regarding the ANOVA results presented in Table 4, there was no significant difference among the groups in regard to the CRCT as a pre-test (p=.17; p>.05).

The normality test was applied to determine the test to be used in analyzing the data obtained from the implementation of the CRCT as a post-test. The Shapiro-Wilk normality test was applied regarding the fact that the number of samples was less than 30 in all groups participating in the study. Shapiro-Wilk test results regarding the CRCT are given in Table 5.

Table 5. Shapiro-Wilk test Results Regarding CRCT as Post-Test

Groups	Statistic	SD	p
CMG	.923	25	.06
COG	.915	23	.05
CG	.916	23	.06

Regarding Table 5, it was determined that the data had normal distribution in all groups [CMG (p=.06; p>.05); COG (p=.05; p>.05) and CG (p=.06; p>.05)] in the implementation of the CRCT as post-test. Therefore, one-way ANOVA from the parametric tests was applied to the data obtained from the implementation of the CRCT as a post-test. The descriptive statistics of the data obtained from the implementation of the CRCT as a post-test are presented in Table 6, and the ANOVA results are presented in Table 7.

Table 6. The Descriptive Statistics of the Data from the CRCT as Post-Test

Groups	N	X	SD
CMG	25	71.20	20.38
COG	23	44.57	18.64
CG	23	36.96	22.45
Total	71	51.48	25.18

Considering Table 6, it is seen that the group with the highest mean is CMG (X=71.20) and the group with the lowest mean is CG (X=36.96).

Table 7. The ANOVA results of the CRCT as Post-Test

Groups	Sum of squares	df	Mean of squares	F	p
Between groups	15673.11	2	7836.56	18.57	.00
Within groups	41596.61	68	422.01		
Total	57269.72	70			

Table 7 presented the results of ANOVA indicates that there was a significant difference among the groups in regard to the post-test (p =.00, p<.05). The Scheffe test from multiple comparisons test was utilized in order to determine which groups favored this difference since the variances were homogeneously distributed. The results of Scheffe test are shown in Table 8.

Table 8. The Results of Scheffe Test Regarding the Data from the CRCT as Post-Test

(I) Groups	(J) Groups	Mean difference (I-J)	Standard error	p
CMG	COG	26.64*	5.94	.00
	CG	34.24*	5.94	.00
COG	CMG	-26.64*	5.94	.00
	CG	7.61	6.06	.46
CG	CMG	-34.24*	5.94	.00
	COG	-7.61	6.06	.46

*Shows significance difference.

Table 8 shows that there was a significant difference between CMG and COG in favor of CMG, and between CMG and CG in favor of CMG (p<.05).

Findings of Descriptive Analysis in regards to the CRCT

The data obtained from the implementation of the CRCT as a pre- and post-test were conceptually analyzed. In that regard, the drawings containing the answers given to the pre- and post-test by the PSTs in the experimental and control groups were classified into three groups as *'Correct Drawings'*, *'Incorrect Drawings'* and *'No Drawings'*, and frequency and percentage values were calculated, and those findings were presented at tables for comparison between the pre-test and post-test. The first question of the CRCT is presented in Figure 4.

CHEMICAL REACTIONS CONCEPT TEST

1. A 250mL glass flask is taken and filled with 50 mL of CH_3COOH. Then, 25g of $NaHCO_3$ is added to the glass flask. Glass flask is covered with a plastic balloon.

a. **Before starting the reaction,** show the substances present in the figure on the particle size.

● = CH_3COOH; △ = $NaHCO_3$; ▲ = CO_2; O = H_2O ■ = $NaCH_3COO$

Neglect the air in the glass flask and plastic balloon.
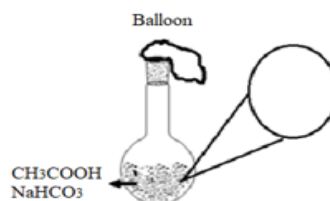
What causes the plastic balloon to swell after the reaction has started? The substances formed when the reaction is complete are given below.

$$CH_3COOH_{(aq)} + NaHCO_{3(s)} \longrightarrow NaCH_3COO_{(aq)} + H_2O_{(l)} + CO_{2(g)}$$

b. **After the reaction is completed,** draw the substances in the parts given with the question mark in the figures. *The reaction is carried out in 100% yield. Neglect the air in the glass flask and plastic balloon.*

● = CH_3COOH; △ = $NaHCO_3$; ▲ = CO_2; O = H_2O ■ = $NaCH_3COO$

Figure 4. *The First Question of the CRCT*

In the first question of the CRCT, a flask containing CH_3COOH and $NaHCO_3$ and attached with a plastic balloon at the head was given. Considering the symbols in part A of the problem, the PSTs were asked to represent the particles of the matter *before* the reaction starts. *The air in the plastic balloon and the volumetric flask has been ignored.* In this part, the PSTs were expected to leave CH_3COOH solution in the volumetric flask as liquid, draw $NaHCO_3$ as solid, and leave empty the plastic balloon. In part B of the question, after the reaction is completed, they were required to represent the matters which occurred after the reaction in the volumetric flask and plastic balloon in particulate level. *It has been stated that the reaction occurred at 100% efficiency.* In this part, CO_2 gas was expected to be drawn into the plastic balloon and $NaCH_3COO$ as liquid state and water (H_2O) were expected to be drawn into the volumetric flask. The second question of the CRCT is presented in Figure 5.

2. A 250mL glass flask is taken and filled with 50 mL of CH_3COOH. Then, 25 g of $NaHCO_3$ is added to the glass flask. Glass flask is covered with a plastic balloon and waiting for a while. A 250mL another glass flask is taken and filled with 50 mL of CH_3COOH. Then, 5 g of $NaHCO_3$ is added to the glass flask. Glass flask is covered with a plastic balloon and waiting for a while. Plastic balloons appear swollen. In the last case, show the amount of matter in both plastic balloons in particulate form. *Neglect the air in the glass flask and plastic balloon.*

● = CH_3COOH; △ = $NaHCO_3$; ▲ = CO_2; ⬤ = H_2O ■ = $NaCH_3COO$

$$CH_3COOH_{(aq)} + NaHCO_{3(s)} \longrightarrow NaCH_3COO_{(aq)} + H_2O_{(l)} + CO_{2(g)}$$

Balloon

Balloon

Addition of 25g $NaHCO_3$

Adding of 5g $NaCO_3$
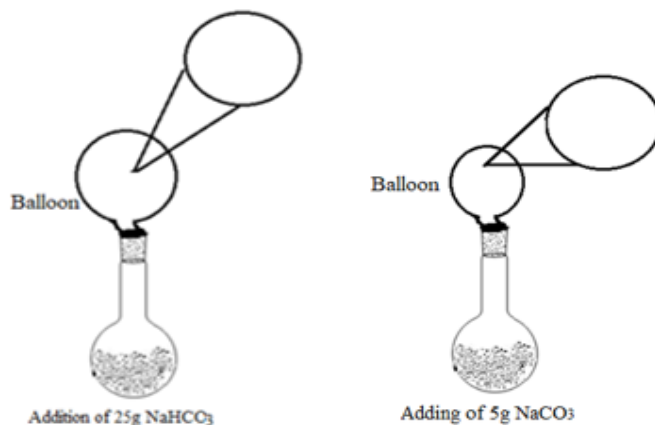
Figure 5. *The Second Question of the CRCT*

In the second question of the CRCT, the amount of CO_2 which was formed as a result of the react CH_3COOH solution with 25g of $NaHCO_3$ and 5g of $NaHCO_3$ was required to be represented in particulate level. In that question, the PSTs were expected to know that the plastic balloon attached to the volumetric flask and containing 25g $NaHCO_3$ should be inflated more and accordingly draw more amount of the particles. Conceptual analysis of answers of the PSTs to the questions was presented. The frequency and percentage values of correct and incorrect drawings of the PSTs for the first question are presented in Table 9.

Table 9. Drawings of PSTs for the First Question

Answers		CMG (n=25)				COG (n=23)				CG (n=23)			
		Pre		Post		Pre		Post		Pre		Post	
		f	%	f	%	f	%	f	%	f	%	f	%
Correct drawing	Part A	3	12	13	52	-	-	4	17.4	1	4.3	1	4.3
	Part B	3	12	17	68	3	13	5	21.7	3	13	6	26.1
Incorrect drawing	Part A	22	88	12	48	23	100	19	82.6	21	91.3	21	91.3
	Part B	22	88	8	32	18	78.3	18	78.3	18	78.3	16	69.6
No drawing	Part A	-	-	-	-	-	-	-	-	1	4.3	1	4.3
	Part B	-	-	-	-	2	8.7	-	-	2	8.7	1	4.3

Table 9 represents that the rate of correct drawing is very low in all groups before the implementation. After the implementation, it was determined that the maximum increase in the correct drawing rate was in CMG whereas the rate of incorrect drawing was still high in the other groups.

Examples to incorrect drawings the PSTs did at the pre- and post-test to the part A of the first question are represented in Figure 6.
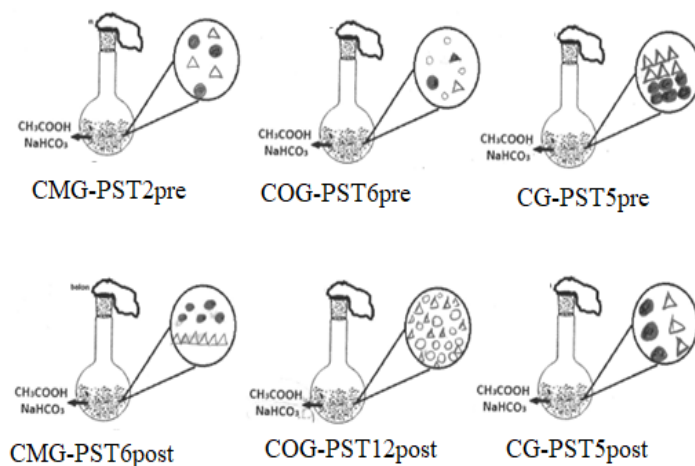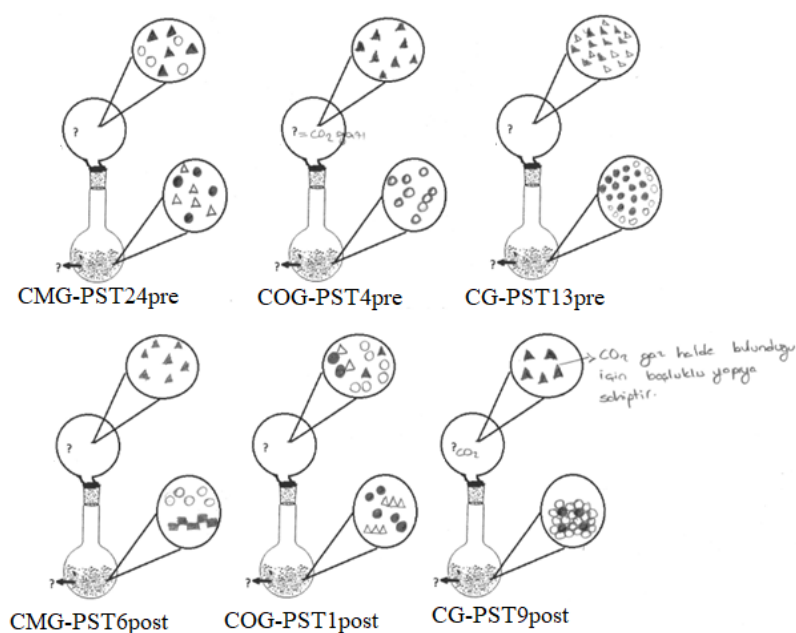

Figure 6. *Incorrect Drawings to the Part A of the First Question*

Figure 6 shows that CMG-PST$_2$ drawed the particles of CH$_3$COOH and NaHCO$_3$ in a highly porous form at pre-test. In the drawing of matters before the reaction, COG-PST$_6$ represented all matters in the flask including the matters formed after the reaction, as well. CG-PST$_5$ drawed particles at pre-and post-test in highly regular and ordered manner. At post-test, COG-PST$_{12}$ drawed the particles of water and NaHCO$_3$ as solution state at the first case. In that regard, it can be stated that some of the PSTs continued to do incorrect drawings at post-test.

Examples to the incorrect drawings the PSTs did at the pre- and post-test to the part B of the first question are presented in Figure 7.

Figure 7. *Incorrect Drawings to the Part B of the First Question*

Figure 7 presents that CMG-PST$_{24}$ and CG-PST$_{13}$ represented other matters apart from CO_2 inside of the plastic balloon at pre-test as well as COG-PST$_1$ represented other matters apart from CO_2 inside of the plastic balloon at post-test. In the given examples, no PST drew $NaCH_3COO$ inside of the flask at post-test except the drawing of CMG-PST$_6$. COG-PST$_4$ represented only the particles of water inside of the flask at pre-test while CMG-PST$_{24}$ did not draw any particle of water at pre-test and COG-PST$_1$ did not draw any particle of water at PST$_{24}$ at post-test. Still, CMG-PST$_6$ and COG-PST$_1$ clearly distinguished the phases and make very regular drawings at the post-test. In Figure 7, it is observed incorrect drawings at post-test, and that students have difficulty in representing the matters formed in the reactions in the particles.

The frequency and percentage values of correct and incorrect drawings of the PSTs for the second question are presented in Table 10.

Table 10. Drawings of PSTs for the Second Question

Answers	CMG (n=25)				COG (n=23)				CG (n=23)			
	Pre		Post		Pre		Post		Pre		Post	
	f	%	f	%	f	%	f	%	f	%	f	%
Correct drawings	1	4	15	60	3	13	6	26.1	2	8.7	3	13
Incorrect drawings	24	96	10	40	18		17	73.9	19	82.6	19	82.6
No drawings	-	-	-	-	2	8.7	-		2	8.7	1	4.3

Regarding Table 10, parallel to the first question, it is seen that the rate of correct drawing is very low in all groups before the implementation. After the implementation, it is determined that the

maximum increase in the rate of correct drawing was in the CMG while the rate of incorrect drawing is still high in the other groups.

Examples to incorrect drawings the PSTs did at the pre- and post-test to the second question are presented in Figure 8.
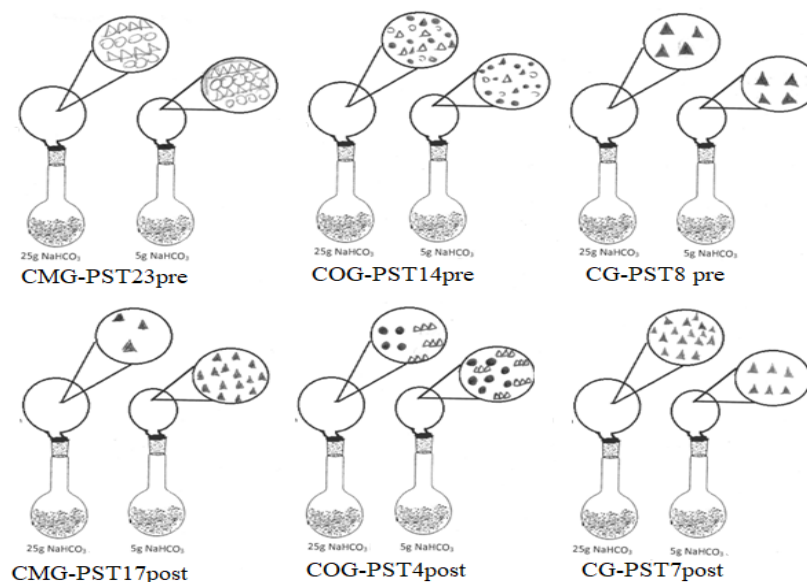
Figure 8. *Incorrect Drawing at the Second Question*

Figure 8 states that CMG-PST$_{23}$ and COG-PST$_{14}$ represented other matters apart from CO_2 inside of the plastic balloon at pre-test as well as COG-PST$_4$ represent other matters apart from CO_2 inside of the plastic balloon at post-test. It is observed that CG-PST$_8$ draw equal amount of particles inside of both plastic balloon at pre-test whereas CMG-PST$_{17}$ draw less number of particles inside of balloon at the first situation. CG-PST$_7$ is observed to represent particles at the second situation in a highly porous and ordered way.

Discussion and Conclusion

Based on the CRCT which was implemented as a pre-test to determine the preliminary knowledge of the PSTs, there was no significant difference among the groups in regard to pre-knowledge before the application ($p > .05$). Thus, it can be concluded that the preliminary learnings of the PSTs are similar before the implementation.

The findings of the CRCT as a post-test implemented to determine the effects of the applied methods on the conceptual understanding after the cooperative and model studies were carried out indicates that there was a significant difference between CMG and COG in favor of CMG and CMG and CG in favor of CMG ($p < .05$). There was no significant difference between COG and CG ($p > .05$). In that regard, it can be inferred that model assisted cooperative learning has a positive effect on understanding gas discharge in chemical reactions. Similar results have been obtained in studies which

investigate the effect of models on chemical reactions in the literature (Chandrasegaran et al., 2009; Jaber & Boujaoude, 2012). Okumus, Cavdar, Alyar, and Doymus (2017b) reported that they did not observed a significant difference in their studies, while it was determined in studies in which various model types of cooperative learning were applied to different chemistry subjects that cooperative learning applied with models generally increase the conceptual understandings (Cavdar & Doymus, 2018; Cavdar et al., 2017a; Okumus et al., 2017a; Warfa et al., 2014). Concepts can be correctly structured in the mind by allowing models to offer first-hand experience of learning, enabling them to embody abstract concepts, and designing by seeing and touching (Adadan, 2014; Wang et al., 2014). This ensures more meaningful and correct understandings. In this respect, it can be stated that the visualizations through models have a positive effect on the PSTs' understanding gas discharge in chemical reactions in this study. Several studies (e.g. Adadan, 2014; Prins, Bulte & Pilot, 2016; Ryoo et al., 2018) have stated that models make the conceptual understandings easier.

However, applying only cooperative learning method alone did not make a meaningful difference in this respect. Unlike the result of this research, it is expressed in the literature that cooperative learning affects conceptual meaning positively on its own (Belge Can & Boz, 2016; Doymus, 2007; Eymur & Geban, 2017; Karacop & Doymus, 2013). The nature of cooperative learning makes it possible for a group to have a "group spirit" in the group where the individuals in the group are both responsible for their own learning as well as for the learning of their group members. Through this "group spirit" together with mutual cooperation, more meaningful learning takes place in a more social environment.

It has been determined that the rate of incorrect drawing is quite high in all groups before the implementation, and that these errors reduced after the implementation. It has been also determined that the most advancement was in CMG. However, based on the post-test data, incorrect drawings continued in all groups. Preliminary learning of PSTs can be the effective factor in this situation since correcting the wrong knowledge was already built in the mind is more difficult than making sense of new knowledge in the mind. This is an indication that the misconstructed concepts in mind are resistant to change. In this vein, many studies have been reported that it is difficult to promote students to change the pre-existing understanding of a subject (Cavdar et al., 2017; Okumus et al., 2017a; Tsai, 1999). The fact that misconstructed concepts in mind are resistant to change can be attributed to the fact that they do not embody abstract concepts in their minds precisely because of the preliminary learning of PSTs, the language they speak in everyday life, and the inability to correctly associate micro, macro, and symbolic levels (Kingir & Geban, 2014; Okumuş & Doymus, 2017; Ozmen, 2011). More meaningful learning can be taken place through using different model types as well as addressing different sense organs like seeing, hearing and feeling.

The most important alternative concepts that can be observed in the drawings of the PSTs related to chemical reactions are as follows*: not drawing the solid, liquid and gas particles correctly in the particle structure, drawing the particles of the liquid and gas matters as particles of the solid matters, not knowing the substances forming as a result of reaction even though the reaction equation is provided, not taking into account water molecules in aqueous solution, reactive matters of input at products*. The alternative concepts in this research overlap with the results of the studies in the literature. Accordingly, many relevant studies have been stated that students and PSTs are forced to think solid, liquid and gas materials as particles (Adadan, 2013; Aydeniz & Kotowski, 2012). In the study of Kimberlin and Yezierski (2016), it was also reported that students have difficulty in understanding the reaction stoichiometry in parallel with the above-identified conceptual error. The alternative concepts of the PSTs about chemical reactions can be continued at the end of the implementation since the application period is not long or different model types are not used together. Thus, the PSTs may not have been motivated to study for two weeks, or modeling studies conducted with molecular models and play-dough may not have made sense for some of the PSTs. In this respect, in the light of the results obtained from the research, it is considered that the applying different models for a longer period of time in order to enhance visually, such as simulation, animation, analogical models which embody abstract situations will be effective in order to provide a conceptual understanding of the chemistry course containing quite abstract concepts.

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The Relationship Between the Time Management Skills and Cyberloafing Behavior of School Administrators: A Quantitative Analysis

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Abstract

The aim of this study is to review the relationship between the time management skills and cyberloafing behavior of school managers. Descriptive survey and relational research models were used in this research. Data was collected from 181 school managers at official elementary schools, secondary schools, and secondary education schools in the district of Nizip in Gaziantep during the 2017-2018 school year. A "Time Management Scale", which looks at time planning, the effective use of time and the dimensions of time traps together with a "Cyberloafing Scale" which is composed of both significant and insignificant cyberloafing dimensions were used as data collection tools in the research. The collected data was analyzed using descriptive statistics and correlation analysis. The research concluded that the better the school managers were at time planning and using their time effectively, the less prone they were of falling into time traps. In other words, the better their time planning and effective use of time, the more their significant and insignificant cyberloafing behavior decreased. As a result of the regression analysis, it was seen that only time traps, among the sub-dimensions of time management, significantly predicted cyberloafing behavior.

Keywords: School manager, time management, cyberloafing

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Introduction

Since ancient times, time has been a concept that scientists have attempted to define and measure. The way a time source is perceived and used varies between cultures and societies. While it is perceived as being a flexible source in traditional communities, in developed communities time slots have been allocated to account for every detail of individual and communal life (Can, 2007). Time is a subject of interest across many fields and has been defined in many different ways based on its characteristics. According to the Turkish Language Association, time is the period through which an occurrence has passed, will pass or is passing. Time is also expressed as being a dimension in which change occurs and as being the period that elapses for a position change to occur during the movement of all of the objects in the universe (Turgut, 2002; Gürbüz & Aydın, 2012). Another definition is that time is a period in which an uninterrupted process occurs, which began in the past, is ongoing in the present, and will continue in the future. We exist in the moment, continue in the process, and hope to experience the next occurrence. Time has also been called an infinite space which fills the universe and events as part of an unstoppable flow, or the entire period given to individuals or a period in which a certain action occurs (Tutar, 2003; Kandemir, 2015; Ataş, 2017; Hacıbalayeva, 2017). Time that is equally distributed to all people, which is extremely valuable, unique and non-storable (Rodoplu, 2001), can also be considered as the period in which an action occurs. If everything that is in motion on earth and in the universe stops, such an environment could be considered as having no concept of time (Karaoğlan, 2006). Einstein's "General Theory of Relativity Theory" has led humans to think about the connection between time and location. According to Einstein's theory, in cases of extreme 'velocity', time slows down.

If it is considered as a process in the execution of a function, both for people and institutional structures, time can be expressed as the process of seizing an opportunity that must be taken, and as a process parameter (Ören, 2016). Unlike other resources, time is a scarce resource that cannot be traded, shared with others, collected, stolen, stocked like a raw material, borrowed or lent, altered, stopped and operated like a machine, produced, replaced when expended, re-experienced, reproduced, renewed, postponed or replaced (Eroğlu & Bayrak, 1994; Tutar, 2003; Harmancı, 2006; Küçük, 2010; Pocket Mentor, 2013; Yurdagül, 2016). As it is such a scarce resource, time also has a quite important role for organizations that play a significant role in modern human life, as well as in the sustainability and modernization process of human life (Çelebi, 2017). Time began to be perceived as a resource that must be managed by managers at the beginning of the 80s (Bülbül, 2014). It is important to fully understand time and its characteristics in order for time to be managed effectively and its value within an organization to be understood. In order for time to be managed effectively, it is necessary to appreciate that time is a unique and irrevocable asset, and one of the most important resources in management processes. However, management of time will not be effective if its importance is not understood (Turgut, 2002). Managers and employees of organizations must therefore be familiar with

the characteristics of time in order to understand and manage it. As time is something that is given by God to all people equally, regardless of wealth, age or sex, it is a gift and a treasure (Yurdagül, 2016).

Gürbüz & Aydın (2012) have stated that there is no way to increase time, as it is a natural resource that applies to everyone equally, and therefore it is important to plan what can be done in the available time, rather than consider how much time there is available. Time management is defined in various ways in the literature: as being the process of applying management tools such as "planning, organizing, executing and controlling" to one's own program so that an individual is able to effectively achieve his/her objectives both in work and social life (Gözel, 2010); the activity of efficiently and effectively using and controlling time (Hacıbalayeva, 2017); effective management of time by people in order to achieve their targets (Marsh-Girardi, 2011); aiming to improve the volume and content of the work performed within a scarce time frame; and the management of oneself by an individual or organization within certain time frames that apply equally to everyone (Kışla, 2017; Tutar, 2003). In fact, time management is merely a tool to systematically arrange the effect of an individual on efficacy (Botha, 2013).

Adair and Adair (1999) stated that the quality of time used is more important than its quantity, and so the main principle is to make the best of time. In this respect, Demir (2016) defined effective time management as "performing the right task, in the right place, at the right time, and in the right way". Time management can be defined as the relationship between five independent variables. These are the tasks of managers, the frequency of tasks, the success rate of tasks, the use of time management techniques, and time management style (Kouali & Pashiardis, 2015). When time management is conducted successfully, sufficient time remains for a person to fulfill his work responsibilities and to pursue a social life and hobbies (Hızırlı, 2012). The aims of time management are the separation of unnecessary tasks, an increase in efficiency, reduction of time taken in the performance of tasks, and execution of quality work within limited time frames (Gözel and Halat, 2010).

An individual might, intentionally or unintentionally, fall into time traps such as inadequate planning, uncertainty, a lack of self-discipline, failure to say no, perfectionism, disorder, the pressure of stress and time, indecisiveness, uncertainty regarding priorities, over self-confidence, excessive paperwork, unexpected visitors and an unhealthy work environment (Scoot, 1997; Adair & Adair, 1999; Tutar, 2003; Harmancı, 2006; Hızırlı, 2012; Pocket Mentor, 2013; Akbeyik, 2013; Akçinar, 2014; Bülbül, 2014; Sevim Kılıç, 2015; Döner, 2016; Demir, 2016). If someone wants to manage time, they can manage it by learning and implementing time management techniques. This is because this is an attainable and improvable system, rather than being an inherent ability (Bayramlı, 2009).

Managers utilize different approaches to the management of time. These are an *orderly life approach* that projects order in both one's business and personal environment (Arkcı, 2014), the *warrior approach* that focuses on the protection of time which an individual allocates to oneself

(Tutar, 2003), the *target identification approach* that favors identification of consistent targets that are in harmony with each other (Arkcı, 2014), the *ABC approach* that involves a well-designed hierarchy of priorities (Akbeyik, 2013) and the *magical tool approach* that references the principle, "Good tasks are performed with good tools" (Ataş, 2017). There are also time management techniques. These techniques are an *awareness of time flow* (Pocket Mentor, 2013), the *preparation of a time report and evening analysis* which identifies the amount of time spent on various tasks (Scoot, 1997), the *priority identification technique* which enables differentiation between urgent and important tasks (Smith; 1998), the *pareto analysis* that is based on the logic that 20% of time spent at work constitutes 80% of results, and 80% of time spent constitutes 20% of results (Scoot, 1997), and the *recognition of energy periods* which focuses on the identification of peak performance times (Adair & Adair, 1999). It is unlikely that managers who manage time well, and who utilize time approaches and techniques to manage time, will fall into time traps. A lack of time management skills in school managers can be considered as one of the main factors that lead to major inefficiencies and ineffectiveness within the context of the school working environment (Botha, 2013). Since technological tools and micro electronic devices consume a lot of time, due to the use of both virtual games and social media, people today complain about the insufficiency of time to invest in human and social capital. In other words, people today waste significant periods of time due to the busy pace imposed by the age of global information and technology (Ören, 2016).

Nowadays, the dependency of people on information technology applications is constantly increasing as a result of innovations and changes that are occurring in the field of technology. In the digital era, technology has a key role worldwide (Demirkan, 2019, pp. 41). Therefore since the second half of the 20th century, the use of computers and the Internet has become obligatory for individuals, and this has expanded even more with the introduction of mobile technologies (Akman and Koçoğlu, 2016). This is particularly due to the spread of Internet access, and consequently an increase has been observed in the Internet use of employees for personal purposes (Blanchard & Henle, 2008, pp.1068). More studies investigating the efficient, conscious and proper use of the Internet are being undertaken along with the rapid escalation in Internet use around the world (Akman, 2016). Even though the Internet is a technological tool that allows for the development of important work opportunities and for improvements in the working efficiency of employees, it can sometimes lead to problems in the workplace (Greenfield & Davis, 2002; Lim & Teo, 2005). Indeed, it is often seen in practice that employees use technology and Internet for personal rather than for business-related purposes, which leads to wastage of labor and time (Lim & Teo, 2005, Ulukapı et al., 2014; Ünalvd.,2015; Candan and İnce, 2016; Serttaş and Şimşek, 2016; Çavuşoğlu & Palamutçuoğlu, 2017; Karataş & Avci, 2017; Karatepe & Güngör, 2017).

As a new method of shirking duties, cyberloafing can be defined as aberrant behavior that leads to the inefficient use of time (Lim & Teo, 2005; Askew et al., 2014), the use of non-business

related Internet for personal purposes rather than for fulfilling the requirements of one's role within working hours, and the unnecessary use of an organization's Internet for personal purposes by surfing irrelevant websites, receiving and sending personal e-mails and using information technology applications beyond their intended use (Lim, 2002; Doorn, 2011; Lim & Teo, 2005; Liberman et. al., 2011; Ulukapı et al., 2014, Serttaş & Şimşek, 2016; Çivilidağ, 2017). The definitions of cyberloafing have some common expressions such as; the performance of an activity within working hours, the voluntary activities of employees, the resulting time wasted, employees that neglect their job, the personal nature of activities, the intended nature of activities, a lack of interest in an employee's job, and even their performance of such activities in line with their own interests (Çavuşoğlu & Palamutçuoğlu, 2017; Karatepe & Güngör, 2017).

Examples of cyberloafing behavior includes surfing non-business related websites, playing online games, conducting online banking transactions, updating personal blog/site information or exchanging non-business related e-mails by using the Internet for non-organizational related purposes during working hours (Örücü and Yıldız, 2014; Karatepe and Güngör, 2017, Şen et al., 2016). In order for these Internet activities to be considered as cyberloafing, they must be performed at work and hinder the employee's work performance (Tan and Demir, 2018). Employees who are engaged in cyberloafing use the information systems, especially the Internet of an organization, in order to consciously shirk their duties (Liberman et al., 2011; O'Neill et al., 2014; Yağcı and Yüceler, 2016; Yıldırım and Karabey, 2017). As technology continues to develop, cyberloafing practices become more complex as mobile tools, such as smart phones, tablets and electronic readers, are added to the Internet facilities of an organization (Kaplan and Öğüt, 2012; İyigün et al., 2014).

Since cyberloafing can result in significant costs to an organization and can have negative effects in terms of that organization and its employees, it is important to identify the underlying causes (Kaplan and Öğüt, 2012). Organizational and non-organizational factors, such as the characteristics of employees (Liberman et al., 2011; Yağcı & Yüceler, 2016), the high-level and intensive use of technology within an organization, the attitude of employees towards their job, employees shirking of their duties due to non-Internet related reasons, a lack of Internet use policies in the work place (Mills et al., 2001; Çavuşoğlu & Palamutçuoğlu, 2017), becoming bored with one's work, the length of working hours, low salaries, dissatisfaction with one's job and a sense of injustice (Garrett & Danziger, 2008; Yağcı and Yüceler, 2016; Salary.com, 2008 as cited in Çivilidağ, 2017), possession of quality information technology tools (Garrett & Danziger, 2008), the length of employment in an organization, executive or non-executive status, and the wage earned (Ugrin et al., 2007), are all factors that might result in cyberloafing.

Cyberloafing has both advantages and disadvantages for an organization. There is no doubt that cyberloafing seems to have quite negative effects for both the institution and the employees

(Karataş & Avci, 2017). Computers and mobile tools are increasingly being used, resulting in an escalation in cyberloafing behavior which negatively impacts on the work performance of an individual by causing a loss of efficiency if not controlled or properly limited (Afacan & Fındıklı, 2016). When employees misuse the Internet for activities such as online games, online shopping, personal investment management, personal e-mail exchanges, chatting or watching media, the time that is required to do their work is wasted (Ugrin et al., 2007). Cyberloafing may therefore cause economic loss, an inefficient use of time and exposure of the organization to legal liabilities as a result of a decrease in productivity (Lavoie & Pychyl, 2001; Lim & Teo, 2005; Liberman et al., 2011; Yağcı & Yüceler, 2016). Actions and applications used to send posts on social media accounts, chat with friends, visit online communities/forums, listen to music, play games, comment on news in sports pages, newspapers, magazines, etc., watch pornography, and check e-mails, which are all referred to as social-purpose cyberloafing behavior, can be regarded as constituting the negative aspects of cyberloafing (Mills et al., 2001; Greengard, 2002; Tan & Demir, 2018).

However, as well as having disadvantages, cyberloafing also has some advantages. While engaging in cyberloafing behavior, employees might review and share opinions on various blogs and online communities related to their institutions. This would allow them to collect new information by joining social networks and utilizing information as organizational information. As a result, interaction-based organizational learning capacity and participative decision-making capacity may be improved. Cyberloafing can be beneficial in developing vocational satisfaction and efficiency by combating employee stress and discomfort (Keklik et al.., 2015; Yağcı & Yüceler, 2016). What is important is the proper use of information systems and the Internet. In other words, the use of information systems and the Internet by employees in the interests of the organization, as well as for individual and occupational development, is one of the advantages of cyberloafing.

Cyberloafing has been classified in various ways by researchers. Lim (2002) categorizes cyberloafing behavior into two areas: browsing activities (surfing on websites that are not related to work but related to sports, investment, entertainment, and news, personal shopping, visiting adult websites (with sexual content)); and e-mail activities (receiving, sending and checking non-business related e-mails). Blanchard and Henle (2008) classify cyberloafing into two groups, the insignificant: (exchange of e-mails by employees within working hours); and the significant (gambling and surfing on adult websites). According to the literature, the generally recognized classification is the one proposed by Blanchard and Henle (2008, pp.1076). Such a classification was therefore used as the basis for this research. Significant cyberloafing includes activities that pose a legal liability for the employer, is detrimental to an employees' efficiency and is excessively time consuming (Ulusoy & Gültekin Benli, 2017). Insignificant cyberloafing behavior generally arises due to other employees, while significant cyberloafing behavior is individual-based (Askew et al.,2014).

Educational organizations are important structures that perform important roles in the social, cultural and economic growth and development of a nation (Akar, 2018, pp.8). Educational institutions make use of technology in undertaking these roles. Educational institutions are among the institutions that have been most affected by information technologies, and also amongst those which use these technologies most frequently. Information technologies are frequently used by teachers and students during educational activities, and are actively used by managers for school-related tasks (e-school, correspondences, staff transactions, etc.). There are significant opportunities for cyberloafing behavior and engagement in personal activities while these tasks are being performed. Within this context, the relationship between the time management skills and the cyberloafing behavior of school managers will be examined in this study. Based on this primary objective, responses were sought to the following questions:

1. At what level do school managers demonstrate their time management skills and cyberloafing behavior?

2. Is there a statistically significant relationship between time planning, the effective use of time, the avoidance of time traps skills, and the cyberloafing behavior of school managers?

3. Are the time planning, effective use of time and the avoidance of time traps skills of school managers significant predictors of cyberloafing behavior?

Methodology

Research Model

Descriptive survey and relational research models were used in this research. A descriptive survey was used to review the demonstrated levels of time management skills and the cyberloafing behavior of school managers, while a relational model was preferred for the examination of the relationship between time planning, the effective use of time, the avoidance of time traps skills, and the cyberloafing behavior of school managers. Studies aimed at collecting data to determine certain characteristics of a group are called descriptive surveys, whereas studies performed to identify the relationship between two or more variables are referred to as relational research (Büyüköztürk et al., 2014).

Study Population and Sample

The population of the study consisted of school managers who were working in schools located in the district of Nizip, in Gaziantep, during the 2017-2018 school year. Considering the small size of the population, and the number of items being evaluated, the entire population was included in the research sample. A total of 181 school managers were involved in the research. Table 1 shows the information relating to the personal variables of the school managers who participated in the research.

Table 1. The Personal Variables of School Managers who Participated in the Research

Personal Variables		n	%
Gender	Male	21	11.6
	Female	160	88.4
Age	20-30	14	7.7
	31-40	86	47.5
	41-50	67	37
	51 or above	14	7.7
Seniority in School Management	1-5	99	54.7
	6-10	38	21
	11 or above	44	24.3
School Type	Kindergarten	15	8.3
	Elementary School	58	32
	Secondary School	51	28.2
	High School	57	31.5
Educational Status	Bachelor's Degree	151	83.4
	Master's Degree	30	16.6
	Total	181	100

According to Table 1, 88.4% (n=160) and 11.6% (n=21) of the participating school managers were male and female, respectively. Distribution based on age shows that 7.7% (n=14), 47.5% (n=86), 37% (n=67) and 7.7% (n=14) of the school managers were within the age ranges of 20-30, 31-40, 41-50, and 51 and above, respectively. 54.7% (n=99) of the managers, which constitute the majority, had a seniority of 1-5 years in management. 8.3% (n=15), 32% (n=58), 28.2% (n=51) and 31.5% (n=57) of the participating managers worked in kindergarten, elementary schools, secondary schools and high schools, respectively. According to their educational status, 83.4 (n=151) of the managers had a bachelor's degree and 16.6% (n=30) had a master's degree.

Data Collection Instruments

Measurement instruments used in the research consisted of three sections: the first section included the personal information of the participants, the second section comprised the time management scale and the third section comprised the cyberloafing scale.

Time Management Scale: Developed by Süsün (2012), this scale consisted of a total of 46 items, and had three dimensions including time planning, effective use of time, and time traps, and was based on a 5 point Likert scale. The internal consistency coefficient of the original scale is 0.78. The internal consistency coefficients of the time planning, the effective use of time and the time traps dimensions of the scale were 0.81, 0.60 and 0.71, respectively. The Cronbach Alpha (α) reliability coefficient was 0.62, 0.82, 0.78 and 0.74 for the entire scale, and time planning, effective use of time, and time traps dimensions, respectively. The score ranges of the scale were as follows: 1.00–1.79 Strongly disagree, 1.80–2.59 Disagree, 2.60 –3.39 I have no idea, 3.40 – 4.19 Agree and 4.20–5.00 Strongly agree.

Cyberloafing Scale: Developed by Örücü and Yıldız (2014), and adapted for school managers by Özdemir and Demir (2015), the cyberloafing scale consisted of 14 items and 2 dimensions as significant and insignificant cyberloafing, and was based on a 5 point Likert scale. In the study by Özdemir and Demir (2015), the Cronbach Alpha internal consistency coefficient was 0.83, 0.78 and 0.72 for the entire scale, the significant cyberloafing dimension and the insignificant cyberloafing scale, respectively. In this study, the Cronbach Alpha internal consistency coefficient was found to be 0.87, 0.83 and 0.78 for the entire scale, the significant cyberloafing dimension and the insignificant cyberloafing scale, respectively. Considering the scores received from the scale, 1.00-1.80 indicated Never, 1.81-2.60 Rarely, 2.61- 3.40 Sometimes, 3.41-4.20 Frequently and 4.21-5.00 Always. The increase in the expression values of the scale from 1 to 5 was interpreted as being a more frequent demonstration of the cyberloafing behavior of the response group (school managers).

Data Analysis

Before analyzing the data, eight scales that were not properly completed, and thus were unsuitable for analysis, were excluded. Extreme values were determined for the data in the data analysis process. All scores were turned into standard Z scores for the determination of extreme values. In normal distribution, 99% of the data has a +3 and -3 standard deviation from the average (Çokluk et al., 2010). However, 13 scales with a standard Z point of over +2.5 and -2.5 were excluded from the data set in order to prevent the analysis results from being over-affected having regard to the number of samples in the research. The kurtosis and skewness coefficients of data were subsequently examined, and it was decided that the data set showed a normal distribution, as the coefficient values were between +1 and -1 and parametric tests were used in the analysis. Data was analyzed using the IBM SPSS Statistics 20.00 package software. In order to identify the perception levels of participating school managers relating to the effective use of time, time planning, time traps, and significant and insignificant cyberloafing mean and standard deviation values were calculated. The mean score ranges of the scales were used to determine which option on the scale corresponded to the scores obtained from the sub-dimensions of scales. Correlation analysis was performed to determine the relationship between the effective use of time, time planning, avoiding time traps skills, and significant and insignificant cyberloafing behavior of school managers. In regard to the correlation coefficient, which is expressed as the level of the relationship between two variables, values that are below 0.30, between 0.30-0.69 and equal to 0.70 or above are considered as low, medium and high levels of relationship, respectively (Çokluk et al., 2010). Therefore, correlation coefficients that were obtained as a result of the analysis were interpreted based on these measures.

Findings

This section comprises the results of the analysis performed to determine the perception levels of school managers, relating to time management skills and cyberloafing, as well as the relationship between variables. The arithmetic means and standard deviation values of school managers relating to the time management scale standard deviation are given in Table 2.

Table 2. The Arithmetic Mean and Standard Deviation Values Relating to Time Management Scale Sub-Dimensions

Sub-Dimensions	$\overline{X}$	Sd
Time Planning	4.12	0.45
Effective Use of Time	4.11	0.39
Time Traps	2.35	0.46

Based on the values in Table 2, the arithmetic mean values of the time management sub-dimensions of school managers were as follows; time planning ($\overline{X}$=4.12), effective use of time ($\overline{X}$=4.11) and time traps ($\overline{X}$=2.35). The perception levels of school managers, relating to time planning and the effective use of time, were within the "Strongly Agree" score range, whereas the perception levels relating to time traps were within the "Disagree" score range.

The arithmetic mean and standard deviation values of school managers relating to cyberloafing scale sub-dimensions are given in Table 3.

Table 3. Arithmetic Mean and Standard Deviation Values Relating to Cyberloafing Scale Sub-Dimensions

Sub-Dimensions	$\overline{X}$	Sd
Significant Cyberloafing	1.88	0.72
Insignificant Cyberloafing	2.57	0.73

It can be seen in Table 3 that the arithmetic mean scores of the cyberloafing sub-scales of school managers were ($\overline{X}$=2.57) for the insignificant cyberloafing and ($\overline{X}$=1.88) for significant cyberloafing sub-dimensions. According to these results, the perception levels of school managers relating to the significant cyberloafing dimension is within the "Rarely" score range, whereas the perception levels regarding insignificant cyberloafing were within the "Sometimes" range.

The results of the Pearson Correlation Analysis that was undertaken to identify the relationship between the time management sub-dimensions (time planning, effective use of time, time traps), and the cyberloafing sub-dimensions, (significant cyberloafing, insignificant cyberloafing) can be seen in Table 4.

Table 4. The Results of the Correlation Analysis of The Relationship Between Variables

Variables	1	2	3	4	5
1. Time Planning	1				
2. Effective Use of Time	.64**	1			
3. Time Traps	-.48**	-.38**	1		
4. Significant Cyberloafing	-.17*	-.15*	.31**	1	
5. Insignificant Cyberloafing	-.14*	-.11	.21**	.65**	1

*p<.05, **p<.01

According to the correlation analysis results seen in Table 4, there was a positive and significant relationship (r=0.64, p<.01) between *time planning* and the effective use of time. Additionally, time planning, time traps (r=-0.48, p<.01), significant cyberloafing (r=-0.17, p<.01) and insignificant cyberloafing (r=-0.14, p<.01) had a negative and significant relationship. In other words, an increase in the time planning skills of school managers enable them to use time more effectively, fall less frequently into time traps and avoid significant and insignificant cyberloafing behavior. *Effective use of time* had a negative and significant relationship with time traps (r=-0.38, p<.01), significant cyberloafing (r=-0.15, p<.01) and insignificant cyberloafing (r=-0.11, p<.01). Managers with a low level of effective use of time skills showed an increased tendency to fall into time traps and to demonstrate both significant and insignificant cyberloafing behavior. As the last sub-dimension of time management, *time traps* have a positive and significant relationship with significant cyberloafing (r=0.31, p<.01) and insignificant cyberloafing (r=0.21, p<.01). In other words, the more likely the managers were to fall into time traps, the greater the increase observed in their significant and insignificant cyberloafing behavior.

The results of multiple regression analysis relating to the prediction ability of school managers' time planning, effective use of time and avoiding time trap skills on their cyberloafing behavior can be seen in Table 5.

Table 5. The Results of Multiple Regression Analysis of the Prediction Ability of School Managers' Time Planning, Effective Use of Time and Avoiding Time Trap Skills on The Managers' Cyberloafing Behavior

Predictor Variables	B	Std. Error	β	t	p
Constant	1.68	.75		2.23	.03
Time Planning	-.05	.14	-.03	-.34	.73
Effective Use of Time	-.03	.16	-.02	-.21	.83
Time Traps	.38	.12	.27	3.22	.00

$R^2_{change}=.086$

According to the multiple regression analysis results in Table 5, it can be seen that the time planning and effective use of time skills of school managers were not significant predictors of cyberloafing behavior, whereas time traps are significant predictors of cyberloafing behavior (β=.27, p<.05). In other words, an incremental increase of 1 unit in time traps, causes an incremental increase of 0.27 units in cyberloafing behavior. Time traps account for about 9% of the variance in the cyberloafing behavior of school managers. The increased risk of school managers falling into time traps leads to an increase in their demonstration of cyberloafing behavior.

Discussion and Conclusion

In research aimed at examining the relationship between the time management skills and the cyberloafing behavior of school managers, levels of time management skills and cyberloafing behaviors were determined, followed by correlation and regression studies performed to identify the relationships between variables.

The research has concluded that perception levels of school managers relating to time planning and effective use of time were within the "Strongly Agree" score range, whereas the perception levels related to time traps were within the "Disagree" score range. According to other research (Dağlı, 2000; Terzi, 2007; Akbaba Altun, 2011; Süsin, 2012; Küçük, 2014; Uyduran, 2014; Özer & Kış, 2015; Kandemir, 2015; Şahin & Gümüş, 2016), the opinions of school managers relating to time management support the findings obtained in this research. In his field research, Şahin (2014) concluded that the opinions of managers on the effective use of time are generally at the "Mostly" level, and managers are seen to be generally careful about using time effectively. Eroğlu and Bayrak (1994) stated that effective time management is necessity for its effective and efficient use, and even though time is important for everyone, it is much more important for managers since time impacts on their decision-making. During school hours, a managers' time does not belong to them because they are required to share their time with their colleagues, students and other stakeholders (Botha, 2013). Therefore, an important responsibility in a managers' organizational life is to manage their time properly, as well as to eliminate problems relating to time and to take control of the time available. All this is possible through effective time management (Yılmaz & Aslan, 2002; Akatay, 2003). As the leader of an educational facility, a school manager must manage time well in order to improve education outcomes (Dağlı, 2000; Küçük, 2014). School managers who cannot manage time effectively and efficiently are likely to experience stress and burnout syndrome during their performance of various roles. This will significantly impact on the quality of educational activities in schools (Özer & Kış, 2015). Using and managing time well is extremely important for educational managers to ensure the effective conduct of their work. Effectiveness and efficiency of educational managers in their working life will have a positive effect on students, teachers and other educational staff (Küçük, 2014).

It is concluded that the perception level of school managers, relating to a significant cyberloafing dimension, was within the score range of "Rarely", whereas their perception level concerning insignificant cyberloafing dimension was within the "Sometimes" range. Similar and supporting findings have been obtained in other research (Ulukapı et al., 2014; Örücü & Yıldız, 2014; Arık, 2014; Keklik, et al., 2015; Yıldız et al., 2015; Sağır & Ateş, 2017; Özdemir, 2017; Ataş, 2017; Çavuşoğlu & Palamutçuoğlu, 2017; Karatepe & Güngör, 2017; Yıldırım & Karabey, 2017; Çivilidağ, 2017; Erkutlu & Özdemir, 2018; Örücü & Aksoy, 2018; Bacaksız et al., 2018). Özdem and Demir (2015) concluded that school managers "rarely" demonstrated significant cyberloafing behavior and "sometimes" exhibited insignificant cyberloafing behavior. In the general evaluation of research results on the subject, it can be seen that employees demonstrate insignificant cyberloafing behavior more often than significant cyberloafing behavior.

According to the findings of another study, the more school managers demonstrate time planning behavior, the more their effective use of time behavior increases. Furthermore, this study indicated that the more managers demonstrated time planning and effective use of time behavior, the less they demonstrated falling into time traps behavior. As a result of Ulusoy's (1996) study on the subject, it was seen that 82.1% of the managers fell into time traps due to a "lack of planning" (Uyanıker, 2014). In some similar studies (Yeşil, 2009; Makenzie (1989, as cited in: Erdul, 2005), it was concluded that purposeless or unplanned work is one of the main reasons for falling into time traps. Andıç (2009) and Türe (2013) suggested that planning is a pre-requisite for the effective use of time, and a lack of time management and time planning increased the possibility of falling into time traps. Time allocation as a concept differs from time management. Time management refers to the intentional preference of performing a certain activity. Time allocation, on the other hand, refers to the reaction to everything based on urgency in the absence of a specific plan (Kouali & Pashiardis, 2015). Therefore, planning time refers to the management of time. Kibar and Yücel (2014) stated that time traps are the greatest obstacles to the effective and efficient use of time, while Özkan (2008) and Akbeyik (2013) have suggested that a good manager must develop personal policies to avoid falling into time traps, and must look for ways to take control of their time.

As an organization, a school requires efficient and effective time management. Therefore, the role of a school manager is especially important (Botha, 2013). As a result of the study, it was found that the significant and insignificant cyberloafing behavior of managers decreased as their time planning and effective use of time behavior improved. Tasks and activities that have became more complex due to changes and developments in the fields of technology, information and communication during recent years have caused managers who perform within limited time frames to feel the pressure of time more intensely. Therefore, this has heightened the importance of time, as well as the effective use of time for organizations and, especially, managers (Akatay, 2003).

As a result of the regression analysis, it was seen that only time traps, among the underlying elements of time management, significantly predicted cyberloafing behavior. Time traps account for 7% of cyberloafing behavior. The results of other research (Genç, 2014; Genç & Aydoğan, 2014; Sağır & Ateş, 2017, Ataş, 2017) also support the findings of this study. Sağır and Ateş (2017) stated that cyberloafing can hinder the effective use of time, since it has a delaying effect within the working environment. Managers must account for virtually every second of their time in order to be successful. Karaoğlan (2006) suggests that time traps can be avoided by managers through the proper and intelligent management of time.

Technology that is not used according to its intended purpose may result in the inefficient use of human resources and time within an organization, and may also result in significant legal problems (Kaplan & Öğüt, 2012). It is now a known fact that cyberloafing is an inevitable and negative form of behavior in organizations that prevents employees from performing their tasks effectively and efficiently. Smart mobile phones, tablets, etc. are increasingly being integrated into daily life and are being more commonly used in the work environment. The use of learning opportunities offered by the Internet in a way that contributes to business life and the establishment of relevant policies by managers in consideration of the aforementioned potential, can be advantageous for organizations (Ulukapı et al., 2014; Karatepe & Güngör, 2017; Yıldırım & Karabey, 2017) Therefore, organizations must establish policies relating to the use of electronic devices. This is a common method for preventing cyberloafing activities, for creating balanced interventions and systems, for research into the effects of cyberloafing on institutional learning, as well as for assessing the motivation and performance of employees (Ünal et al., 2015; Serttaş & Şimşek, 2016; Candan & İnce, 2016). An organization must clearly convey its policies to employees. Managers must also be aware of any legal situations that they may encounter (Karataş & Avci, 2017). Employees who believe that an organization does not have clear policies on the use of the Internet or where, if it does so, it has not been sufficiently explained to them, demonstrate more cyberloafing behavior (Kerse et al., 2017).

It is possible, in accordance with the findings obtained from this study, to make suggestions for both investigators and practitioners. Since time planning and the effective use of time reduce cyberloafing behavior, practical training in time management and the efficient use of technology needs to be provided to school managers. The Ministry of Education must establish technology and Internet use policies, systems and legal sanctions in order to prevent cyberloafing. The individual and the organizational reasons behind cyberloafing behavior of staff at a school should be researched.

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The Effect of Understanding Phrase-Meaning Relationship through Digital Storytelling on Academic Achievement and Retention[1]

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Abstract

The purpose of the current study is to reveal the effect of teaching the phrase-meaning relationship through digital storytelling on academic achievement and retention in teaching Turkish grammar. The study employed the mixed method. In the quantitative part of the study, the factorial design, one of the experimental designs, and in its quantitative part, the case study was simultaneously used. The study group of the current research is comprised of 40 8th grade students attending two different classes. As the data collection tools, a personal information form, an academic achievement test and an open-ended question form (OEQF) and a semi-structured interview form administered to the experimental group students were used. In the analysis of the qualitative data, descriptive statistics such as arithmetic means, standard deviations, percentages and frequencies were used. The normality of the data distribution was tested through skewness and kurtosis coefficients and these coefficients were found to be between +1 and -1. Moreover, the z statistic calculated by dividing the skewness coefficient by its own standard deviation was tested. As an additional proof to the normality of the distribution, Shapiro Wilk test was administered; and the equality of the variances was tested with Levene test. In the within and between-groups comparisons of the pre-test and post-test achievement scores of the experimental and control groups and their retention test scores, two-way variance analysis was used. The data collected through the OEQF and interviews conducted with the experimental group students were analyzed by using the content analysis and descriptive analysis techniques. The current study concluded that the instruction given to the experimental group students for them to understand the phrase-meaning relationship by using the digital storytelling more positively affect the secondary school 8th grade students' academic achievement and retention of what they have learned when compared to the current means of instruction given to the control group students.

Key Words: Digital storytelling, phrase-meaning relationship, elements of a sentence, grammar teaching, academic achievement, retention.

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Introduction

Giving importance to functionality in education will enable students to associate what they have learned with life and make them a part of their lives, which will lead to permanent learning as well as improvement in students' academic achievements. The principle of "relating to life", one of the basic principles of Turkish education, draws attention to training for this purpose. Accordingly, it seems to be important to organize the educational activities by taking into consideration the functionality. For this reason, as in all areas of education, it seems to be good to identify a teaching strategy relying on meaningful learning and relating what has been learned to the real life in grammar teaching. Another issue that should be considered is the necessity of organizing educational and instructional activities by using technology as the effect of technology in our lives increases with each day. In today's world, where we live in close interaction with technology, the materials to be used in educational and instructional settings must meet the interests and needs of the students, address their different senses, and develop them in terms of knowledge, skills and intellectual capacities. Given the delineations above, the importance and necessity of grammar teaching centered on meaning and information technologies become evident.

When how the theories of grammar teaching have been implemented in Turkey is examined, it seems to be clear that the behaviorist approach widely used for many years to make students memorize the structures of the language through repetition did not help them develop their language skills. Moreover, this teaching approach has led students to view grammar as a boring set of rules and to develop a negative attitude towards grammar. With the constructivist language approach, more emphasis is placed on the development of mental skills and social skills as well as language skills and it is aimed to create individuals who are thinking, researching, questioning, and having problem solving skills and also using Turkish properly, beautifully and effectively (Güneş, 2013a, 2013b). As in all areas of education, it is very important to determine a teaching strategy based on comprehension in grammar teaching and through which what has been learned can be related to real life. Given that the constructivist approach aims to promote students' linguistic, mental and social skills, students should be enabled to discover the meanings and functions of information learned; thus, to relate it to the real life by conducting suitable in-class and out-of class activities. In this respect, the constructivist language teaching approach is similar to the functional language teaching approach. The use of methods bringing the functional aspect of grammar to the fore will make it possible to achieve positive and permanent outcomes in grammar teaching (İşcan, 2007). While the competence "communicating in the mother tongue", which should be mastered by every individual, is being defined in the 2018 Turkish Curriculum, the need for understanding and using the language is also pointed out (MEB, 2018). In this connection, we can say it that an approach focusing on comprehending and relating what has been learned to the real life can contribute to the effective occurrence of grammar teaching because as grammar provides the basis for the development of language skills, it must be taught

accurately and effectively. Only considering the form in grammar teaching is not enough for effective teaching to occur. Larsen Freeman (1991, 1997) stresses that in grammar teaching, besides form, meaning and usage should be strongly emphasized; they should be taught in an integrated manner as grammar is a unity of meaningful structures. In other research exploring this issue (Coşkun, 2015; Dalbagno, 2016; Khan, 2007; Kurudayıoğlu, 2014; Larsen Freeman & Anderson, 2013; Nunan, 1998, Şaf, 2010), it has also been argued that grammar teaching centered on meaning and usage as well as form positively affects the learning process.

One of the subjects on which the greatest problems are experienced in grammar teaching is the sentence structure. The main reason behind these problems is teaching the grammar terms corresponding to the elements of a sentence through rote memorization without explaining the meanings of the elements and how they are brought together to create a meaningful unity. However, teaching the grammar subject of sentence structure by focusing on the phrase-meaning relationship will arouse students' interest in the course and allow them to relate what they have learned to the real life. The existing research has revealed that creation of meaning-phrase relationships contribute to the development of students' language skills (Işık, 2012), help them conduct an in-depth analysis of the sentence and determine the meaningful units more accurately (Coşkun, Uysal, & Özkaya, 2017), enable students to explore the deep structure, to establish language-thought-imagination relationship and to uncover the richness of the language (Coşkun, Özkaya, & Uysal, 2017; Özkaya & Coşkun, 2017). Moreover, Polat (2014) emphasized that as in prose writing, in the analysis of the sentences constituting a poem, it is of great importance to create connections between the meaning and structure. In grammar classes directed to teaching sentence structure, focusing only on terms such as subject, verb, object, adverbial clause, indirect object is inadequate in terms of inculcation of linguistic awareness in individuals because language is made up of meaningful units. Individuals who can recognize units carrying primary or secondary meaning can easily detect the subject, object, time, place, means (Coşkun, 2015). The whole of the meaningful elements located in the foundation of a sentence constitutes the deep structure (Hengirmen, 2007). Analysis of the linguistics units in terms of meaning makes it possible to discover the relationships not seen on the surface but found in the deep structure (Üstünova, 2010).

Sentence analysis progressing from meaning to term refers to the exploration of which meaning the elements of a sentence have and from which aspect they complement the sentence and then to the discovery of grammar terms corresponding to these meaningful units. Depending on the meaning they have in a sentence, concepts such as "time, cause, manner, direction, togetherness, means, amount, purpose" correspond to the term "adverbial clause". The meanings expressed by the terms "subject" and "object" in a sentence are "the one affecting" and "the one being affected". The concepts "being directed to, being present and leaving" correspond to the term "indirect object". If the concepts of "being directed to, being present and leaving" are related to place, they can be called

"place" (to cinema, in the wardrobe, from İstanbul, etc.). As the other elements in a sentence are determined by relating them to the verb, the main element "verb" to which other elements are connected is called "heart" on the basis of the meaning it holds (Coşkun, Özkaya ve Uysal, 2017; Coşkun, Uysal ve Özkaya, 2017; Özkaya ve Coşkun, 2017). Progression from meaning to term in sentence analysis makes it possible to comprehend the meanings of the elements making up the sentence as well as to learn the names of the terms corresponding to the elements. A sentence analysis progressing from meaning to term can be exemplified as follows:

Last night / my mother / broke / the vase in the living room.

Time adverbial (the time when the action is done)	*the one affecting*	*heart*	*the one being affected*
Subject (doer, the one that does the action)	*verb* (the verb indicating action done)		*object* (The one being affected from the action of the subject)

As can be seen in the sample sentence given above, students are first made to discover from which aspects of meaning the elements in a sentence complement the sentence and then the grammar term corresponding to the meaningful unit is determined. Through such an approach, while the meaning is brought to the fore to establish and develop language skills, at the same time, students can be trained to answer questions requiring them to find the names of terms in exams. Teaching the subject of sentence structure through progression from meaning to form will enable students to grasp language skills and to establish meaning-term relationship (Özkaya & Coşkun, 2017).

In language classes built on the phrase-meaning relationship, it is important to enrich the instructional environment by using methods and techniques promoting students' in-class interactions and developing their thinking skills. Presentation of the topic through stories from the real life helps students to relate the topic to their own lives. Digital storytelling allows the presentation of a story in a context in such a way as to appeal to different senses, which makes it suitable for the mastery of the phrase-meaning relationship. There are many definitions made for digital storytelling allowing the integration of stories with digital technologies and the presentation of a story in such a way as to cater to different senses. The common aspects of these definitions are that digital storytelling is performed in an interactive digital environment through the presentation of texts, sounds, images and music in the form of short videos (Figa, 2004; Meadows, 2003; Miller, 2004; Ohler, 2006; Tatum, 2009).

Involvement of different senses in the process of learning enhances retention. While establishing the phrase-meaning relationship, students' awareness of the life is also raised as they can see the roles and effects of the meanings possessed by the elements in the real life. In this way, students can detect the elements that make their lives meaningful by observing their surroundings. This fosters students' thinking, questioning and relating skills as well as their observation skills. The use of digital storytelling in education positively affects students' academic achievement and attitudes towards the course (Demirer, 2013; Göçen, 2014; Nam, 2017; Sever, 2014; Yang & Wu, 2012). Yang and Wu (2012) found that digital storytelling method develops students' critical thinking skills. When the relevant literature is reviewed, it is seen that digital storytelling not only enhances students' language skills (Baki, 2015; Balaman Uçar, 2016; Ciğerci, 2015; Çıralı, 2014; Kulla Abbott, 2006; Özer, 2016; Tabak, 2017; Yamaç, 2015), it is also very effective in different disciplines such as physics education (Kahraman, 2013), science education (Torun, 2016; Ulum, 2017), social studies education (Demirer, 2013), fine arts education (Ayvaz Tunç, 2016), values education (Yürük, 2015), pre-school education (Başdaş, 2017; Gözen & Cırık, 2017), adult education (Prins, 2017) and in different populations such as teachers (Gordon, 2011; Karakoyun, 2014), pre-service teachers (Gakhar, 2007; Göçen, 2014; Göçen Kabaran & Aldan Karademir, 2017; Shelton, Archambault, & Hale, 2017; Yavuz Konokman, 2015). However, in the relevant literature, there is no research investigating the effect of digital storytelling on grammar teaching providing the basis for the development of language skills.

When the existing research on grammar teaching has been reviewed, it is seen that meaning-centered instruction and making use of information technologies have led to positive effects on the development of grammar. The limited amount of research focusing on meaning in grammar teaching (Coşkun, Uysal, & Özkaya, 2017; Coşkun, Özkaya, & Uysal, 2017; Işık, 2012; Özkaya & Coşkun, 2017; Polat, 2014; Şaf, 2010; Uysal & Bardakçı, 2014) has pointed out that for permanent learning to occur, students need to internalize what they have learned by relating them to the real life and this is only possible through an approach primarily focusing on meaning and that such an approach can generate positive impacts on the development of students' thinking and language skills. Moreover, in the existing research, making use of information technologies and visual tools in grammar teaching has been found to be to positively affecting students' achievement and attitudes and activation of more than one sense has been found to be leading to increasing retention (Abu Naba'h, 2012; Akbaba, 2007; Akkaya, 2011; Durukan, 2011; Özkoyuncu, 2016; Saeedi & Biri, 2016; Yağcı, 2002).

However, in the relevant literature, no study addressing both meaning and information technologies together has been encountered. The current study seems to be original as it investigates information technologies and meaning in tandem by means of digital storytelling. As it is a two-dimensional study integrating meaning with technology, the current study is believed to make some contributions to the literature.

The purpose of the current study is to elicit the effect of making students understand the phrase-meaning relationship by means of digital storytelling on academic achievement and retention in Turkish grammar teaching.

Within the framework of this general purpose, answers to the following questions were sought:

1. Is there a significant difference between the use of digital storytelling and the current method in the teaching of the phrase-meaning relationship to the middle school eight grade students within the context of teaching sentence structure in the learning area of grammar of Turkish language course in terms of achievement level and retention?

2. What are the misconceptions held by the middle school eight grade students instructed by means of digital storytelling about the phrase-meaning relationship and those of the students instructed by means of the current method?

3. What are the students' opinions about the instruction given through digital storytelling for teaching them the phrase-meaning relationship?

Method

Research Model

In the current study, the mixed method was employed. The mixed method is a research method in which quantitative and qualitative data are collected and analyzed together (Creswell, 2011; Johnson & Onwuegbuzie, 2004; Punch, 2014; Teddlie & Tashakkori, 2015). When the current research is evaluated in terms of the issues important in the determination of which mixed method design to use, in the group of mixed designs in which the quantitative and qualitative data are simultaneously processed, greater priority is assigned to the qualitative data and the quantitative data are embedded into the qualitative design. In the relevant literature, there are many design classifications (Greene & Caracelli, 1997; Johnson & Onwuegbuzie, 2004; Leech & Onwuegbuzie, 2009; Morse, 1991; Teddlie & Tashakkori, 2015). For the design of the current study, the embedded mixed design from the classification by Creswell and Plano Clark (2015) was found to be suitable. This design called the embedded design is used in situations in which a single data set is not adequate; different research questions require different data sets (Creswell & Plano Clark, 2015) and generally for the purpose of supporting the experimental and relational quantitative research with qualitative data (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2014). In the qualitative dimension of the study "the factorial design", one of the experimental designs and in the quantitative dimension, "the case study", were simultaneously used.

The factorial design used in the quantitative dimension is a type of design allowing the simultaneous investigation of the effect of two or more independent variables (factors) on the dependent variable separately and in combination (Balcı, 2004; Büyüköztürk et al., 2014; Christensen, Johnson, & Turner, 2015; Fraenkel & Wallen, 2008). Factorial designs can be classified as between-groups, within-groups and mixed designs (Büyüköztürk et al., 2014). For the current study, from among these factorial designs, the mixed design was selected. In the mixed design, there are at least two independent variables whose effect on the dependent variable is examined. One of them defines different experimental operations and the other defines repeated measurements made at different times (Büyüköztürk et al., 2014; Christensen et al., 2015). In the design used in the quantitative part of the study, students' academic achievement is taken as the dependent variable. The digital storytelling-based instruction applied to the experimental group to teach them the phrase-meaning relationship, the current instruction applied to the control group and the pre-test, post-test and retention test administered at different times are taken as the independent variables of the current study.

The case study design making up the qualitative part of the study is a qualitative approach in which the researcher describes a case or cases by collecting detailed information about a case or cases from multiple data sources such as observations, interviews, documents (Creswell, 2015; Merriam, 2013; Seggie & Bayyurt, 2015). Within the context of the current study, the misconceptions of the experimental and control group students about the subject of the study and the experimental group students' opinions about the effect of the implementation process were examined and these cases were described.

Study Group

The study group of the current research is comprised of the middle school 40 eight graders attending two different classes in a middle school in the city of Mugla within the fall term of 2016-2017 school year. The reason for the selection of eight graders for the current study is that the subject of sentence structure is in the grammar learning area of the Turkish Language course curriculum of eight graders. Students were randomly assigned to the experimental and control groups. Of the participating students, 52.5% (n= 21) are girls and 47.5% (n= 19) are boys.

In the current study, the match between the experimental group and the control group was ensured with the pre-test scores they took from the academic achievement test. In the experimental group, there are 21 (9 girls and 12 boys) and in the control group there are 19 (12 girls and 7 boys) students.

Data Collection Tools

Academic Achievement Test: An academic achievement test was developed by the researcher to measure the participating students' achievement in the subject of sentence structure.

While developing the test, first the Turkish language course curriculum was examined, and the learning outcomes set in relation to the subject located in the grammar learning area were determined. The table of indicators in relation to distribution and content of the subject was formed and in the selection of the questions, the questions asked in the centralized exams of former years and various question banks were utilized. In this way, a total of 35 questions were selected and submitted to the review of three field experts and an educational sciences expert. In line with the feedbacks taken from the experts, some changes were made on the wording of some questions and thus the final form of the achievement test was given. The test was piloted on 50 eight grade students attending middle schools in the city of Muğla in 2015-2016 school year. As a result of this implementation, the KR-20 reliability coefficient of the 35-item test was calculated to be .80. After the piloting, item analyses and test analyses were conducted on the test items. Seven questions were discarded from the test whose item discrimination values were found to be lower than (Rjx) .25 as a result of the calculation of item discrimination index and item difficulty and thus, a final 28-item achievement test was obtained. As a result of the analysis, the KR-20 reliability coefficient of the 28-item test was found to be .83.

The obtained twenty-eight questions substances in academic achievement test subject and measuring the value ranges are shown in Table 1.

Table 1. The Range of Values of the Academic Achievement Test Items and the Subjects Measured by Twenty-Eight Questions

Question	Subject	Difficulty Value	Mean discrimination value	Question	Subject	Difficulty value	Mean discrimination value
1	Subject	.86	.26	15	Divide a sentence into its elements	.62	.52
2	Adverbial clause	.74	.43	16	Verb	.38	.47
3	Sequence of elements	.60	.45	17	Subject	.68	.50
4	The element emphasized in a sentence	.84	.35	18	Sequence of elements	.70	.47
5	Object- Indirect object- Adverbial clause	.82	.24	19	Verb	.56	.27
6	Sequence of elements	.50	.37	20	Object	.70	.39
7	Indirect object	.70	.40	21	The element emphasized in a sentence	.68	.37
8	Subject	.28	.28	22	Divide a sentence into its elements	.54	.50
9	Indirect	.74	.50	23	Adverbial	.76	.42

	object				clause		
10	Subject	.72	.35	**24**	Indirect object	.78	.40
11	The element emphasized in a sentence	.76	.36	**25**	Verb	.54	.43
12	Divide a sentence into its elements	.62	.53	**26**	Object	.48	.52
13	Object	.46	.32	**27**	Divide a sentence into its elements	.62	.43
14	Verb	.78	.39	**28**	Sequence of elements	.70	.51

According to the data in Table 1, the mean item difficulty value (Pj) of the academic achievement test was found to be .64; mean discrimination value (Rjx) was found to be .40. These values show that the academic achievement test is applicable.

Open Ended Question Form: In order to detect the students' misconceptions on the sentence structure and to support the findings obtained from the academic achievement test, an open-ended question form (OEQF) was developed by the researcher. In order to establish the content validity of OEQF, the learning outcomes of the subject of sentence structure in the Turkish Language course curriculum and the explanations made for these learning outcomes were taken into consideration. The questions in OEQF, were prepared in accordance with the stages "understand", "apply" and "analyze" in Bloom's new taxonomy. In this way, while the students' misconceptions about the subject of sentence structure were being determined, they were enabled to use their higher order thinking skills. Three more questions were added to the open-ended question form initially including four questions as a result of the review made by two field experts and one educational sciences expert; thus, the number of the questions in the form increased to seven. The first and second questions in OEQF aim to elicit whether the students can recognize the element emphasized in a sentence. As such, the students were asked to underline the auxiliary element stressed in the first question and to underline the basic element stressed in the second question and to write their names. The aim of the third question is to elicit whether the students have understood the basic elements of a sentence; the aim of the fourth question is to elicit whether they have understood the auxiliary elements of a sentence. To this end, the students were asked to select one of the words given to them and to use it as a subject of a sentence they would create within the context of the third question and as an object of sentence they would create within the context of the fourth question. The aim of the fifth question is to determine whether the students can divide a sentence into its elements accurately. To this end, the students were given two sentences and asked to separate them into their elements. The aim of the sixth and seventh questions is to determine whether the students can generate sentences in compliance with the given sequence of elements. For this purpose, the students were asked in the sixth

question to create a sentence in which the elements are sequenced as "subject-indirect object-object-verb" and they were asked in the seventh question to generate a sentence in which the elements are sequenced as follows "subject-object-adverbial clause-verb".

Student Interview Form: A semi-structured interview form was developed by the researcher to elicit the experimental group students' opinions about the use of the digital storytelling method in the Turkish language course and about the formation of the phrase-meaning relationship. There were six questions in the initial interview form and then on the basis of the feedbacks received from two field experts and two educational sciences experts, three more questions were added, thus the total number of the questions became nine. The questions 1, 2, 5, 6 and 7 aim to elicit the students' opinions about the digital storytelling method. In this connection, the first question was asked to the students to determine how they felt about the method; the second question was asked to elicit their opinions about the effect of the method on achievement; the fifth question was asked to elicit their opinions about whether the method should be preferred to teach grammar subjects; the sixth question was asked to elicit their opinions about whether the method should be preferred to teach Turkish classes and the seventh question was asked to elicit their opinions about whether the method should be preferred to teach different courses. The questions 3, 4 and 8 aim to elicit the students' opinions about learning the subject of sentence structure by bringing meaning to the fore; that is, through the phrase-meaning relationship. In this regard, the third question was asked to determine the effect of bringing meaning to the fore on learning; the fourth question was asked to determine whether what has been learned is related to the real life and the eighth question was asked to determine the difficulties experienced during learning. The ninth question was asked to determine the students' suggestions for different activities to be used during the instruction apart from the ones having already been implemented.

Implementation Process

At the beginning of the study, Muğla Sıtkı Koçman University Ethics Committee Approval was obtained with regard to the implementation process and the data collection tools to be used. Prior to the implementation, the data collection tools developed in the current study were administered to the study group within the fall term of 2016-2017 school year to determine the current state of the students as pre-tests. In the determination of the experimental and control groups, the students' pre-test scores taken from the academic achievement test were taken into consideration and as a result of the independent samples t-test, no significant difference was found between the mean achievement scores of the groups $(t(38)= .17; p> .05)$. The activities and instructions were carried out by the researcher within a four-week period in which according to the curriculum the subject of sentence structure would be taught in the classroom by the teacher. Two class hours each week and thus a total of eight class hours were allocated to the implementation. The reason for conducting the implementation in

this time period is that in the curriculum, this is the period of time allocated to the teaching of the subject of sentence structure. In the control group, the lessons were delivered according to the current curriculum and the instructions given in the teacher's book and the activities in the student's book and in the Education Information Network. As there is no activity in the workbook for general revision, in the fourth week in which the general revision is expected to be done, a group writing activity was performed. There is no difference between the lessons taught in the experimental and control groups in terms of the subject and learning outcomes. The only difference between the two groups is that the activities conducted in the experimental group were directed to teaching of the phrase-meaning relationship by means of digital storytelling which brought meaning to the fore. In the experimental group, the activities were structured on the basis of establishing the phrase-meaning relationship by using cards matching, group writing, acting out and station activities which were designed to reinforce the learning outcomes addressed in the digital stories, to enhance students' in-class interactions and to promote their thinking skills. The activities were sequenced in line with the themes of the digital stories that would be presented in the four-week period. In this way, connections were established between the stories the students watched and the activities they were engaged in, thus, consistency was ensured. After the completion of the implementation, the measurement tools developed in the current study were administered to determine the improvements in the achievement levels of the experimental and control group students as post-tests. Student interviews were conducted following the administration of post-tests with all the experimental group students in the teacher's room. The students were individually interviewed; the questions in the semi-structured interview form developed by the researcher were directed to the students. The students' consents were gained and then the interviews lasting ten minutes on average were tape-recorded. The data that were tape-recorded were coded according to the students' names and entered into computer environment. Four weeks after the completion of the implementation, the measurement tools developed in the current study were administered to the experimental and control group students once more to determine the retention.

Data Analysis

Quantitative Data Analysis: In the analysis of the quantitative data, descriptive statistics such as arithmetic means, standard deviations, percentages and frequencies were used. In the determination of the experimental and control group students, their pre-test achievement test scores were taken into consideration. From parametric tests, the independent samples t-test was used to determine whether there is a significant difference between achievement pre-test mean scores of the groups. Two-way variance analysis (two-way ANOVA for mixed measurements) for between-groups and within-groups comparisons of the academic achievement pre-test, post-test and retention test was used. Prior to the analysis of the data, the assumptions of the two-way ANOVA test were tested. In this regard, first outlier analysis was conducted. In the determination of the outliers, z values ($z < 3$) were calculated. The z values for the academic achievement pre-test were found to be ranging from

1.61 to 2.40; for the academic achievement post-test they were found to be ranging from 1.55 to 1.75 and for the retention test they were found to be ranging from 1.70 from 1.86. The normality of the distribution was tested with skewness and Kurtosis coefficients and these coefficients were found to be between +1 and -1. Moreover, then the z statistic obtained by dividing the skewness coefficient into its own standard error was checked. This value was found to be 1.96 in 95% confidence level, indicating that the distribution is not overtly skewed from the normal distribution (Büyüköztürk, 2016). This value was found to be .52 as the lowest and 1.68 as the highest for the achievement test. Thus, the distribution was accepted to be normal. Moreover, as the additional evidence to the normality of the distribution, Shapiro Wilk test was administered as the sampling size is smaller than 50 (Büyüköztürk, 2016) (pre-test: P experimental= .10, P control= .38, post-test: P experimental = .39, P control = .04, retention test : P experimental= .10, P control = .01 p> .05); it was found that the pre-test, post-test and retention test data of the experimental group were normally distributed while the post-test and retention test data of the control group were not normally distributed. However, when all the methods used to decide on the suitability of the achievement test scores for the normal distribution and the number of the students making up the study group are taken into consideration, the distribution can be considered to be normal. Homogeneity of the variances was tested with the Levene test and the variances were found to be equal for all the variables. Furthermore, how much of the total variance of the dependent variable is explained by the independent variable was tested with the effect size. When the partial eta-squared ($\eta2$) is in the range $.01 \leq \eta p2 < .06$, it shows a small effect size, in the range $.06 \leq \eta p2 < .14$, it shows medium effect size and in the range $\eta p2 \leq .14$, it shows high effect size (Green & Salkind, 2005). The eta-squared values showing the effect size within the current study were analyzed considering these ranges.

Qualitative Data Analysis: The qualitative data of the current study were entered into NVivo 10 program package and analyzed through the content analysis and descriptive analysis techniques. The content analysis technique allows the systematization of the codes obtained through the detailed analysis of the data by converting them into categories and themes (Seggie & Bayyurt, 2015). The descriptive analysis on the other hand allows the presentation of the organized and interpreted data with the support of direct excerpts (Karataş, 2015). Within the context of the current study, the descriptive analysis was conducted by including direct excerpts and then the content analysis was carried out to perform an in-depth investigation of the data presented with the support of direct excerpts, to combine codes, to form themes and categories and to describe the relationships between them. While conducting the content analysis, the inductive method was adopted; the data were coded through an in-depth analysis and then categories and themes were formed by combining the codes. In this way, a categorical analysis was employed in the current study and at the same time, the data were subjected to a frequency analysis based on their frequencies. In the analysis of the data obtained from OEQF, a grading key was constructed showing the correct responses to the questions

asked to the students and how many points should be assigned to each correct unit. According to this key, each of the correct response is to be given one point. The students' responses were assessed on the basis of this key and the total numbers of correct responses of the experimental and control group students to the pre-test, post-test and retention test were determined and interpretations were made on the basis of the correct responses. The main goal of OEQF was to determine the students' misconceptions through the content analysis on the basis of their correct responses and to find their reasons. In the current study, first a table that makes it possible to see the general numbers of the correct answers given by the groups as a whole was constructed. Then, a content analysis was conducted on the students' false answers to determine the reasons behind their misconceptions regarding the subject of sentence structure. From the students' responses to OEQF, pre-test, post-test and retention test, their misconceptions were coded and categorized; both between-groups and within-groups comparisons were made for the obtained findings. The data collected from the semi-structured interviews conducted with the experimental group students were first grouped under the related unit of analysis (question). Then, these codes were combined under certain categories. The units of analysis (questions) for which codes and categories were determined were related to each other according to their contexts; thus, the themes representing the students' opinions were attained. In this way, the coding key including the students' opinions was developed. The codes derived from both OEQF and student interviews were analyzed in relation to their frequencies. In order to establish the reliability of the study, the grading and coding keys and 20% of the data collected from OEQF and student interviews were submitted to review of two field experts. The researcher and the experts' using a same code for the students' statements was considered to be agreement and their using a different code was considered to be disagreement. Thus, the reliability of the analyses conducted was calculated by using the formula [Agreement/(Agreement+Disagreement)x100] (Miles & Huberman, 1994). As a result of this analysis, the current study found that there is no disagreement related to coding and grading keys between the researcher and the experts. The agreement (reliability) was found to be 98.00% and 95.80 between the researcher and the two experts for the data derived from OEQF and student interviews, respectively. The level of agreement for both of the measurement tools was found to be higher than 80%, showing that the coding is reliable (Miles & Huberman, 1994). In the presentation of the qualitative data, the experimental group students were coded as D1, D2, D3…, D21 and the control group students were coded as K1, K2, K3.., K19, and students' statements are directly quoted.

Findings

Findings Obtained from the Academic Achievement Test

Within the context of the current study, it was aimed to determine whether there is a significant difference between the use of digital storytelling and the current method to teach the phrase-meaning relationship within the context of the subject of sentence structure to the middle

school eight grade students in the learning area of grammar of Turkish language course in terms of achievement level and retention. To this end, the achievement test was administered to the students as pre-test, post-test and retention test. The achievement pre-test, post-test and retention mean scores and standard deviations of these scores taken by the experimental and control group students from the achievement test are given in Table 2.

Table 2. The Experimental and Control Group Students' Mean Scores and Standard Deviations of these Scores Taken from the Achievement Pre-test, Post-test and Retention Test

Group	N	Pre-test $\overline{X}$	S	Post-test $\overline{X}$	S	Retention test $\overline{X}$	S
Experimental	21	42.52	20.18	60.66	23.01	61.38	20.90
Control	19	41.47	18.74	55.31	25.31	48.63	27.27

As can be seen in Table 2, while the experimental group students' academic achievement pre-test mean score was found to be 42.25, this mean score increased to 60.66 in the post-test and 61.38 in the retention test. While the control group students' academic achievement pre-test mean score was found to be 41.47, this score increased to 55.31 in the post-test and then decreased to 48.63 in the retention test. Thus, it can be said that the experimental group students' achievement scores increased more in both the pre-test and retention test when compared to the control group.

The results of the two-way ANOVA conducted to determine whether the changes observed in the control and experimental group students' academic achievement pre-test, post-test and retention test mean scores are significant are presented in Table 3.

Table 3. ANOVA Results for the Experimental and Control Group Students' Academic Achievement Pre-test, Post-test and Retention Test Scores

Source of the Variance	Sum of Squares	sd	Mean Squares	F	p	$\eta p2$
Between-Groups	3298.20	39				
Group (D/K)	682.65	1	682.65	9.91	.003	.207
Error	2615.54	38	68.83			
Within-groups	10881.91	66.28				
Measurement (Pre-test-Post-test-Retention)	5770.40	1.60	3475.90	49.69	.000	.567
Group Measurement	698.60	1.60	420.81	6.01	.006	.137
Error	4412.86	63.08	69.95			
Total	14180.11					

*(p< .05)

As can be seen in Table 3, the experimental and control group students' academic achievement test mean scores varied significantly from pre-test to retention test; that is, the common effect of the factors of being in different treatment groups and of repeated measurements on the students' academic achievement was found to be significant (F= 6.01; p< .05). This finding shows that

different instructions given to the experimental and control group students yielded different effects on increasing the students' academic achievement. The effect size is medium ($\eta p2$= .13). Thus, it can be contended that the instruction given to the experimental group students is more effective than the instruction given to the control group students in terms of improving their academic achievement.

Moreover, as can be seen in Table 3, a significant increase occurred in the experimental and control group students' academic achievement pre-test, post-test and retention test scores (F= 49.69; p< .05). This finding shows that there is a statistically significant difference between the experimental group students' pre-test mean score ($\overline{X}$ = 42.52), post-test mean score ($\overline{X}$ = 60.66) and retention mean score ($\overline{X}$ = 61.38). There is also a statistically significant difference between the control group students' pre-test mean score ($\overline{X}$ = 41.47), post-test mean score ($\overline{X}$ = 55.31) and retention test mean score ($\overline{X}$ = 48.63). Thus, we can say that the instructions given to the both groups were effective in improving the students' academic achievement. Here, there is a strong effect for both of the groups ($\eta p2$= .56). However, when the significant difference between the means of the total scores obtained from the experimental and control group students' achievement scores is examined (F= 9.91; p< .05), it is seen that this difference is in favor of the experimental group. The effect size of the between-groups difference is strong ($\eta p2$= .20).

The increases in the experimental and control group students' academic achievement pre-test, post-test and retention test scores can be clearly seen in Figure 1:
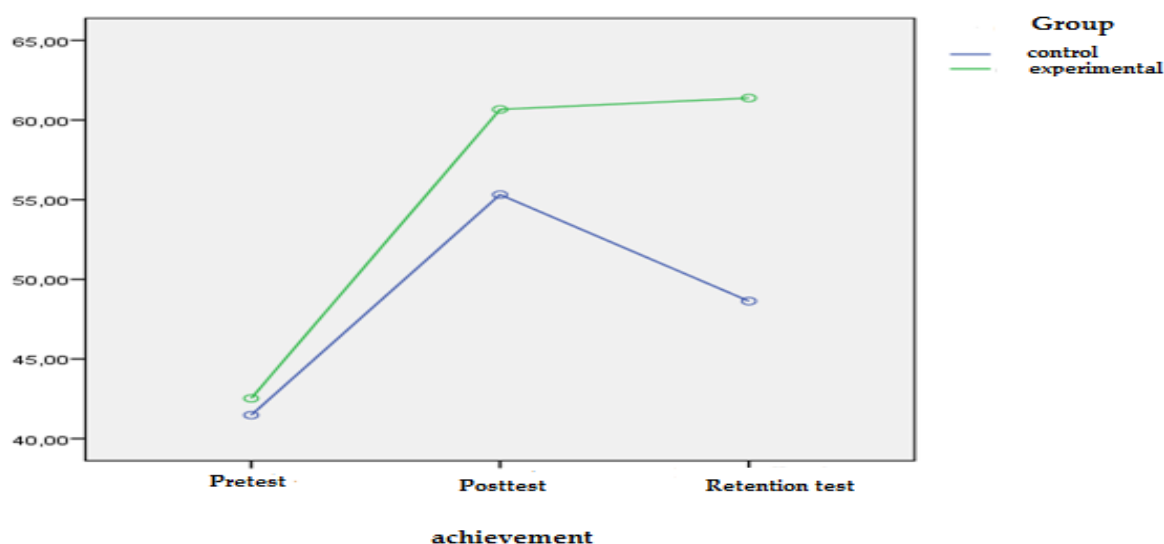

Figure 1. Increases in the Experimental and Control Group Students' Achievement Pre-test, Post-test and Retention Test Scores

As can be seen in Figure 1, the experimental group students' pre-test mean score was found to be 42.52 and the control group students' mean score was found to be 41.47. The post-test mean score of the experimental group students taught the phrase-meaning relationship with digital

storytelling was found to be 60.66 while that of the control group students taught with the current method was found to be 55.31. Thus, the amount of increase in the experimental group students' mean achievement score was found to be 18.14 points, while the amount of increase in the control group students' mean achievement score was found to be 13.84. This shows that the amount of increase observed in the experimental group is higher than that observed in the control group. When the mean scores obtained from the retention test administered four weeks after the implementation were examined, the mean retention score was found to be 61.38 for the experimental group and 48.63 for the control group. This shows that the experimental group students' retention mean score increased by .72 more than their post-test mean score. The scores of the experimental group students consistently increased. This shows that the instruction delivered to the experimental group students through digital storytelling to teach the phrase-meaning relationship results in a long-term positive influence on the students' achievement. The retention test mean score of the control group however dropped by 6.68 points to 48.63 when compared to the post-test mean score. This may show that the current instruction delivered to the control group students to teach the phrase-meaning relationship loses its effect over time. When all the process is taken into consideration, the amount of increase in the mean score of the experimental group students in the period extending from pre-test to retention test is 18.86 points. In the control group on the other hand the amount of increase is 7.16 points. This shows that the instruction given through digital storytelling to teach the phrase-meaning relationship results in a more positive effect on student achievement when compared to the current instruction applied to the control group.

Findings Obtained from the Open-Ended Question Form

In order to determine whether there is a significant difference between the use of digital storytelling and the current method in the teaching of the phrase-meaning relationship to the middle school eight grade students within the context of teaching sentence structure in the learning area of grammar of Turkish language course in terms of achievement level and retention, OEQF consisting of seven questions were administered to the students as pre-test, post-test and retention test. The data obtained from OEQF were analyzed for each individual question and then the codes including the students' misconceptions were constructed. Then a general evaluation was made to compare the misconceptions of the control and experimental group students found in the pre-test, post-test and retention test. The codes created in relation to the misconceptions on the basis of the experimental and control group students' responses to OEQF are presented in Table 4.

Table 4. Codes for the Misconceptions Derived from the Experimental and Control Group Students' Responses to OEQF Pre-test, Post-test and Retention Test

Codes Derived from the Responses to the 1st and 2nd Questions	fd	fk	Codes Derived from the Responses to the 3rd and 4th Questions	fd	fk	Codes Derived from the Responses to the 5th	fd	fk	Codes Derived from the Responses to the 6th and 7th Questions	fd	fk
Underlining the correct element but naming it wrongly	3	7	Using the selected element as a different element	34	22	Taking different elements into the same category and naming them wrongly	26	39	Using the wrong element	32	33
Wrongly indicating the stressed element without underlining any of the elements	3	0				Taking different elements into the same category and not being able to name	0	1	Accepting a single element as more than one element	8	10
Underlining the correct element but not being able to name it	0	2				Wrongly disintegrating into the elements and wrongly naming them	11	18	Not being able to construct a sentence in the correct order	16	6
Underlining the wrong element	10	2				Wrongly disintegrating into the elements and not being able to name them	0	1			
Underlining the wrong element and wrongly naming	3	3				Naming wrongly	22	11			
Underlining the wrong element and not naming	5	4				Not being able to name	5	0			
Taking different elements into the same category and naming wrongly	7	5				Not being able to determine any element correctly	9	3			
Taking different elements into the same category and	5	2									

not being able to name them								
Being able to disintegrate into its elements but not being able to indicate the stressed element	7	12						
Wrongly disintegrating into elements and not indicating the stressed element	4	16						
Total	47	53	34	22	73	73	56	49

In Table 4, the definitions of the codes assigned to the misconceptions determined through the students' responses given to OEQF are presented. The coding of the misconceptions determined for each question can be exemplified on a code for each question as follows: In the 1st and 2nd questions aiming to determine whether the stressed element in the sentence has been understood, the students coded as K9, K18, D17, D21 underlined the correct element as the stressed element in the sentence yet named the element wrongly and in this connection the code "underlining the correct element but naming the element wrongly" was obtained. In the 3rd and 4th questions aiming to determine whether the main and auxiliary elements of the sentence have been understood, the students asked to select one of the words given to them and to make a sentence in which the word is used as the subject "3rd question) and the object (4th question). In the 3rd question, the students coded as K1, K13, D2, D4 used the word they selected as the object instead of the subject and in the 4th question, the students coded as K7, K9, D2, D7 used the word they selected as the subject instead of the object, the code "using the selected word as a different element" was obtained. In the 5th question aiming to determine whether the students can disintegrate the sentence into its elements correctly, the students coded as K2, K4, D1, D5 underlined more than one element thinking that they are the same elements and thus named them wrongly and, in this regard, the code "taking different elements into the same category and naming them wrongly" was obtained. In the 6th and 7th questions aiming to determine whether the students can make sentences according to the sequence of the elements given, the students coded as K5, K11, D7, D10 used an element not present in the given sequence of the elements and thus the code "using the wrong element" was obtained.

As can be seen in Table 4, the total frequencies of the misconceptions derived from the experimental and control group students' responses to the pre-test, post-test and retention test are close

to each other. However, the reason behind this closeness is that the frequencies of the experimental and control group students' not responding are different. While the number of no response by the experimental group students in the 1st and 2nd questions aiming to determine whether the stressed element in the sentence has been understood in only 1, it is 4 in the control group. While the number of no response by the experimental group students in the 3rd and 4th questions aiming to determine whether the main and auxiliary elements have been understood is 3, it is 10 in the control group. While the number of no response by the experimental group students in the 5th question aiming to determine whether the students can disintegrate the sentence into its elements is 78, it is 135 in the control group. While the number of no response by the experimental group students in the 6th and 7th questions aiming to determine whether they can make sentences complying with the given sequence of the elements is 32, it is 65 in the control group. Given the number of no response, it is clear that the control group students' rate of response to the questions in OEQF is lower than that of the experimental group students. As no response cannot be considered a misconception, we can say that though the number of the questions responded by the control group students is lower than that of the experimental group students, they seem to have equal numbers of misconceptions, and thus, it seems that the experimental group students have fewer misconceptions than the control group students.

The experimental and control group students' numbers of correct answers to the OEQF pre-test, post-test and retention test are shown in Table 5.

Table 5. The Experimental and Control Group Students' Numbers of Correct Answers to the OEQF Pre-test, Post-test and Retention Test

	1st question		2nd question		3rd question		4th question		5th question		6th question		7th question		Total	
	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)	C (f)	F (f)
Pre-test																
Ex	7	14	10	11	10	11	14	7	59	109	48	36	47	37	195	225
Con	3	16	4	15	15	4	8	11	42	110	51	25	34	42	157	223
Post-test																
Ex	13	8	13	8	17	4	17	4	118	50	67	17	68	16	313	107
Con	9	10	14	5	14	5	14	5	81	71	58	18	54	22	244	136
Retention test																
Ex	18	3	16	5	18	3	13	8	113	55	71	13	64	20	313	107
Con	11	8	11	8	16	3	15	4	62	90	60	16	59	17	234	146

In Table 5, the experimental and control group students' total numbers of correct and false answers are given for individual questions and in total. In the pre-test, the experimental group students' absolute rate of success was found to be .46 while that of the control group students was found to be .41. From these values, it is seen the absolute rate of success for both of the groups is around .40. When the data obtained from the OEQF pre-test were examined, we found that the number of correct answers to the 1st and 2nd questions, which is in the stage of understand, is smaller than the number of correct answers given to the 3rd and 4th questions related to determination of the elements and 6th and 7th questions related to sentence order, which are at the stage of apply. This might be

because of the students' lack of information about the third learning outcome of the subject of sentence order; that is, determination of the stressed element in a sentence, In the 3rd and 4th questions related to the use of main and auxiliary elements in a sentence, which is covered by the first and second learning outcomes, the students were asked to produce sentences in which the subject would be used as the main element and the object would be used as the auxiliary element. When compared to the other elements of a sentence, the subject and object are elements more frequently encountered by students. The students' previous learnings about nouns and types of nouns may have contributed to their correct answer to this question. As the determination of the stressed element in a sentence is addressed for the first time within the context of the subject of sentence structure, it can be seen as normal for some students' not having information about it. In the post-test and retention test, the number of correct responses given to the 3rd and 4th and 6th and 7th questions was found to be higher than that of the correct responses given to the 1st and 2nd questions. This might be because of the fact that the students have better understood and internalized how to determine the main and auxiliary elements covered by the first and second learning outcomes than how to determine the stressed element covered by the third learning outcome and that they themselves constructed the sentences and could more easily responded to the implementation-oriented questions. Though there is not much difference between the experimental group students' and the control group students' pre-test responses to the 5th question, which is in the stage "analyze", requiring the disintegration of a sentence into its elements, the difference widened in the post-test and retention test. The stage "analyze" is the highest stage in OEQF. In this stage, higher achievement attained by the experimental group than the control group shows that the instruction including the use of digital storytelling is more effective than the current instruction in terms of nurturing students' higher order thinking skills.

As can be seen in Table 5, prior to the implementation, the experimental group's number of correct answers is 195 while the control group's number of correct answers is 157. In the post-test, the experimental group's number of correct answers was found to be 313 in total while it is 244 in the control group. Thus, while the increase in the experimental group students' number of correct answers is 118, it is 87 in the control group. This shows that the number of correct answers in the experimental group increased more than that in the control group. When the numbers of the correct answers found in the retention test administered four weeks after the completion of the implementation were examined, the number of the correct answers in the experimental group was found to be 313, it was found to be 234 in the control group. This shows that there is no decrease in the experimental group students' number of correct answers in the retention test when compared to the post-test. The fact that there is no loss in the number of correct answers in the experimental group indicates that the instruction given through digital storytelling to make the students grasp the phrase-meaning relationship is influential on the long-term retention of the learned information. The number of the control group students' correct answers decreased by 10% to 234 in the retention test when compared

to the post-test. This decrease in the number of the control group students' correct answers may mean that the current instruction delivered to the control group tends to lose its effect in the long-term. When all the process is considered, it is seen that the increase in the number of the experimental group students' correct answers during the period extending from the pre-test to the retention test is 118 while it is 77 in the control group. This shows that the instruction given through digital storytelling for teaching the phrase-meaning relationship is more effective in eliminating misconceptions and retention of the learned information than the current method.

The findings obtained from OEQF support the quantitative findings which show that the experimental group students' academic achievement test scores are higher than those of the control group students.

Findings Obtained from the Student Interviews

In order to elicit the students' opinions about the instruction given through digital storytelling to make the students grasp the phrase-meaning relationship, one-to-one interviews were conducted with the experimental group students (n= 21); nine questions found in the interview form developed by the researcher were directed to the students. The findings obtained from the student interviews are presented below:

When the students' opinions about the feelings aroused by the digital storytelling method (*1st question*) were examined, we found that nineteen students expressed positive opinions, one student expressed negative opinions and one student expressed opinions evaluated in the others category. Some of the positive opinions expressed as follows: (D1): *"I felt happy. The lessons were more enjoyable."*; (D11): *"There was no rule, it was very enjoyable to study in this way, it was not boring. In this way, it was easier for me to remember what I have learned because I could immediately remember the plot of the story. I liked this."*. As a result of the analysis, on the basis of the students' positive opinions, the following codes were reached "enjoyable (f.5)", "interesting (f.3)", "nice (f.3)", "different (f.3)", "more freedom (f.1)", "better retention (f.1)". While most of the students expressed positive opinions (f.19), one student expressed negative opinions as follows (D18): *"In my opinion, it would be better if my teacher told the story himself/herself."* Thus, it can be claimed that the digital storytelling method was found to be inadequate by this student for understanding the subject and this aroused negative feelings on this student. Thus, the code "inadequacy of storytelling" was reached. One student (D17): expressed his/her opinions as follows: *"It is sometimes positive, sometimes negative because when a student feels concerned about an extracurricular issue, nothing makes him/her interested."*. Thus, besides how interesting the method is students' mood during the lesson can be effective in developing positive attitudes towards the course. In this connection, the code "change of mood" was obtained.

When the students' opinions about the effect of the digital storytelling method on their achievement (*2ⁿᵈ question*) were examined, we found that fifteen students expressed positive opinions, while six students expressed opinions considered in the "others category". There is no student expressing negative opinion on this issue (D1): *"I was able to solve more problems; positively affected my achievement.";* (D12): *"It affected positively, I was able to understand how such issues are observed in our life.";* (D19): *"Its effect was nice. As I had fun, I learned better."* As a result of the analysis, on the basis of the students' positive opinions about the effect of the digital storytelling method on their achievement, the codes "learning better (f.4)", "facilitating learning (f.3)", "better retention (f.3)", "increasing achievement (f.2)", "solving more questions (f.1)", "making observation (f.1)" were reached. Though high majority of the students (f.15) expressed positive opinions, two students stated that (D4): *"First I felt a bit confused. After I have understood the subject, I felt better.";* (D15): *"It first made me a bit confused, then I realized that I had understood better."* In light of the opinions of these two students, we can argue that the use of digital storytelling first caused some confusion in the students, thus, made learning more difficult for them; yet, after they had become familiar with the method, it became easier and more convenient for them to learn. On the basis of these opinions, the code "first negative and then positive effect code" was reached. Four students seemed to be of the opinion that digital storytelling had neither positive nor negative effect on their learning by stating; (D1): *"It did not have much effect.";* (D16) *"It did not affect much, in fact.";* (D20): *"In think it didn't change.";* (D21): *"In my opinion, it was the same."* On the basis of these opinions, the code "ineffective" was reached. The students did not express any opinions indicating that digital storytelling negatively affected their achievement.

When the students' opinions about whether they would prefer the digital storytelling method for the teaching of other grammar subjects to be taught in the future (*5ᵗʰ question*) were examined, it was found that 15 students expressed positive opinions, 2 students expressed negative opinions and 4 students expressed opinions evaluated in the category of others. (D1): *"Yes, because it was more enjoyable.";* (D2): *"Yes, I want, it makes it easier to learn.";* (D5): *"Yes, I remember better.".* As a result of the analysis, on the basis of the positive opinions expressed by the students about the use of digital storytelling for the teaching of other grammar subjects in the future, the categories "better understanding (f.8)", "making learning easier (f.5)", "enjoyable (f.2)", "better retention (f.1)" were obtained. While most of the students (f.15) expressed positive opinions, two students (D16, D18): expressed negative opinions about the use of digital storytelling for the teaching of other grammar subjects in the future; yet, they put forward no reason for their negative opinions. On the basis of these negative opinions, the code "not wanting" was obtained. Three students indicated that not all but some of the grammar subjects can be taught with this method by stating (D10): *"It changes depending on the subject to be taught. Some grammar subjects are easier to learn by talking.";* (D17): *"It can be sometimes used for teaching some subjects because if you use it frequently, you can get bored.";*

(D21): *"Some subjects can be taught. For example, it can be good for the teaching of ambiguous sentences. We learn it better."* On the basis of these opinions, the code "partially "depending on the subject)" was obtained. One student (D4): stated *"It does not make any difference. We are studying the same subject in both of the methods."*. On the basis of this opinion, the code "undecided" was reached.

When the students' opinions about whether they prefer to use the digital storytelling method as a method of delivery of Turkish lessons in the future (*6th question*) were examined, it was found that 18 students expressed positive opinions, 1 student expressed negative opinions and two students expressed opinions evaluated in the category of others. Some of the positive opinions are as follows: (D10): *"I want. It is more enjoyable, I can understand better and more easily.";* (D21): *"Yes, the topics related to life can be taught better in this way. We can use it in our daily life, we can learn better."*. On the basis of the positive opinions expressed about the use of digital storytelling in the delivery of future Turkish lessons, the following codes were derived; "better understanding (f.10)", "making learning easier (f.6)", "enjoyable (f.2)", "better retention (f.1)", "relating to life (f.1)". While most of the students expressed positive opinions (f.18), only one student (D16) stated: *"Yes, they can be delivered but some people may not understand like me."*. On the basis of the opinion of this student, the code "not comprehensible" was obtained. Two students on the other hand stated that they prefer its use in the delivery of some lessons but not all and emphasized that for this method to be effective, students' attention is of vital importance as follows; (D17): *"Sometimes. When watched carefully, they can be really good, I think";* (D18): *"It can be in some lessons. When a lesson gets boring, it can be used to arouse students' interest in some part of it."* On the basis of these opinions, the code "partially (depending on students' state of attention/in some part of the lesson)" was obtained.

The students' opinions about whether the digital storytelling method should be used as a method of instruction in other courses (*7th question)* were examined, it was found that 19 students expressed positive opinions and 2 students expressed negative opinions. On the basis of the positive opinions expressed about the use of the digital storytelling method as an instructional method in other courses, the codes "mathematics (f.7)", "science (f.7)", "English (f.7)", "revolution history (f.4)", "social studies (f.2)", "all the courses (f.1)" were obtained. While most of the students (f.19) expressed positive opinions, two students (D18, D20): expressed negative opinions about the use of the method as an instructional method in other courses; yet, they did not provide any reasons for their negative opinions. Thus, on the basis of their opinions, the code "not wanting" was obtained.

When the students' opinions about the effect of teaching the subject of sentence structure by bringing the meaning to the fore through the establishment of the phrase-meaning relationship on their learning (*3rd question)* were examined, it was found that 18 students expressed positive opinions and 3 students expressed negative opinions. Some of the positive opinions are as follows: (D10): *"It made the meaning deeper in the sentence, which somehow made my learning easier.";* (D17): *"It created a*

good effect because we could not remember later when we memorized the questions but now we focus more on meaning, leading to better retention.". As a result of the analysis, the following codes were obtained on the basis of the students' positive opinions about the effect of teaching the subject of sentence structure by bringing the meaning to the fore through the establishment of the phrase-meaning relationship on their learning "making learning easier (f.16)", "better learning (f.2)". While most of the students (f.18) expressed positive opinions, 3 students stated (D1, D16): *"It made me confused.";* (D18): *"It made it more difficult for me."* On the basis of these opinions, the codes "creating confusion" and "making learning more difficult" were obtained.

When the students' opinions about their use of what they have learned in the lessons by relating them to the real life *(4ᵗʰ question)* were examined, it was found that that 17 students expressed positive opinions and four students expressed negative opinions. Some of the positive opinions expressed by the students are as follows: (D3): *"Yes, I can use it. I am observing the environment and questioning the meaning of what I have seen.";* (D5): *"Sometimes. While I am walking, I am making observations.";* (D10): *"Sometimes. For example, when I go to market place, while buying some fruits and vegetables, we must think about weights."* As a result of the analysis, on the basis of the students' positive opinions about the use of what they have learned in the lessons by relating them to the real life, the code "using (f.17)" was obtained. While most of the students (f.17) expressed positive opinions, 4 students (D6, D18, D20, D21) expressed negative opinions about the use of what they have learned in the lessons by relating them to the real life; yet, they did not state any reasons for their negative opinions. On the basis of their opinions, the code "not using" was obtained.

When the students' opinions about the difficulties they experienced during the instruction *(8ᵗʰ question)* were examined, it was found that while only 1 student expressed positive opinions, 18 students expressed negative opinions. Two students on the other hand did not express any opinions. One student stated that he/she did not experience any difficulties related to learning throughout the process (D20): *"All of them were easy, I did not have any."* On the basis of his/her opinions, the code "not having difficulty" was obtained. Eighteen students stated that they had experienced difficulties. Some of the students' opinions about the difficulties experienced as follows: (D1): *"As I was used to the terms, at first I found it strange to use words such as place, time instead of adverb of place and adverb of time.";* (D17): *"I had some difficulties in relation to new names. I had some difficulties as I first tried to memorize them. Then it became easier as I started to understand."* As a result of the analysis, on the basis of the negative opinions of the students, the following codes were obtained "feeling confused in naming (f.8)", "subject-object distinction (f.3)", "adverbial clause (f.2)", "object (f.2)", "passive subject (f.1)", "the distinction between object and adverb of place (f.1)", "being different (f.1)".

When the students' suggestions for the alternative activities aside from the ones having been used in the study *(9ᵗʰ question)* were examined, it was found that while 7 students stated that the activities were enough, 14 students made suggestions for alternative activities. As a result of the analysis, on the basis of the students' opinions, the following codes were obtained; "finding the activities enough (f.7)", "playing games (taboo, silent film etc.) (f.4)", "using sports (f.2)", "making whole class sentence analysis (f.1)", "assigning project works (f.1)", "using tales, jokes and songs (f.1)", "making observations (f.1)", "acting out (f.1)", "shooting a film together (f.1)".

The models representing the students' opinions about the teaching of the phrase-meaning relationship through the use of digital storytelling were drawn in NVivo 10 program package. The models drawn are presented in Figure 2, Figure 3 and Figure 4:
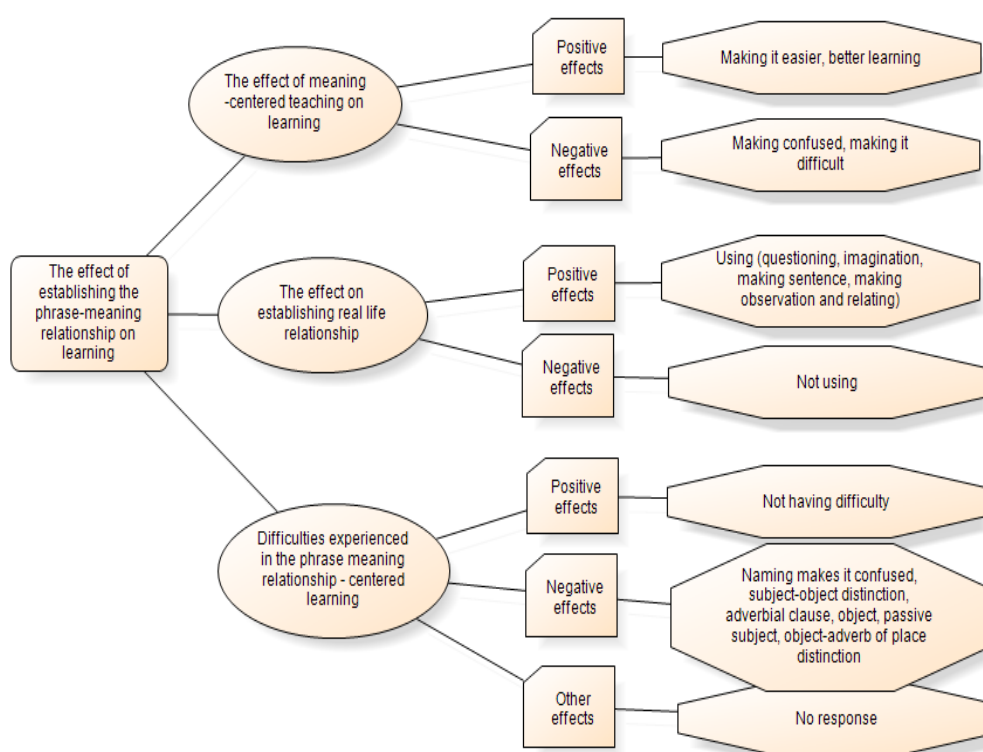
Figure 2. Students' Opinions about the Effect of Establishing the Phrase-Meaning Relationship on Learning
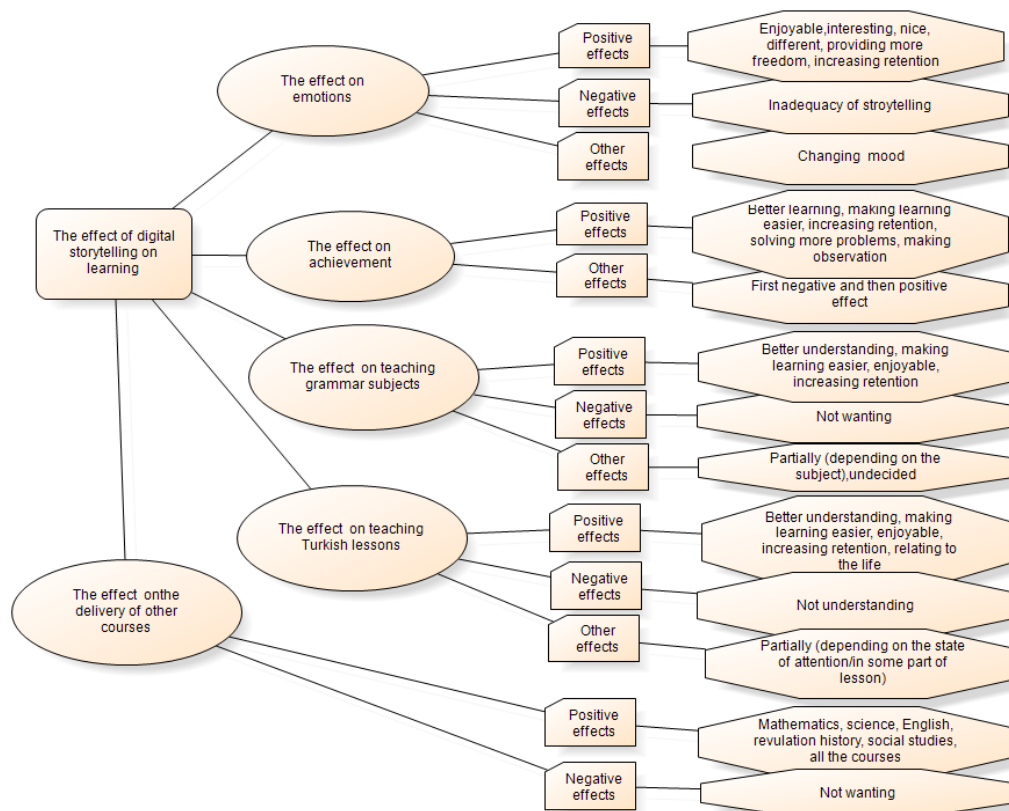
Figure 3. Students' Opinions about the Effect of Digital Storytelling on Learning
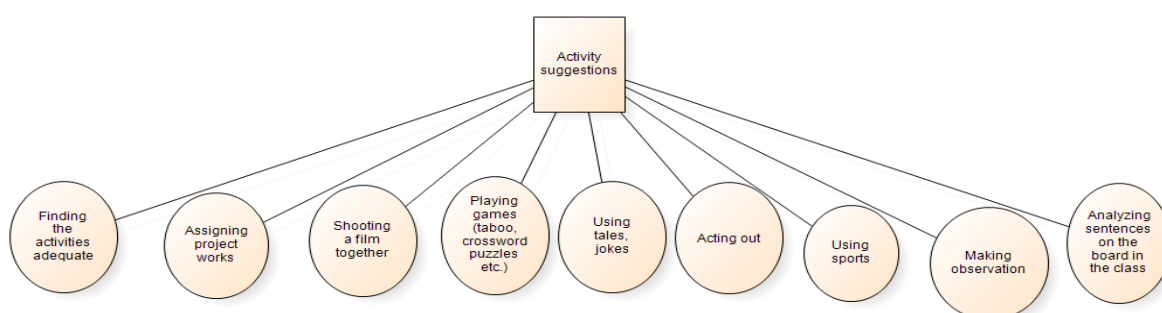

Figure 4. Students' Activity Suggestions

In Figure 2 and Figure 3, codes, categories, analysis units and themes constructed on the basis of the students' opinions are shown. Here, the octagon figure shows the codes; the note card figure shows categories under which the codes are combined; ecliptic figure shows analysis units (related questions) and the rectangle figure shows the themes. In Figure 4, the round figure shows the codes derived from the students' suggestions for activities and the square figure shows the analysis unit (the related question) for which these codes were determined.

When the students' opinions are subjected to a general evaluation, it can be seen that the students have positive opinions in general about both the digital storytelling method and the teaching

of sentence structure by bringing the meaning to the fore through the phrase-meaning relationship; thus, they have developed positive attitudes towards them. Moreover, the students are also of the opinion that digital storytelling and the teaching focusing on making the phrase-meaning relationship understood had positive effects on their achievement. The students' negative opinions did not cover the whole learning process; rather, they experienced problems mostly stemming from their unfamiliarity with this new method. The students stated that their learning became more enjoyable and easier as they solved their problems through relating what they have learned to the real life by conducting implementations and making observations. In general, the students suggested alternative activities that would relate their lessons to the real life. Thus, we can argue that the students' liked the meaning-centered teaching by establishing the phrase-meaning relationship and that they would like more activities from the real life to be incorporated into lessons.

The findings derived from the students' opinions support the quantitative findings indicating that the experimental group students' academic achievement test scores are higher than those of the control group students.

Results, Discussion, and Suggestions

Results and Discussion

The current study aimed to determine the effect of making students understand the phrase-meaning relationship through digital storytelling on academic achievement and retention. The analyses conducted have revealed a significant difference between the experimental group and control group students' academic achievement levels and we concluded that the instruction given to make students understand the phrase-meaning relationship through digital storytelling makes greater contribution to the students' learning than the current method. Similar findings were also obtained from the open ended question form (OEQF) administered to determine the students' misconceptions and to support the findings obtained from the academic achievement test. When the results obtained by the experimental and control groups from the OEQF pre-test, post-test and retention test were examined, we saw that the misconceptions of the control group students decreased more than those of the control group students. This shows that instruction given to make the students understand the phrase-meaning relationship through digital storytelling is more effective than the current method in terms of eliminating the students' misconceptions and retention of the learned concepts. This result obtained from OEQF supports the quantitative findings showing that the experimental group students' achievement test scores are higher than those of the control group students.

The results obtained from the academic achievement test and OEQF show that the instruction given to make the students understand the phrase-meaning relationship through digital storytelling had a positive effect on academic achievement. When the experimental group students' opinions about the effect of the method on their achievement were examined, we saw that the students

most strongly emphasized that the method made better learning possible. The factors making the students believe that the method had positive effects on their learning were stated to be its making better learning possible, making learning easier, enhancing retention, enabling students to relate what they have learned to their real lives and thus enabling them to solve more problems and to make more observations. We think that there are two reasons for this positive effect. One of them is internalization of what has been learned through focus on meaning rather than rote-learning. In the existing research (Coşkun, Özkaya, & Uysal, 2017; Işık, 2012; Özkaya & Coşkun, 2017; Polat, 2014; Şaf, 2010; Uysal & Bardakçı, 2014), the researchers are of the opinion that the traditional approach preferred instead of the meaning-centered approach remains inadequate in fulfilling the objectives set in the program; that grammar teaching focusing on meaning and usage besides form affects the learning process positively; that teaching the subject of sentence structure, which is a source of confusion for many students, as terms used are usually confusing, through an approach involving progression from meaning towards term allows the inculcation of basic and advanced language skills and establishing the phrase-meaning relationship; that making sentence analysis considering the meaning makes it possible to discover the deep structure of a sentence, to establish language-thought-imagination relationship and to uncover the richness of the language. These results reported in the literature support the finding of the current study pointing out that the instruction given to make the students understand the phrase-meaning relationship through digital storytelling is more effective than the traditional method in terms of increasing achievement. One of the reasons for the experimental group students' being more successful than the control group students is the organization of the educational and instructional activities in compliance with the requirements of the age by utilizing information technologies and provision of multi-dimensional learning environment. In other studies (Abu Naba'h, 2012; Akbaba, 2007; Akkaya, 2011; Durukan, 2011; Özkoyuncu, 2016; Saeedi & Biri, 2016; Yağcı, 2002), it has also been revealed that the technology-assisted grammar teaching using visual materials is more effective in increasing academic achievement than the traditional method.

In the current study, in order to make use of information technologies to increase students' interest and achievement, the digital storytelling method, which allows the integration of stories with information technologies and the presentation of the subject within a context of a story in such a way as to appeal to different senses, was used. In research focusing on the use of the digital storytelling method in education, it has been found that this method makes positive contributions to the development of students' academic achievement (Demirer, 2013; Göçen, 2014; Nam, 2017; Özerbaş & Öztürk, 2017; Sever, 2015; Yang & Wu, 2012). This shows that this method is effective in increasing the academic achievement of different groups. Moreover, in this research, we also concluded that the digital storytelling method has some positive effects on the development of language skills (Baki, 2015; Balaman Uçar, 2016; Ciğerci, 2015; Çıralı, 2014; Kulla Abbott, 2006; Özer, 2016; Tabak, 2017; Yamaç, 2015). These findings concur with the finding of the current study

showing that the digital storytelling method is more effective than the traditional method in terms of enhancing the students' academic achievement.

In the interviews conducted in the current study, the students made suggestions for alternative activities that would make relating what had been learned to their real life possible. Thus, it was concluded that the students liked the meaning-centered learning by establishing the phrase-meaning relationship and wanted more activities to be included in classes to relate what had been learned to the real life. The findings derived from the students' opinions support the quantitative findings showing that the experimental group students' academic achievement test scores are higher than those of the control group students.

One of the purposes of the current study is to investigate the retention level. When the experimental group and control group students' achievement scores taken from the pre-test to the retention test were examined, we found that when compared to their pre-test scores, both of the groups increased their post-test scores but this increase also continued in the retention test for the experimental group while the control group students experienced a drop in the retention test. The fact that no decrease was observed in the experimental group students' achievement scores throughout the whole process shows that the instruction given to the students to make them understand the phrase-meaning relationship through digital storytelling has long-term positive effects on the students' achievement. The same hold true for the results derived from OEQF. The instruction delivered to the experimental group students to make them understand the phrase-meaning relationship through digital storytelling seems to be effective in the long-term retention of the learned concepts. During the instruction delivered to the experimental group students, taking meaning to the center and appealing to different senses of students through digital storytelling are factors contributing to the retention of the learned information.

Teaching the subject of sentence structure on the basis of the phrase-meaning relationship makes it possible for students to discover the possibilities of a language and relate what they have learned to the real life. By relating to the real life, students can find opportunities to use what they have learned in their real life; thus, learning becomes more permanent. Khan (2007) stated that teaching grammar rules via the deductive approach enabled the students to get high marks from the exams in the short-term but caused problems as what was thought was not related to the real life. In the current study, the experimental group students stated that they were able to use what they had learned in the real life by questioning, imagining, making observations and relating to the real life. Students' relating what they have learned in the class to the real life by constructing them in their minds is the basic tenet of the constructivist approach. In this regard, the students in the current study were able to relate what they had learned in the class to their real lives as a result of greater emphasis put on meaning and the phrase-meaning relationship in their instruction. Relating what has been

learned in the class to the real life can be made possible by bringing the real life to the class through the practice-oriented activities and technology-enhanced activities such as digital storytelling (Kurudayıoğlu & Bal, 2014). The digital storytelling method allows the presentation of the text enhanced with sounds, graphs, act-outs and music and the creation of a multimedia-learning environment in the class.

A large amount of research has been conducted on the creation of a multimedia environment in education. The dual coding theory developed by Paivio is based on the processing, coding and retention of information according to the structural and functional characteristics of the system of verbal and non-verbal coding. According to this theory, presenting oral and visual content together makes learning more efficient. The use of more than one channel in the coding increases the effect on the permanence of the learning (Aldağ, 2005; Aldağ & Sezgin, 2002). In the research conducted on the subject, researchers have found that the use of information technologies that enable the creation of multimedia in which binary coding is made has a significant effect on academic achievement and retention. In his research on the relationship between the use of information technologies and memory, İmren (2015) found a positive relationship between the use of multi-media and working memory. Çıralı (2014), in his research, concluded that digital storytelling is more effective on the visual memory than on the current teaching, although there is no significant difference. The conclusion that the storytelling method based on information technologies provides a more lasting learning than the current teaching was also reached by Kahraman (2013).

Digital storytelling was created by blending the storytelling method with information technologies. Therefore, the two components have a role in the method's impact on permanent learning. Dağıstan (2015) found that the storytelling method, one of the memory-enhancing strategies, has significantly affected the vocabulary achievement and retention of the learned words. The storytelling method is effective in the realization of permanent learning as it allows the construction and transmission of what is required to be taught within a text context. In language teaching, creation of contexts and making use of texts for this purpose are of great importance. The teaching of grammar within a context and the importance of the quality of the texts to be selected for this purpose have been emphasized in the literature (Çeçen, 2007; Derman, 2008; Şenol, 2013; Kanat, 2016). In the study conducted by Özkoyuncu (2016), it was concluded that the use of information technologies, which is the other component of digital storytelling, increased the retention of the learned information more than the current instruction in grammar teaching.

As a conclusion, the instruction delivered to make students understand the phrase- meaning relationship by means of digital storytelling was found to be more effective in terms of increasing the middle school 8th graders' academic achievement and retention than the current method.

Suggestions

Practice-oriented Suggestions

• Grammar subjects should be taught through enrichment with meaning-centered methods and techniques by relating them to the real life rather than on the basis of abstract rules and students should be encouraged to question what they have learned and to use and relate them to the real life.

• The current research only focused on the phrase-meaning relationship within the context of the subject of sentence structure of Turkish grammar. Other grammar subjects can be taught by relating them to the real life by means of digital storytelling.

• The students were found to have experienced some difficulties in the initial stage of the process as the digital storytelling method used in the process was unfamiliar to them and different from the methods they were used to. Thus, for students to get acquainted to the method, they can be given more time and practice.

• The digital stories used in the current study were prepared by the researcher and shared with the students in the classroom environment. Activities can be organized for students to develop digital stories and present them.

• When the students' activity suggestions for the course were examined, we saw that they mostly suggested activities that would enable them to relate what they have learned to the real life. In this connection, students can be enabled to relate what they have learned to the real life through extracurricular social activities.

Suggestions for Researchers

• In the current study, two 8th classes in Cumhuriyet Middle School in the city of Muğla were selected as the study group. The study group can be expanded by including classes from different schools. In this way, more data can be obtained about between-groups differences.

• The current study investigated the effect of the instruction given to the students to make them understand the phrase-meaning relationship by using digital storytelling on their academic achievement and retention. The effect of the use of meaning-centered instruction and the digital storytelling method on academic achievement, attitude and retention can also be tested within the context of teaching subjects in other courses such as science, social studies, English and history.

• In the existing research, positive effect of the digital storytelling method has been reported on writing and reading skills. In the current study, the effect of the method on grammar teaching providing the basis for all the basic language skills was explored. The effect of this method on speaking and writing kills can be researched.

• A meta-analysis study can be conducted on the effect of the digital storytelling method on the development of language skills.

- Given that the digital storytelling method address many senses such as visual and auditory simultaneously, different methods and techniques can be developed for students experiencing difficulties in relation to one or some of these senses while studying the phrase-meaning relationship.

- Given that the digital storytelling method is interesting and increasing achievement, seminars and in-service training programs can be organized in cooperation with the Ministry of National Education to make this method more widespread among teachers.

- Meaning-centered digital stories directed to teaching of all the subjects and objectives in the curriculum can be prepared and made available to all teachers over a network within a context of a project so that grammar subjects can be related to the real life and taught more easily.

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Word Recognition Levels of First Grade Students: An Application of Word Recognition Inventory[1]

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Abstract

Students are expected to recognize the vocabulary items appearing in a text in order for reading to be meaningful. The evaluation of word recognition is commonly considered in educational applications in order for reading to be meaningful for students and to identify and correct mistakes. This study aims to exhibit the effectiveness of the inventory whose stages of preparation and implementation were process-based and which was developed for word recognition on determining the first graders' word recognition levels. For this purpose, the Type 1 development research type of design and development research model was used to develop an instrument for students' word recognition levels and thus to demonstrate its applicability. The study group was composed of 85 first graders who had been chosen in convenience sampling method. Student Information Form, Word Recognition Inventory-1 (WRI-1) and Word Recognition Inventory-2 (WRI-2) were used as the tools of data collection. Variance analysis (ANOVA) and independent groups t-test were used in comparing the students for WRI-1 inventory which met the conditions for normal distribution whereas Kruskal Wallis and Mann Whitney U-test were used in comparing the students for WRI-2 inventory which did not meet the conditions for normal distribution. Consequently, it was found that the inventories, whose stages of preparation and implementation were process-based and which were developed to determine students' word recognition levels, were effective in determining the primary school first graders' word recognition levels.

Key Words: word recognition, evaluating word recognition, word recognition levels, word recognition inventory, primary school first grade

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Introduction

Word recognition skill is the first step an individual takes to read. It is very important for individuals to recognise words correctly in the process of learning to read; because it is impossible to read without recognising words. Yet, word recognition is not sufficient on its own. It can be said that word recognition is the first stage in making sense of reading.

Oral word recognition is acquired through listening and speaking, and written word recognition is acquired through reading and writing. A written word is recognised with such clues as letters, syllables and pronunciation (Ministry of National Education [MoNE], 2009, p. 16). According to Güneş (2013), "recognising the written words is a critical stage in the process of learning to read. It is impossible to read without recognising the words. The skill of recognising the written words is developed through special work in the process of teaching literacy. First, voices and letters are taught; alphabetical relationships are discovered and gradually syllables and words are recognised" (p. 232). Children who can set up the sound-letter and letter-sound relationships- which is also called an alphabetical principle- do not have problems in forming syllables and then in transition into words. After work on sound awareness comes studies on discovering alphabetical relationships. Oral activities done to develop sound awareness are replaced by written activities in discovering alphabetical relationships. At this stage, we need to form syllables. According to Akyol (2012), "the most important stage in elementary literacy teaching involves forming syllables, forming words by using syllables and then forming sentences by using words. After the two sounds given at this stage, syllables are reached by using the sounds" (p. 101). With the decision made by the council in 2015, the sounds in the sound group of E, L, A and N are taught; and after that, teachers are asked to form meaningful syllables. Each sound given is associated with the previous sound. Thus, it will prepare the ground for the formation of new syllables, the number of syllables will increase in parallel to the sounds given, and the process of forming words will be facilitated. In doing this, teacher have to check whether the previously given sound groups are learnt by students before moving on to the new group of sounds. Otherwise, meaningful words will not be derived from the syllables formed, and reading will not be meaningful for children. Teachers should take special care that the words made from the syllables are meaningful. Meaningful words will facilitate children to attach meaning to reading, and thus it will assure that they progress in the way to become good readers. Whether they can make sense of reading or whether they become good readers can be found through evaluation activities.

Evaluating Word Recognition

We need evaluation activities to find at what stage of reading and comprehending we are. Alternative evaluation applications in addition to traditional evaluation applications are also used in evaluating reading in constructivist mentality. Accordingly, a series of evaluations leading to more

determinant teaching beyond large-scale evaluations indicating children's instant achievement are available (Akyol, Yıldırım, Ateş et al., 2014, p. 2). Information on the process of reading can be obtained by assessing students' reading performance through formal and informal evaluation instruments. Formal evaluation instruments are the instruments containing several sub-tests whose validity and reliability have been tested and which are based on the principle of evaluating in groups which were formed according to a norm. Informal instruments of evaluation, on the other hand, are the instruments evaluating students according to their own performance and consequently informing us of their reading process in detail (Kretschmer and Kretschmer, 1978; McLoughlin and Lewis, 2004; Richek, Caldwell, Jennings, Lerner, 2002; Uzuner, 2008; Karasu, 2011). It is recommended that formal and informal measurement instruments be used together in order to be able to observe progress in students' reading skill and to be able to evaluate both the outcome and the process. Accordingly, such instruments as observation, interview, self-evaluation, product file and informal reading inventory enabling one to analyse students' oral and written performance in various ways can be used in assessing reading (Cooter and Flynt, 1996; McLoughlin and Lewis, 2004; Uzuner, 2008, Karasu, 2011).

Reading levels for students' performance can be determined in three critical areas in evaluating reading. They are word recognition, fluency in reading and comprehension (Akyol, Yıldırım, Ateş et al., 2014, 3). Students' progress in those critical areas can be observed through information obtained for their reading performance in reading inventories. Considering the fact that one of the factors for reading to become meaningful is word recognition, it would be more appropriate to give word recognition inventories to students prior to giving them reading inventories. It can be done through the "Word Recognition Inventory" developed as a measurement instrument which was prepared as suitable to the purpose of evaluating word recognition in terms of analysing the process as well as the skill.

Word Recognition Inventory

Children should face as many words as possible in the first and second grades so that word recognition can become automatic very soon. Word Recognition Inventory (WRI) is an informal evaluation instrument in which lists containing words in simple forms are available (Avşar Tuncay, 2019). According to researchers, individuals become successful readers if word recognition develops at earlier ages (Torgesen, 1986; Harris and Sipay, 1990; Akyol, 1998; Garnett, 2011; Snow, Burns and Griffin, 1998; Rayner, Foorman, Perfetti et al., 2001; Goodman, 1967). Following sound teaching in the first grade in primary schools, syllables are formed and then words are formed from the syllables. It is expected in word formation that the words made are meaningful. It is extremely important for teachers to determine students' levels of word recognition and to select texts accordingly. Therefore,

individual instruments are needed to determine students' word recognition levels. WRI is an evaluation instrument developed by Avşar Tuncay (2017) so as to help teachers evaluate students' ability to recognise and make sense of the words belonging to sound groups in the word lists. WRI-1 contains words made with 6 levels of sound groups used in the first grades in primary schools in 2016-2017 academic year. WRI-2, on the other hand, contains words appearing in Turkish, Life Sciences and Mathematics course books recommended by the Ministry of National Education for use in primary schools. WRI-1 contains 64 lists each of which contains 20 words written in italics and WRI-2 contains 34 lists each of which contains 20 words which appear in course books and students learn in classroom applications even though they do not know how to read; and thus, the two inventories together contain 98 lists. The inventories were thought to use in evaluating the first graders' word recognition skills during formal education and in selecting reading passages suitable to students' individual needs.

Determining Word Recognition Levels

The term reading level was first used by Betts (1946) in the book "Foundations of Reading Instruction". In the above-mentioned book, Betts distinguishes four different levels of reading. They are labelled as independent, instructional, frustration and maximum reading levels. Of them, maximum reading level is the level which students who can answer the comprehension questions by 75% by listening to others attain and in which only listening skill is measured. According to Betts, a student attains independent reading level if he/she can comprehend by 90% and can recognise words by 99%. Students who are at the level of instructional reading can comprehend by 75% and can recognise words by 95%. They are at the level of frustration if they can comprehend less than 50% and can recognise less than 90% of the words (Stange, 2013). A reading inventory is a test for determining individual reading level which help teachers make instructional decisions and which can be used with people of any age. The percentages of reading levels forming the basis for reading inventories differ according to the number of words included in word recognition lists. Graded word lists in the classroom Reading Inventory start with beginner level and continue up to the level of frustration. It means that a person will continue reading until he/she reads 5 out of 20 words incorrectly (Silvaroli and Wheelock, 2011). The Basic Reading Inventory, however, contains word lists starting with pre-primer level and continuing up to level 12. The criteria for evaluating word recognition lists distinguish four levels labelled as independent, instructional, instructional-frustration and frustration. The stages for determining the levels are as in the following: a student who can read 19 out of 20 words correctly is at the level of independent reading, a student who can read 16-18 words correctly is at the level of instructional reading, a student who can read 15-14 words correctly is at the level of instructional-frustration level, and finally, a student who can read 13 words or fewer than that correctly is at the level of frustration (Johns, 2016). The word lists available in Ekwall/Shanker Informal

Reading Inventory and Analytical Reading Inventory are composed of lists of 20 words of different forms between level 1 and level 11. Evaluation is made at three levels of word recognition determined with percentages according to grade levels 3-12 by Powell (1970). Accordingly, 99% and above are the level of independent reading, 95% and above are the level of instructional reading, and 90% and below are the level of frustration . Informal Reading Inventory developed by Roe and Burns uses the same levels of reading; but there are changes in the percentages at grade levels 1 and 2. Thus, 95% and above indicate the level of independent reading, 85% and above indicate the level of instructional reading and below 85% indicates the level of frustration in those grade levels. It was found that the same percentages were used in Ekwall/Shanker Informal Reading Inventory developed by Shanker and Cockrum (2014) and in Analytical Reading Inventory developed by Woods and Moe (2011). This current study aims to reach the information indicating the independent, instructional and frustration levels in relation to students' levels of word recognition with percentages modified by Roe and Burns (2007) on the basis of Powell (1970) by using the word lists available in WRI-1 and in WRI-2.

Method

This study develops an instrument for determining students' word recognition levels and uses Type 1 development research type of the design and development research model to exhibit the applicability of the instrument. Type 1 studies are also called "product and instrument research", and they aim to develop a product or an instrument or to test it. Product and instrument development process contains three stages in Type 1. The stages are labelled as the stage of analysis, the stage of product development and the stage of evaluating the final product (Mutlu, 2016, p. 54). The product to be developed to solve the problem, the properties that the product should have, how to use the product and what it should be like and finally testing the product are determined in accordance with stakeholders' and experts' opinion by considering the relevant literature (Büyüköztürk, 2016, p. 229-230).

What is specific to design and development research is to develop vehicles and models to support education in the long term (McKenney and Reeves, 2013, p. 139). In addition to the knowledge it generates, the value of design and development research in education is measured through the applicability of the developed instrument in education Design-Based Research Collective, 2003, p. 5). The fact that the detailed documentation of the stages of design and development for the inventories developed are available and the structure of this study- in which the applicability of the inventories whose validity and reliability are tested is tested and evaluated- are consistent with Type 1 "product and instrument research" type.

The Study Group

The study group for the research was composed of 85 primary school students who were the first graders in three state school located in Ankara who were chosen through convenience sampling. The socio-economic status was taken into consideration in the selection of the schools, and thus diversity was obtained in word recognition levels. An examination of demographic information concerning the participants demonstrated that 44 of them (51.8%9 were female whereas 41 (48.2%) were male. As to their age, it was found that 1 of the participants (1.2%) was 65 months old- who did not have the obligation to start school and who could start school upon the written request of parents, 13 of them (15.3%) were 69-71 months old- who had the right not to start school with medical report and 71 (83.5%) were 72-85 months old- who had to start school. According to the variable of socio-economic status 23 of the students (27.1%) attended primary school A having high socio-economic status while 34 of them (40%) attended primary school B having medium socio-economic status and 28 (32.9%) attended primary school C having low socio-economic status. According to whether or not they received pre-school education, it was found that 77 students (90.6%) had received pre-school education but that 8 (9.4%) did not receive pre-school education. According to the type of pre-school the participants attended, it was found that 36 of them (42.4%) went to a kindergarten, 41 (48.2%) went to a day nursery and a kindergarten and that 8 (9.4%) did not go to a pre-school institution.

Data Collection Tools

The data collection tool- whose stages of preparation and evaluation were process-based, which was developed and implemented to determine the first graders' word recognition levels- contained three parts. Part one contained a personal information form developed by the researchers. It required such information as participants' name-surname (nickname), school, grade level, age (in months), gender, whether they had received pre-school education, if so, what type of pre-school institution they had gone to, their mother's educational status, their father's educational status, their mother's job, their father's job and their parents' life styles.

Part two of the data collection tool included WRI-1 and WRI-2 to determine students' word recognition levels. WRI-1 contained 1 list at level 1 in the sound group of E, L, A, N; 5 lists at level 2 in the sound group of İ, T, O, B, U; 12 lists at level 3 in the sound group of K, I, R, Ö, S, Ü; 15 lists at level 4 in the sound group of M, D, Ş, Y, C, Z; 16 lists at level 5 in the sound group of Ç, G, P, H; and 15 lists at level 6 in the sound group of F, V, Ğ, J- thus, 64 lists in total. WRI-2 did not contain word lists at levels 1 and 2. Vowel letters are completed at level 2 in the programme. Therefore, several words in Life Sciences, Turkish and Mathematics course books recommended for use in primary schools were the words that could be formed with the sound groups at level 3 and above. For this reason, forming words beginning with level 3 was preferred. Consequently, WRI-2 contained 5 lists at

level 3 in the sound group of K, I, R, Ö, S, Ü; 15 lists at level 4 in the sound group of M, D, Ş, Y, C, Z; 8 lists at level 5 in the sound group of Ç, G, P, H; and 6 lists at level 6 in the sound group of F, V, Ğ, J- thus, 34 lists in total.

Findings

98 word lists in total which were included in WRI-1 and WRI-2 were given to 85 students at certain intervals and the students were asked to read them, and thus the application process was completed. The findings concerning the word recognition levels of the first graders to whom WRI-1 and WRI-2 were administered are presented in this section of the study. Accordingly, the students' word recognition level will be 95% if they can completely read 19 out of 20 words included in the word lists- which will indicate that they are at the level of independent reading. Students who are at the level of instructional reading can read 3 out of 20 words at the maximum- which shows that they have achievement of 85% and above. The number of words that students who are at the level of frustration cannot read is very big and it means that they can make reading mistakes in more than 3 out 0of 20 words. This result shows that such students can achieve success at a rate below 85% (Roe and Burns, 2007, p. 3). Each word the participant could read correctly was coded as 1 while each word they read incorrectly was coded as 0, and their levels of word recognition were identified according to the number of words they were able to read correctly.

The total number of words included in WRI-1 was 64 and the number of words included in those lists was 1280. Table 1 below shows the word recognition levels of the first graders who read the word lists included in WRI-1 at six Levels.

Table 1. The students' word recognitions levels for 6 levels in WRI-1

	Level 1 word lists		Level 2 word lists		Level 3 word lists		Level 4 word lists		Level 5 word lists		Level 6 word lists	
Levels of word recognition	N	%	N	%	N	%	N	%	N	%	N	%
Independent	8	9.4	1	1.2	1	1.2	7	8.2	13	15.3	11	12.9
Instructional	17	20	19	22.4	22	25.9	38	44.7	53	62.4	44	51.8
Frustration	60	70.6	65	76.4	62	72.9	40	47.1	19	22.4	30	35.3
Total	85	100	85	100	85	100	85	100	85	100	85	100

According to Table 1, 8 students (9.4%) are at the level of independent reading, 17 students (20%) are at the level of instructional reading and 60 students (70.6%) are at the level of frustration in the word lists at level 1; 1 student (1.2%) is at the level of independent reading, 19 students (22.4%) are at the level of instructional reading and 65 students (76.4%) are at the level of frustration in word lists at level 2; 1 student (1.2%) is at the level of independent reading, 22 students (25.9%) are at the level of instructional reading and 62 students (72.9%) are at the level of frustration in word lists at level 3; 7 students (8.2%) are at the level of independent reading, 38 students (44.7%) are at the level of instructional reading and 40 students (47.1%) are at the level of frustration in word lists at level 4; 13 students (15.3%) are at the level of independent reading, 53 students (62.4%) are at the level of instructional reading and 19 students (22.4%) are at the level of frustration in word lists at level 5; and 11students (12.9%) are at the level of independent reading, 44 students (51.8%) are at the level of instructional reading and 30 students (35.3%) are at the level of frustration in word lists at level 6.

The number of lists in WRI-2 was 34 in total and the number of words in the lists were 680 in total. Table 2 below shows the word recognition levels of the first graders who read the word lists included in WRI-2

Table 2. The students' word recognitions levels in WRI-2

	Level-3 word lists		Level-4 word lists		Level-5 word lists		Level-6 word lists	
Levels of word recognition	N	%	N	%	N	%	N	%
Independent	54	63.5	40	47.1	29	34.1	36	42.4
Instructional	25	29.4	34	40	48	56.5	39	45.9
Frustration	6	7.1	11	12.9	8	9.4	10	11.8
Total	85	100	85	100	85	100	85	100

A close examination of Table 2 shows that 54 students (63.5%) are at the level of independent reading, 25 students (29.4%) are at the level of instructional reading and 6 students (7.1%) are at the level of frustration in level 3 word lists; 40 students (47.1%) are at the level of independent reading, 34 students (40%) are at the level of instructional reading and 11 students (12.9%) are at the level of frustration in level 4 words; 29 students (34.1%) are at the level of independent reading, 48 students (56.5%) are at the level of instructional reading and 8 students

(9.4%) are at the level of frustration in level 5 words; and 36 students (42.4%) are at the level of independent reading, 39 students (45.9%) are at the level of instructional reading and 10 students (11.8%) are at the level of frustration in level 6 words.

The findings concerning the demographic properties according to the word recognition levels of students who were given WRI-1 and WRI-2 are described below. Primarily, descriptive statistics such as skewness, kurtosis, mean, median and mode were checked to find whether or not the students included in the research had normal distribution. The scores were re-scaled according to the maximum score to make the comparison between the lists easier because the number of words in each list was not equal.

Accordingly, the biggest number of words in WRI-1 was in the lists of level five words with 320 words. The number of words in level one word list was multiplied with 16 because there were 20 words in the list, the number of words in level two words was multiplied with 3.2 because there were 100 words in the lists, the number of words in level three word lists was multiplied with 1.33 because there were 240 words in the lists and the number of words in level four word lists and the number of words in level six word lists were multiplied with 1.06 because there were 300 words in the lists. The word list with the highest re-scaled mean was level five word list whereas the one with the lowest re-scaled mean was level 1 word list. On comparing the means, medians and modes in the lists in WRI-1; it was found that they did not get away from the normal very much and that they took on values close to each other. Yet, because there was not a set criterion for the three statistics, it could be said that it would be more appropriate to look at skewness and kurtosis. Skewness coefficient   yields more critical results than kurtosis coefficient since skewness violated symmetry and since kurtosis did not yield clear results as to whether it violated symmetry and had normal distribution or not. The fact that skewness coefficient took on values between -1 and +1 (between -.638 and -1.136) can be interpreted as that scores did not deviate significantly from normal distribution. Therefore, all the data were considered to have normal distribution. The findings for the parametric tests used when the data have normal distribution are presented below.

The word recognition levels of students who were given WRI-1 were analysed according to such variables as age (in months), socio-economic status, the types of pre-school education and parents' educational status. The analysis according to age variable demonstrated that 1 of the participants was 65 months old- the age at which students could start school upon parents' written request, 13 students were 69-71 months old- the age at which they have the option not to start school with medical report- and 71 were 72-85 months old- the age at which children have to start school. Thus, the age variable was divided into two categories as below 72 months old- the age at which starting school was optional- and 72 months old and above- the age at which children have to start

school. The t-test results for word recognition levels of students who read the lists written in italics in WRI-1 according to the variable of age (in months) are shown in Table 3.

Table 3. The t-test results for word recognition levels of the first graders who were given WRI-1 according to the variable of age (in months)

	Age (in months)	N	Mean	ss	sd	t	p
Level 1 word lists	72 months old and above	71	13.53	4.46	83	1.111	.270
	Below 72 months old	14	12.07	4.73			
Level 2 word lists	72 months old and above	71	75.53	13.98	83	.967	.336
	Below 72 months old	14	71.64	12.52			
Level 3 word lists	72 months old and above	71	184.54	29.13	83	.152	.879
	Below 72 months old	14	183.28	23.73			
Level 4 word lists	72 months old and above	71	251.61	28.50	83	.704	.484
	Below 72 months old	14	245.71	29.75			
Level 5 word lists	72 months old and above	71	282.43	23.04	83	-.160	.873
	Below 72 months old	14	283.50	20.64			
Level 6 word lists	72 months old and above	71	259.25	26.25	83	.996	.322
	Below 72 months old	14	250.71	42.12			

*p<0.05

According to Table 3, for level one word lists: ($t_{(83)}$= 1.111, p>.05); for level two word lists: ($t_{(83)}$= .967 p>.05); for level three word lists: ($t_{(83)}$= .152, p>.05); for level four word lists: ($t_{(83)}$= .704, p>.05); for level five word lists: ($t_{(83)}$= -.160, p>.05) and for level six word lists: ($t_{(83)}$= .996, p>.05). Thus, it was found that there were no statistically significant differences between students' scores of word recognition levels according to age (in months) variable.

The one-way variance analysis (ANOVA) results for the word recognition levels of students who read the lists written in italics in WRI-1 according to their socio-economic status are shown in Table 4.

Table 4. The ANOVA results for the word recognition levels of the first graders who were given WRI-1 according to the variable of socio-economic status

Word Lists	Socio-economic status	N	Mean	ss	F	p
Level 1 word lists	High	23	15.34	3.44	12.824	.000*
	Medium	34	14.44	3.75		
	Low	28	10.21	4.62		
Level 2 word lists	High	23	79.65	12.16	5.842	.004*
	Medium	34	77.23	9.55		
	Low	28	68.14	16.83		
Level 3 word lists	High	23	204.39	17.28	19.812	.000*
	Medium	34	187.88	24.33		
	Low	28	163.57	26.45		
Level 4 word lists	High	23	273.17	16.08	28.421	.000*
	Medium	34	255.00	21.93		
	Low	28	226.85	26.56		
Level 5 word lists	High	23	292.08	18.87	3.000	.055
	Medium	34	278.05	24.63		
	Low	28	280.35	21.02		
Level 6 word lists	High	23	269.56	23.36	2.899	.061
	Medium	34	255.91	25.33		
	Low	28	250.57	35.60		

As clear from Table 4, the one-way variance analysis (ANOVA) results showed that there were significant differences between students' levels of word recognition according to socio-economic status. Thus, for level one-word lists: F=12.824; p.000<0.05); for level two-word lists: (F=5.842; p=.004<0.05); for level three word lists: (F=19.812; p=.000<0.05) and for level four word lists: (F=28.421; p=.000<0.05)

Post-Hoc analysis was done to find the causes of differentiation. Thus, it was found that the students with high socio-economic status had higher word recognition level scores (x=15.34) than those with low socio-economic status (x=10.21) in level one-word lists. In the same way, students with medium socio-economic status were found to have higher word recognition scores (x=14.44) than those with low socio-economic status (x=10.21) in level one-word lists. The word recognition scores of students with high socio-economic status were higher (X=79.65) than those with low socio-economic status (X= 68.14) in level two-word lists. Again, students with medium socio-economic

status received higher scores (X= 77.23) than those with low socio-economic status (X= 68.14) in level two-word lists. Students with high socio-economic status had higher word recognition scores (X=204.39) than those with low socio-economic status (X= 163.57) in level three-word lists. Students with medium socio-economic status also had higher scores (X= 187.88) than those with low socio-economic status (X= 163.57) in level three-word lists. As to the scores in level four-word lists, students with high socio-economic status had higher scores (X= 273.17) than those with low socio-economic status (X=226, 85); and students with medium socio-economic status had higher scores (X= 255.00) than those with low socio-economic status (X=226, 85). It was apparent that students with high socio-economic status had higher word recognition scores than those with medium and low socio-economic status in all four levels of word lists. On the other hand, it was found that there were no significant differences between students' word recognition levels in level five and level six word lists according to the ANOVA results (p>0.05).

The one-way variance analysis (ANOVA) results for the word recognition levels of students who read the lists written in italics in WRI-1 according to the types of pre-school education they had received are shown in Table 5.

Table 5. The ANOVA results for the word recognition levels of the first graders who were given WRI-1 according to the types of pre-school education they had received

Word Lists	Types of pre-school education	N	Mean	ss	F	p
Level 1 word lists	Kindergarten	36	13.47	4.71	6.093	.003*
	Day nursery and kindergarten	41	14.09	3.84		
	None	8	8.37	4.13		
Level 2 word lists	Kindergarten	36	75.33	12.80	4.834	.010*
	Day nursery and kindergarten	41	77.14	12.15		
	None	8	61.37	19.19		
Level 3 word lists	Kindergarten	36	184.91	27.16	3.591	.032*
	Day nursery and kindergarten	41	188.53	27.91		
	None	8	160.25	25.01		
Level 4 word lists	Kindergarten	36	250.72	25.39	4.469	.014*
	Day nursery and kindergarten	41	255.78	28.57		
	None	8	224.00	31.19		
Level 5 word lists	Kindergarten	36	279.52	24.74	1.211	.303
	Day nursery and kindergarten	41	286.46	18.22		
	None	8	276.75	31.11		
Level 6 word lists	Kindergarten	36	255.16	32.73	3.154	.048*
	Day nursery and kindergarten	41	264.14	21.50		
	None	8	237.62	39.66		

According to Table 5, the one way variance analysis (ANOVA) results showed that there were significant differences between students' levels of word recognition according to the types of pre-school education they had received in level one word lists (F=6.093; p=.003<.05), level two word lists (=4.834; p=.010<.05), level three word lists (F=3.591; p=.032<.05), level four word lists (F=4.469; p=.014<.05) and in level six word lists (F=3.154; p=.048<.05).

Post Hoc analysis was done to find the causes of differentiation. The word recognition scores of students who had attended a kindergarten (X= 13.47) were found to be higher than those who had not received any pre-school education (X= 8.37) in level one word lists. In the same way, the students who had attended a kindergarten and day nursery school had higher word recognition scores (X= 14.09) than those who had not received pre-school education (X= 8.37) in level one word lists. Students who had attended a kindergarten only had higher scores (X= 75.33) than those who had not received any pre-school education (61.37) in level two word lists. In the same way, those who had attended a day nursery and kindergarten also had higher scores (X= 77.14) than those who had not received any pre-school education (X= 61.37) in level two word lists. The students who had attended a kindergarten only had higher scores (X= 184.91) than those who had not received any pre-school education (X= 160.25) in level three word lists. In the same way, the students who had attended a day nursery and kindergarten also had higher scores (X= 188.53) than those who had not received any pre-school education (X= 160.25) in level three words. In level four word lists, students who had attended a kindergarten only had higher scores (X= 250.72) than those who had not received any pre-school education (X= 224.00). In the same way, students who had attended a day nursery and kindergarten also had higher scores (X= 255.78) than those who had not received any pre-school education (X= 224.00) in level four word lists. In level six word lists also, students who had received pre-school education had higher word recognition scores (X= 264.14) than those who had not (X= 237.62). However, no significant differences were found between students' word recognition scores in level five words (p>.05).

The one-way variance analysis (ANOVA) results for the word recognition levels of students who read the lists written in italics in WRI-1 according to their mother's educational status are shown in Table 6.

Table 6. The ANOVA results for the word recognition levels of the first graders who were given WRI-1 according to their mother's educational status

Word Lists	Mother's level of education	N	Mean	ss	F	p
Level 1 word lists	Primary school	13	9.46	4.70		
	Secondary-high school	40	12.97	4.68	9.349	.000*
	University	32	15.25	2.96		
Level 2 word lists	Primary school	13	64.53	13.37		
	Secondary-high school	40	74.02	14.48	7.007	.002*
	University	32	80.18	10.23		
Level 3 word lists	Primary school	13	162.69	25.53		
	Secondary-high school	40	180.10	26.71	10.076	.000*
	University	32	198.43	24.05		
Level 4 word lists	Primary school	13	226.46	20.67		
	Secondary-high school	40	245.77	29.88	13.102	.000*
	University	32	266.56	19.81		
Level 5 word lists	Primary school	13	276.92	24.42		
	Secondary-high school	40	279.40	23.26	2.135	.125
	University	32	288.93	19.94		
Level 6 word lists	Primary school	13	243.23	37.18		
	Secondary-high school	40	254.27	29.58	4.230	.018*
	University	32	268.25	21.78		

According to Table 6, the one way variance analysis (ANOVA) results showed that there were significant differences between students' levels of word recognition according to their mother's educational status in level one word lists (F= 9.349; p=.000<.05);); in level two word lists (F= 7.007; p=.002<.05); in level three word lists (F= 10.076; p= .000<.05); in level four word lists (F= 13.102; p= .000<.05) and in level six word lists (F= 4.230; p= .018<.05).

Post Hoc analysis was done to find the causes of differentiation. It was found that the students whose mother was secondary-high school graduate had higher word recognitions scores (X= 12.97) than those whose mother was primary school graduate (X= 9.46) in level one word lists. In the same way, children with mothers who are university graduates also had higher scores (X= 15.25) than those with mothers who are primary school graduates (X= 9.46) in level one word lists. Children whose mother was university graduate had higher scores (X= 80.18) than those whose mother was primary school graduate (X= 64.53) in level two word lists. Students whose mother was university

graduate had higher scores (X= 198.43) than students whose mother was primary school graduate in level three word lists (X= 162.69) in level three word lists. In the same way, students whose mother was secondary-high school graduate had higher scores (X= 180.10) than those whose mother was primary school graduate (X= 162.69) in level three word lists. Students whose mother was secondary-high school graduate had higher scores (X= 245.77) than those whose mother was primary school graduate (X= 226.46) in level four word lists. In the same way, students whose mother was university graduate had higher scores (X= 266.56) than those whose mother was primary school graduate (X= 226.46) in level four words. In addition to that, students whose mother was university graduate had higher word recognition scores in level four word lists (X= 266.56) than students whose mother was secondary-high school graduate had in level four word lists (X= 245.77). Students whose mother was university graduate had higher scores (X= 268.28) than those whose mother was primary school graduate (X= 243.23) in level six word lists. On the other hand, it was found through one-way variance analysis (ANOVA) that there were no significant differences between word recognition levels of students who were given WRI-1 in level five word lists according to their mother's educational status (p>.05).

The one-way variance analysis (ANOVA) results for the word recognition levels of students who read the lists written in italics in WRI-1 according to their father's educational status are shown in Table 7.

Table 7. The ANOVA results for the word recognition levels of the first graders who were given WRI-1 according to their father's educational status

Word Lists	Father's level of education	N	Mean	ss	F	p
Level 1 word lists	Primary school	9	12.44	4.44		
	Secondary-high school	37	12.05	5.24	3.568	.033*
	University	39	14.66	3.34		
Level 2 word lists	Primary school	9	69.22	15.50		
	Secondary-high school	37	71.70	15.80	3.958	.023*
	University	39	79.23	9.71		
Level 3 word lists	Primary school	9	172.33	27.87		
	Secondary-high school	37	176.43	28.70	5.368	.006*
	University	39	194.61	24.69		
Level 4 word lists	Primary school	9	237.22	28.39		
	Secondary-high school	37	239.35	29.56	10.276	.000*
	University	39	264.46	21.19		
Level 5 word lists	Primary school	9	277.88	28.69		
	Secondary-high school	37	280.05	22.40	.908	.407
	University	39	286.12	21.54		
Level 6 word lists	Primary school	9	249.55	17.24		
	Secondary-high school	37	251.00	35.46	3.124	.049*
	University	39	266.25	22.60		

As clear from Table 7, there are significant differences between the first graders' word recognition scores according to their father's educational status in level one word list (F= 3.568; p= .049<.05); in level two word lists (F= 3.958; p= .023<.05); in level three word lists (F= 5.368; p= .006<.05); in level four word lists (F= 10.276; p= .000<.05) and in level six word lists (F= 3.124; p= .049<.05).

Post Hoc analysis was done to find the causes of differentiation. It was found that the students whose father was university graduate had higher word recognition scores (X= 14.66) than students whose father was secondary-high school graduate (X=12.05) in level one-word lists. Students whose father was university graduate had university graduates had higher scores (X=79.23) than those whose father was secondary-high school graduate (X=71.70) in level two-word lists. Children whose father was university graduate had higher scores (X= 194.61) than those whose father was secondary-high school graduate (X= 176.43) in level three-word lists. Children whose father was university graduate had higher scores (X=264.46) than those whose father was primary school graduate (X= 237.22) in level four-word lists. In the same way, children whose father was university graduate had higher scores (X= 264.46) than those whose father was secondary-high school graduate (X= 239.35) in level four-word lists. It was found through ANOVA, however, that there were no significant differences between students' word recognition scores in level five word lists according to their father's educational status (p>.05).

The biggest number of words in WRI-2 was in level four-word lists, and they contained 300 words. The number of words in level three-word lists was multiplied by 3 because they contained 100 words, the number of words in level five was multiplied by 1.87 because they contained 160 words and the number of words in level six was multiplied by 2.5 because they contained 120 words. On comparing the means, medians and modes in the word lists in WRI-2; it was found that they did not get away from the normal too much and that they took on values close to each other. Skewness coefficient taking on values between -1 and +1 can be interpreted as that scores do not deviate significantly from normal distribution. It became evident from the values in WRI-2 that the skewness for the word lists in all levels got away from -1. Thus, it was considered more appropriate to use non-parametric tests for those lists which did not have normal distribution. The findings for the non-parametric tests which were used in cases where the data did not have normal distribution are described below.

The word recognition levels of students who were given WRI-2 were analysed according to such variables as age (in months), socio-economic status, the types of pre-school education and parents' educational status. The Whitney-U test results for word recognition levels of students who

read the lists written in block letters in WRI-2 according to the variable of age (in months) are shown in Table 8 below.

Table 8. The Whitney-U test results for word recognition levels of the first graders who were given WRI-2 according to age (in months)

	Age (in months)	N	Mean rank	Total rank	U	p
Level 3 word lists	72 months old and above	71	44.10	3131	419	.353
	Below 72 months old	14	37.43	524		
Level 4 word lists	72 months old and above	71	43.10	3060	490	.934
	Below 72 months old	14	42.50	595		
Level 5 word lists	72 months old and above	71	41.55	2950	394	.222
	Below 72 months old	14	50.36	705		
Level 6 word lists	72 months old and above	71	43.06	3057.5	492.5	.957
	Below 72 months old	14	42.68	597.5		

According to Table 8, there are no statistically significant differences between the first graders' word recognition scores in level three word lists (U= 419, p>.05); in level four word lists (U= 490 p>.05); in level five word lists (U= 394, p>.05) and in level six word lists (U= 492.5, p>.05) according to age (in months).

The Kruskal Wallis-H test results for word recognition levels of students who read the lists written in block letters in WRI-2 according to the variable of socio-economic status are shown in Table 9 below.

Table 9. The Kruskal Wallis-H test results for word recognition levels of the first graders who were given WRI-2 according to socio-economic status

Word Lists	Socio-economic status	N	Mean rank	sd	X^2	p	Significant difference
Level 3 word lists	High	23	45.67				
	Medium	34	49.15	2	6.736	.034*	2-3
	Low	28	33.34				
Level 4 word lists	High	23	45.41				
	Medium	34	45.85	2	2.039	.361	
	Low	28	37.55				
Level 5 word lists	High	23	47.02				
	Medium	34	46.94	2	4.501	.105	
	Low	28	34.91				
Level 6 word lists	High	23	53.15				
	Medium	34	45.93	2	10.911	.004*	1-3
	Low	28	31.11				2-3

Considering the mean ranks for the groups, it may be said according to Table 9 that the students attending primary school A received the highest scores in all word lists except for the ones in level four and that they were followed by those attending primary school B and C respectively. Accordingly, it is apparent that the students having high and medium socio-economic status have the same mean ranks in level four-word lists. Besides, it was also found that the first graders' word recognition scores differed statistically significantly according to socio-economic status in level three word lists (X^2 (2)= 6.736, p<.05) and in level six word lists (X^2 (2)= 10.911, p<.05). Mann Whitney-U test was done to find the paired groups having the difference. In consequence, it was found that the students attending primary school B with medium socio-economic status had higher scores than those attending primary school C with low socio-economic status in level three-word lists and that the differences were significant. In the same way, the students attending primary school A with high socio-economic status had higher word recognition scores than those attending primary school C with low socio-economic status and the students attending primary school B with medium socio-economic status had higher scores than those attending primary school C with low socio-economic level in level six word lists. No significant differences were found between the students' word recognition scores in level four word lists (X^2 (2)= 2.039, p>.05) and in level five word lists (X^2 (2)= 4.502, p>.05) according to socio-economic status.

The Kruskal Wallis-H test results for word recognition levels of students who read the lists written in block letters in WRI-2 according to the variable of the types of pre-school education they received are shown in Table 10.

Table 10. The Kruskal Wallis-H test results for word recognition levels of the first graders who were given WRI-2 according to the pre-school education they received

Word Lists	Types of pre-school education	N	Mean rank	sd	X^2	p
Level 3 word lists	Kindergarten	36	42.86			
	Day nursery and kindergarten	41	46.00	2	3.499	.174
	None	8	28.25			
Level 4 word lists	Kindergarten	36	40.89			
	Day nursery and kindergarten	41	46.93	2	2.786	.248
	None	8	32.38			
Level 5 word lists	Kindergarten	36	40.40			
	Day nursery and kindergarten	41	48.00	2	4.649	.098
	None	8	29.06			
Level 6 word lists	Kindergarten	36	41.96			
	Day nursery and kindergarten	41	46.67	2	3.605	.165
	None	8	28.88			

As is clear from Table 10, considering the mean ranks for the groups, the students who had attended a day nursery school and a kindergarten received the highest scores, who were followed by those who attended only a kindergarten and those who had not received any pre-school education before, respectively. It was found that there were no statistically significant differences between the first graders' word recognition scores in level the word lists (X^2 (2)= 3.499, p>.05); in level four word lists (X^2 (2)= 2.786, p>.05); in level five word lists (X^2 (2)= 4.649, p>.05) and in level 6 word lists (X^2 (2)= 3.605, p>.05) according to the types of pre-school education they had received.

The Kruskal Wallis-H test results for word recognition levels of students who read the lists written in block letters in WRI-2 according to the variable of their mother's educational status are shown in Table 11.

Table 11. The Kruskal Wallis-H test results for word recognition levels of the first graders who were given WRI-2 according to their mother's educational status

Word Lists	Mother's educational status	N	Mean rank	sd	X^2	p	Significant difference
Level 3-word lists	Primary school	13	29.81				3-1 3-2
	Secondary-high school	40	39.53	2	9.548	.008*	
	University	32	52.70				
Level 4-word lists	Primary school	13	33.85				
	Secondary-high school	40	40.56	2	4.587	.101	
	University	32	49.77				
Level 5-word lists	Primary school	13	30.46				3-1 3-2
	Secondary-high school	40	39.16	2	9.494	.009*	
	University	32	52.89				
Level 6-word lists	Primary school	13	25.08				3-1
	Secondary-high school	40	41.74	2	11.124	.004*	
	University	32	51.86				

According to Table 11, considering mean ranks for the groups, it can be said that the students whose mother was university graduate had the highest scores in all word lists and that they were followed by students whose mother was secondary-high school graduate and by students whose mother was primary school graduate. It was also found that there were significant differences between the students' word recognition scores in level three word lists (X^2 (2)= 9.548, p>.05); in level five

word lists (X^2 (2)= 9.494, p> .05) and in level six word lists (X^2 (2)= 11.124, p>.05). Mann Whitney-U test was done to find the groups having the differences. In consequence it was found that the students whose mother was university graduate had higher scores than those whose mother was secondary -high school graduates in level three and level five-word lists and that the differences were significant. In the same way, in level six word lists, students with mothers who were university graduates had higher word recognition scores than those with mothers who were primary school graduates, students with mothers who were secondary-high school graduates had higher word recognition scores than those with mothers who were primary school graduates, and that the differences were significant. No significant differences were found between the first graders' word recognition scores in level four-word lists (X^2 (2) = 4.587, p>.05) according to their mother's educational status.

The Kruskal Wallis-H test results for word recognition levels of students who read the lists written in block letters in WRI-2 according to the variable of their father's educational status are shown in Table 12.

Table 12. The Kruskal Wallis-H test results for word recognition levels of the first graders who were given WRI-2 according to their father's educational status

Word Lists	Father's educational status	N	Mean rank	sd	X^2	p	Significant difference
Level 3 word lists	Primary school	9	32.33				
	Secondary-high school	37	38.84	2	5.418	.067	
	University	39	49.41				
Level 4 word lists	Primary school	9	35.94				
	Secondary-high school	37	39.08	2	3.501	.174	
	University	39	48.35				
Level 5 word lists	Primary school	9	31.67				3-1
	Secondary-high school	37	36.73	2	9.013	.011*	3-2
	University	39	51.56				
Level 6 word lists	Primary school	9	28.67				3-1
	Secondary-high school	37	37.16	2	10.153	.006*	3-2
	University	39	51.85				

Considering the mean ranks for the groups, it can be said according to Table 12 that students whose fathers are university graduates have the highest word recognition scores- who were followed

by students whose fathers are secondary-high school graduates and by students whose fathers are primary school graduates, respectively. Besides, it was also found that the first graders' word recognition scores differed significantly in level five word lists (X^2 (2) =9.013, p<.05) and in level six word lists (X^2 (2) =10.153, p<.05) according to their father's educational status. Mann Whitney-U test was done to find the groups having the differences. In consequence, it was found that the students whose fathers were university graduates had higher word recognition scores than those whose fathers were secondary-high school or primary school graduates in level five and level six word lists, and that the differences were statistically significant. On the other hand, no significant differences were found between students' word recognition scores in level three word lists (X^2 (2) =5.418, p>.05) and in level four word lists (X^2 (2) =3.501, p>.05) according to their father's educational status.

Conclusion and Discussion

Research shows that students can learn 8 words a day and 2000-3000 words a year on average (Sthal and Nagy, 2006; Baker, Simmons and Kame'enui, 1995). Based on these findings, it is said that the number of words individuals learn differs greatly from person to person. While some students learn 8 words a day, some can only learn 1 word a day. For this reason, there can be great differences between words students who start primary school know. The difference continues to exist throughout their life and even it can increase (Biemiller and Boote, 2006). Some research found that the rate of words read or whether the words are known by individuals or not differed according to age, gender, culture, environment and geographical regions (Pars and Pars, 1954; Bilgen, 1988; Çiftçi, 1991; Tosunoğlu, 1998; Koçak, 1999). It was observed that sometimes instruments were developed to analyse students' levels of word recognition skills and that sometimes the instruments developed were used for analyses. Lists of words in context and lists of words out of context can be used to analyse students' word recognition skills (Karasu, Girgin, Uzuner, 2011, p. 118). Word lists can also be used to evaluate word recognition, to analyse the automaticity and to determine the level of a text to be read (Silvaroli and Wheelock, 2011; Johns, 2016; Bader and Pearce, 2013; Roe and Burns, 2007; Shanker and Cockrum, 2014; Woods and Moe, 2011).

This study made efforts to determine students' word recognition levels through words included in WRI-1 and WRI-2. While the words in the inventories represent the level of frustration for a student, they may be representing the instructional level or independence level for another student; because students' word recognition levels differ individually (Avşar Tuncay, 2017). Since students whose word recognition at the level of frustration can have problems in distinguishing words, reading will not be meaningful for those students. If the words students d not know is the majority of the words and if they are the words with technical meanings, the situation will make comprehending the text difficult (Biemiller and Boote, 2006). The text will be more meaningful if work is done on the

unknown words with students who are at the level of frustration before reading the text. In Tam, Heward and Heng (2006) five students having reading difficulty were taught vocabulary; and as a result, changes in their comprehension of the text were observed. At the end of the study, it was found that there was increase in reading comprehension scores of all those students who were the third and fourth graders. In the same vein, another study was conducted by Mastropieri, Scruggs and Mushinski-Fulk (2001) by teaching the words appearing in the texts they going to ask students to read. At the end of the study, the importance of vocabulary on reading comprehension was emphasised. In the same way, the success students at the level of independent reading attained in reading comprehension was a factor effective in the increase in vocabulary. Students who can comprehend what they read can acquire knowledge about the meanings of new words while reading, and thus, they can expand their knowledge of concepts and words. A longitudinal study conducted by Cunningham and Stanovich in 1997 is available in this respect. The researchers tried to find what the potential premises of students' knowledge of vocabulary could be, and they monitored 246 students who were between 4 and 10 years old for eight years in their research. The results showed that such skills of students whose vocabulary knowledge developed earlier continued by increasing. Thus, it was stated that vocabulary knowledge played key roles in students' learning to read, comprehending what they read and in the increase in their school achievement (Wasik, 2010). The researchers also point out that vocabulary knowledge, which play active roles in learning to read, is also the variable which is the strongest and on which the most emphasis is laid in making sense of a text (Baumann, 2009; Rosenshine, 1980). According to Fisher and Blachowicz (2005), insufficiency of vocabulary is a factor in failure to achieve the desired success at reading. According to Bayat, Şekercioğlu and Bakır (2014), students at the level of frustration in reading who cannot develop sufficient vocabulary knowledge cannot succeed in other academic domains such as science and social studies- which are based on reading comprehension-either.

On comparing the word recognition scores of the first graders who were given WRI-1 and WRI-2 in all word levels according to age (in months), no significant differences were found between their scores. 72 month-old students or older students had slightly higher scores than students younger than 72 months old in both inventories. Cesur (2005), in a study of evaluation based on students' compositions, found differences between the words students used according to age- as different from this current study. Accordingly, it was found in students' writing in which they described what they would like to experience in the future that it was possible to determine students' levels of active vocabulary. Çıplak (2005) found that students' diversity of words increased naturally in parallel to the rise in their biological and educational age. In a study conducted by Kılıç (2014) and analysing the 60-66-72 year old first graders' language skills found that the skills differed significantly according to 60-66-72 month old age groups. Thus, it was found in the study that the differences between the language skills of 72 month old students and of older students and between 60-66 month old students and the

66-72 month old students' language skills were in favour 72 month old students or older students. It was also found that the language skill scores of 60-66 month olds were sometimes at the level and that the scores of 72 or more month olds were frequently at the level. In this context, the findings obtained in the study do not support the hypotheses in the literature that word recognition level will rise in accordance with the rise in age (in months).

It was concluded that the students with high socio-economic status had higher word recognition scores than those with low and medium socio-economic status even though the differences in reading the word lists formed with certain sound groups available in WRI-1 and WRI-2 were not found to be significant according to socio-economic status. According to Ocak (2007), families' socio-economic status is an important factor influential in students' primary school literacy work, in their school life and in the process of primary school literacy. As the level of socio-economic status rises, parents' attitudes towards their children change in positive ways, and the literacy experiences they will make their children gain also increase. The results obtained in Yazanoğlu (2011) are also similar to the ones obtained in this study. Thus, the researcher observed that the first graders' literacy skills rose in parallel to the rise in socio-economic level. It was concluded that the literacy achievement of students with low socio-economic status was lower than the literacy achievement of students with high socio-economic status.

The above-mentioned studies support the conclusion that socio-economic level is a variable influential in literacy skills. Batur (2006) classified socio-economically students who have and do not have a computer, who live in a flat or in a slum and students who live in their own flat or live in a rented flat according to living or not living in a lucky environment. The researcher found that the social environment students live in directly affected the language acquisition or their wealth of vocabulary. Accordingly, it was found that the students having a computer and living in a lucky environment achieved more success than those who do not have a computer, that the students who lived in a flat achieved more success than those who lived in a slum and that the students who lived in their own flat achieved more success than those who lived in a rented flat. The researcher found according to students' socio-economic levels that the students attending a school with high socio-economic level acquired more words than those attending a school with medium or low socio-economic level. According to Cesur (2005), the environment the students are in and their socio-economic status cause differentiation in their vocabulary. Çıplak (2005), in a study analysing the active vocabulary in students' writing according to their socio-economic level, found that the 5th and 8th graders coming from low income families acquired more vocabulary than the students coming from high income families but that the students at other grade levels coming from high income families acquired more vocabulary than the students coming from low income families. Ipekçi (2005) found that children coming from families with high income knew fewer words than those coming from

families with low income. Accordingly, having socio-economically high status is not an element increasing the number of words in students' writing. As different from those studies, Konur-Ergene (2011) concluded that there were no significant differences between students who were born in villages, towns and cities in terms of level of learning vocabulary. The study also found that there were no differences between students' learning vocabulary according to families monthly income (0-500 Turkish Lira, 500-750 Turkish Lira, 750-1000 Turkish Lira and above 1000 Turkish Lira). It was claimed in the study that families' monthly income and the place of their residence did not have any effects on students' achievement in terms of learning vocabulary. It is apparent that the findings obtained in studies investigating socio-economic status and language skills, vocabulary learning and word recognition levels differ.

While significant differences were found in WRI-1 between word recognition scores according to the types of pre-school education received, there were no significant differences in WRI-2- which was a remarkable finding in this study. Although no significant differences were found in WRI-2, it was found that the students who had attended a nursery school and then a kindergarten had slightly higher word recognition scores than those who had attended a kindergarten only or than those who had not received any pre-school education. Ipekçi (2005), in a study on the words primary school students used, concluded in a similar way that the children who had attended a kindergarten/ nursery school knew more words than those who had not attended a kindergarten/nursery school. The situation indicates that kindergartens/nursery schools are influential in the increase in children's vocabulary. As can be understood from this point, kindergarten/nursery school helps to increase the number of words children use.

The students whose mothers were university graduates received the highest word recognition scores in all the word lists available in WRI-1 and in WRI-2 in this current study, and they were followed by the students whose mothers were secondary/high school graduates and by the students whose mothers were primary school graduates. The fact that there were no differences between students' scores according to their mothers' educational status only in one level in WRI-1 and WRI-2 does not mean that there are a no differences between students' word recognition scores. In a study concerning the words the 7th graders used, and which was conducted by Ipekçi (2005), it was found that there was increase in students' vocabulary in parallel to the rise in parents' levels of education. The results obtained by Konur-Ergene (2011) differ. The researcher concluded that there were no differences between children's levels of vocabulary learning according to their mother's educational level (illiterate, primary school graduate, high school graduate, university graduate). Accordingly, there are no differences between students' achievement according to the variable of mother's educational level. In this context, it can be said that the results obtained in studies concerning mother's educational level and vocabulary learning and word recognition levels are diverse.

The students whose fathers were university graduates received the highest word recognition scores in all the word lists available in WRI-1 and in WRI-2 in this current study, and they were followed by the students whose fathers were secondary/high school graduates and by the students whose fathers were primary school graduates. The fact that there were no differences between students' scores according to their fathers' educational status only in one level in WRI-1 and WRI-2 does not mean that there are a no differences between students' word recognition scores. This situation can be explained with the fact that all the students whose fathers were at different levels of education achieved success when level five lists were given. The fact that no differences were observed in the results for the groups in the lists with fewer words in WRI-2 and that differences were observed in the lists with more words does not mean that there are no differences between students according to their father's educational status. Even though there were no differences in the levels with fewer lists, it was found that the students whose fathers were university graduates received higher scores than those whose fathers were secondary/high school graduates and those whose fathers were primary school graduates. Batur (2006) found, as we did in this study, that father's educational level was influential in students' word recognition. The researcher believes that the words students can hear home will be diversified as the level of their father's education rises but that they are likely to be introduced to fewer words as the level of their father's education falls. Ipekçi (2005) investigated the words that the 7th graders used and found positive correlations between their parents' levels of education and their achievement in the number of sentences and of words. As the level of education moved from primary school to university, the number of students' words increased; but the level of education moved from university to primary school the number of students' words tended to decrease. Konur-Ergene (2011) concluded that there were no significant differences between students' vocabulary learning levels according to their father's educational level (illiterate, primary school graduate, high school graduate, university graduate). Thus, it was concluded in Konur-Ergene that father's educational level was not influential in students' achievement in vocabulary learning. It may be stated in this context that the results obtained by studies concerning the number of words students know, vocabulary learning and word recognition levels in relation with father's educational level are also diverse as in the case of studies conducted in relation to mother's educational level.

The importance of word lists again becomes apparent in the automatization of word recognition process, in knowing the meaning of words needed in producing a text and in attaining the fluency in reading a text. It believed that it will be necessary to implement such as design in primary schools to reveal students' levels of word recognition and to meet teachers' needs to assess the levels. Harris and Jacobson (1973) stated that one of the main areas of use of their word lists was readability research. Those lists can be used for several purposes such as preparing educational-instructional materials at each grade level and reading level, determining the readability of texts and books, planning teaching and evaluating it (Çetinkaya, 2011). The unavailability of inventories containing

word lists -as in this study- in Turkey causes problems in determining students' word recognition levels and in determining accordingly the types of texts they can read. Çetinkaya (2011) states that the unavailability of word lists through which the words to be taught according to grade levels are determined causes problems. Setting out from this point, an attempt was made to design an inventory to meet the general need. Thus, at the end of the process, WRI-1 and WRI-2 were prepared as a personal tool of evaluation to determine the first graders' word recognition levels, and they were found to serve to meet the need existing.

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To Be a Branch Manager in a Local Educational Directorate: Occupational Problems and Solutions

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Abstract

This study examines the occupational problems of educational branch managers in local educational directorates as well as their expectations and suggestions on these problems. The study aims to reveal the problems of the branch managers regarding their occupational rights, assignments and duty place changes, roles and status, and their rise in their career steps based on the participants' opinions and suggestions. In the study, a phenomenological model was used, and qualitative data was collected via standardized open-ended interviews. The working group, determined by snow ball sampling, was composed of 61 branch managers working in 30 different provinces and seven different regions across Turkey. The findings of the study revealed that the branch managers working in local directorates think that their salaries are lower than other educational managerial positions; their workload is quite heavy; they don't have enough authority, although they have too many responsibilities. The participants also made suggestions for increasing branch managers' salaries and wages by granting seniority, authority and special service compensation; raising additional indicators for retirement; and having more in-service, postgraduate and doctoral training opportunities. More than 2000 branch managers work in local educational directorates in Turkey however no scientific research about the problems of this local staff has been carried out so far. This study is likely to be the first specific research entirely carried out for local educational branch managers. By means of the study, it is also expected that the occupational problems of this managerial position will be better noticed in local educational management system.

Keywords: Branch managers, district and provincial education, professional rights, role and status.

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Introduction

Educational administration, like the overall administration of the country, is highly centralized within the Educational Ministry. MoNE (The Ministry of National Education) is responsible for almost all types of education policies except for higher education such as development of school curricula, coordinating the official staff, designing schools, developing educational materials etc. Educational institutions in districts and provinces are administered by the educational directors appointed by MoNE but also they work under the direction of the district and provincial governor within the organizational scheme of local administration (Turkey, 2019).

The Structure of Educational Administration in Turkey

MoNE, within Turkey's centralized governance structure, is responsible for the education system as a whole both at central and local levels, general directorates and their units established at central ministerial level are responsible for different education programs and policy compliance, such as primary and secondary education, vocational education, special education, guidance and counselling etc. Education Directorates founded at local levels across 81 provinces and 922 districts of Turkey are considered to be responsible for the education policies implemented by MoNE. (OECD, 2019; İçişleri, 2019).

Administrative Structure of Local Education

The administrative structure of the local education of MoNE in Turkey has been formed by directorates at district and provincial levels. Provincial education directorates, founded in provincial capitals, are responsible for the fulfilment of the orders and duties coming from central governor's offices within the framework of the legislation and also primarily responsible for coordination and information flow in a hierarchical way to the district directorates. The district educational directorates are sub-management units that organize and manage the schools, teaching personnel and other ancillary personnel within their units to carry out the orders and duties demanded by the provincial educational directorates (Bağlıbel, Kaygısız & Samancıoğlu, 2010).

Branch managers in district and provincial educational directorates are thought to be the first level of career managerial position in the fulfilment of educational objectives while implementing the ministerial national educational programs. The managerial positions of branch managers in local educational directorates are seen in Figure 2 and 3 below.
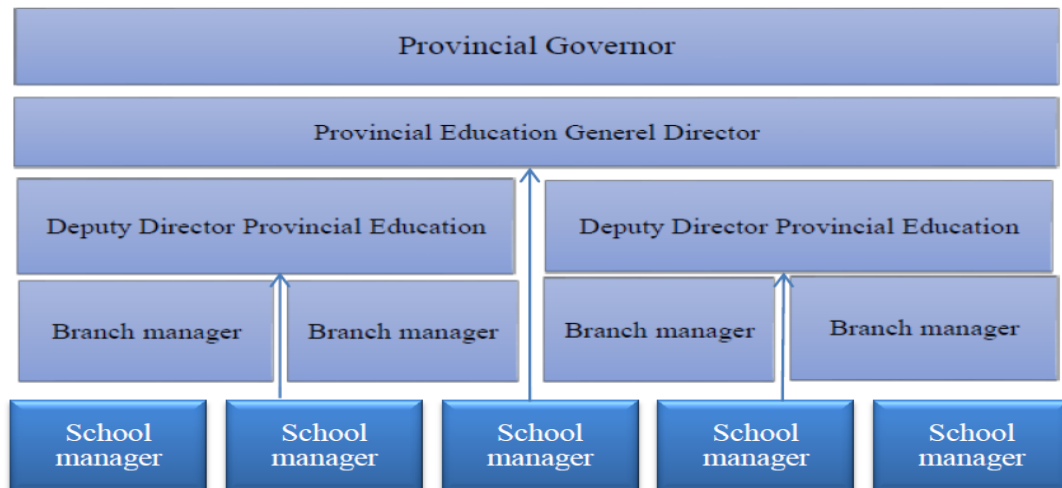
Figure 1: The managerial position of branch managers in the capital of provinces
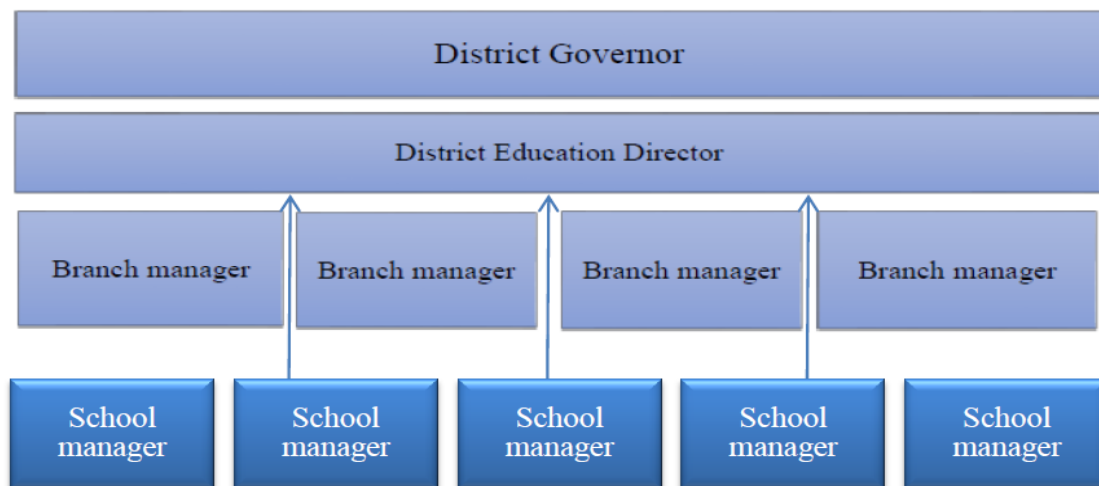

Figure 2: The branch managers in educational directorates of the districts.

Assignment of the branch managers in district and provincial education directorates are carried out within the scope of the educational management services legislation which regulates their position, title change as well as assignment. When this legislation examined, some legal requirements and qualifications are to be fulfilled, such as having, at BC or BA degree of higher education; having served in the ministry of education in the last two years as the training specialist, expert, rapporteur, civil defence expert or school director; having served in the ministry of education in the last three years as the school chief assistant director, school assistant director, architect, engineer, biologist, psychologist, statistician, analyst, programmer, researcher, technician, chief and treasurer; or having worked as a teacher at least for four years (Resmi Gazete, 2010). The candidates who fulfil the conditions explained above can be appointed to district and provincial directorates on conditioned that being successful both in test exam and also in interview exam.

Branch managers in the local educational directorates are in charge of carrying out the educational services and tasks given to their responsibilities; attending the meetings on behalf of the or district and provincial directorate; signing the correspondence and documents on behalf of the district and provincial directors; delegating to the provincial national education directorate. In this context, in addition to the common duties of in the field of education and training services, the branch managers are also responsible for various managerial tasks and services such as special education and guidance; lifelong learning; private education institutions; strategy development; law; human resources; innovation and education technologies; support services; primary education; secondary education; vocational and technical education; religious education, MEBBIS (Information System of National Ministry of Education); secretariat; document and school transportation services (Sarkamış MEM, 2018).

Branch managers in local educational directorates are subject to mandatory duty place changes (also called "rotation") and have to work for certain period in each of the five working zones across the Turkey defined by MoNO according to the general working conditions of the districts and provinces. After being appointed, branch managers are to work at least six years in zone 1; four years in zone 2 and 3; and two years in zone 4 and 5.

The branch managers' staff numbers are determined based on the number of students of educational institutions in the working districts and provinces. It is only one branch manager up to 3000 students; 2 branch managers between 3001-10000 students; 3 branch managers between 10.001-20.000 students; 4 branch managers between 20.001-50.000 students; and 6 between 50.001 and more students. Similarly in provincial directorates, it was determined as 4 branch managers up to 50,000 students; 6 branch managers between 50.001-100.000 students; 8 branch managers between 100.001-200.000 students; 10 branch managers between 200.001-500.000 students; and 20 branch managers between 500.001 and more students (MEB, 2017).

The Importance and Implications of the Study

Although the branch managers have critical duty position in different service areas within the local educational directorates of MoNE, moreover, their being selected by a competition and proficiency exams, the academic studies conducted towards the branch managers working in the local educational organizations of MoNE appears to be limited.

When these limited number of academic studies conducted for branch managers in Turkey examined; these studies are seen to focus on topics such as the job satisfaction and social emotional loneliness levels of the branch managers (Şişman & Turan, 2004); the managerial perceptions of education managers who have been transferred from teaching to branch manager (Keser-Özmantar & Sincar, 2017); opinions of provincial organization managers on localization (Arslan & Atasayar, 2008); attitudes towards decentralization in education; the opinions about assignment and relocation

(rotation practice) (Kayıkçı, Yörük & Atasever, 2015) and organizational justice perceptions of branch and upper top managers.

More than 2000 branch managers' work in local educational directorates in Turkey, however no scientific researches about the problems of this local staff have been carried out so far. This study is thought to be the first specific research entirely focuses on the local educational branch managers' occupational problems in Turkey. By means of the study, it is expected that the occupational problems of this managerial position will be better noticed in local educational management system.

The study also aims to reveal the occupational problems of branch managers in the district and provincial directorates of MoNE and to present their expectations and suggestions on these issues. For this purpose, the study focused on the important problems regarding to occupational rights; assignments and workplace changes; authority and responsibilities; progress in career steps and professional development of the branch managers in local educational administration levels.

Methodology

Data Sources and Method

In the study, a phenomenological qualitative research design was used. According to Yıldırım and Şimşek (2006), the phenomenological research focuses on the individuals and groups who have experienced the phenomenon and able to reflect this phenomenon based on their own experiences. For this purpose, the working group is composed of the participants, who are still working in the district and provincial organizations of MoNE as well as who will able to present the occupational problems of the branch managers.

The opinions and suggestions of the participants were gathered by using standardized open-ended interview. In a standardized open-ended interview, the same questions are asked to all participants in a systematic sequence in order to reduce the subjectivity that may arise from the interviewers. This method is thought to be a method that is relatively easier to compare and analyse the gathered qualitative data (Karasar, 2005; Punch, 2005, Yıldırım & Şimşek, 2006).

Working group

The working group consists of the branch managers' still working in the district and provincial educational directorates of MoNE. A total of 61 branch managers participated the study from 30 different provinces located in seven regions of Turkey. These provinces are seen in Table 1.

Table 1. Distribution of the participants regarding working mandatory service zones and cities

Mandatory service zones and cities									
Zone 1 Cities		Zone 2 Cities		Zone 3 Cities		Zone 4 Cities		Zone 5 Cities	
Antalya	1	Burdur	1	Çorum	1	Artvin	1	Ağrı	1
Aydın	1	Hatay	20	Kırıkkale	2	Çankırı	1	Ardahan	1
Bursa	2	Isparta	1	Kütahya	2	Gümüşhane	1	Batman	1
İstanbul	1	Samsun	1	Ordu	1	Elazığ	1	Diyarbakır	1
Kayseri	1					Tokat	2	Erzurum	1
Konya	1					Şanlıurfa	8	Hakkari	1
Sakarya	1							Mardin	1
								Muş	1
								Van	2
Total	8		23		6		14		10
Cities	Total								30
Participants	Total								61

The research sample was determined by snowball sampling method. The purpose of preferring such a sampling method is that the subject of the study is directly related to the participants rather than the ability of the working group to represent the universe (Yıldırım & Şimşek, 2006; Neuman, 2014). Since one of the researchers was a provincial branch manager, 20 branch managers, who were also close colleagues of the researcher, were interviewed as a pioneer group mainly in Hatay province, and then they were asked to direct the branch managers who could express their opinions in different districts and provinces of Turkey to the researchers, and in the end, a working group sample consisting of 61 branch managers was formed.

Branch managers are subject to mandatory assignment and work with certain period in each of the five working zones defined by MoNE according to the general working conditions of the districts and provinces. Not foreseen at the beginning of the research though, it was seen that the participants were composed of branch managers working in all of those working zones, and thus the working group determined by the snowball sampling at the beginning also fulfilled the conditions of maximum diversity sampling. This can also be considered as a factor that strengthens the sampling.

When the demographic data of the participants given in Table 2 were analysed, the majority of the participants were male (96.7%), seniority was mostly between 1-10 years (% 90,16), age ranged between 30 and 50 years old (80.32%), the majority of them (75,40%) used to work as school administrators (school principal or deputy school principal).

Table 2. Demographics of the participants about Gender, Seniority, Previous Duties and Age

Demographic Characteristics		Participants	Percent (%)
Gender	Woman	1	1,6
	Male	59	96,7
	Unspecified	1	1,6
	Total	61	100
Seniority	1-10 years	55	90,1
	11-20 years	1	1,6
	21 years and over	4	6,5
	Unspecified	1	1,6
	Total	61	100
Age	30-40	22	36
	41-50	27	44,2
	51-60	5	8,1
	61 and over	1	1,6
	Unspecified	6	9,8
	Total	61	100
Previous Task	Teacher	11	18
	Deputy School Director	21	34,4
	School Director	25	40,9
	Other	3	4,9
	Unspecified	1	1,6
	Total	61	100

Gathering Data

Data Collection Tools and Analysis of Data

In the process of developing standardized open-ended interview form, firstly, three researchers, one of who is a branch manager at a local educational directorate and other two are academicians at the department of educational sciences, examined the literature and prepared an interview form. Then, the process of piloting was completed with individual interviews conducted with two branch managers. Finally, after having been evaluated by two academicians from the field of education management and researchers together, a questionnaire consisting of five questions was formed.

Due to the difficult accessibility of the participant branch managers and overtime intensities, the form prepared based on the demographic data and qualitative standardized open-ended interview questions were uploaded to "google forms" system and sent to the participants via e-mails attached by the research permission documents and necessary explanations.

Karasar (2005) states that although the interview is usually done face to face, it can be done with voice and picture transmitters such as telephones and telephones. Similarly, according to Punch

(2005), the interview may be face-to-face, and can also be done by post or via questionnaires that are answered on their own.

In the research, descriptive analysis was used and the data obtained from individual standardized open-ended interviews were analysed, the participants' opinions and suggestions were also classified. The overlapping and common statements of the participant are covered under an inclusive title and presented in tables with frequency or percentage values. In addition, the themes and classifications based on common views and suggestions were extensively described by supporting direct quotations. The main criterion in making the quotations is to reveal the opinions and suggestions that are thought to be important or original for the research. The participants were coded as "BM" between 1-61 and they were cited as the source of the texts and citations.

Validity and reliability

In the qualitative research, a common approach "Trustworthiness", considered as an approach based on the credibility and reliability of the researcher, can be used instead of traditional quantitative validity and reliability in quantitative studies (Yıldırım, 2010). Unlike the traditional validity and reliability criteria in quantitative approach, the participants' giving sincere and more detailed answers to the questions in the qualitative approach in order to ensure the credibility and reliability of qualitative data. To ensure internal validity in the study, participant's opinions were classified under common and integrative expressions and supported by direct quotations. In the scope of external validity, the whole process of the research is explained in detail.

All of the researchers who carried out this study were those who worked in the district and provincial organizations of MoNE in Turkey. One of the researchers is still working as branch manager. The other researchers used to work as teachers and educational inspector in different districts and provinces of Turkey and they have experiences in organizational structure of the local educational directorates and have close relationship with a significant part of the participants. Such experience and relationship can be considered as a motivating factor for the participation of the branch managers and for their giving more sincere and qualified answers to the research.

To ensure the reliability of the research, the themes and classifications created by the researchers based on the views of the participants were reviewed by two faculty members in educational sciences as well as by the researchers via a group meeting. At this stage, no statistical study was conducted and a general scope assessment was made, and to increase the comprehensiveness of the expressions and the necessary finalized changes have been made on the themes and classifications.

Findings

In this study, the following questions were asked to the participants.

1) What are the most important problems related to professional rights of branch managers in MoNE?

2) What are the most important problems related to assignment and workplace change of branch managers working in MoNE?

3) What are the most important problems related to the authority and responsibilities of the branch managers working in MoNE?

4) What are the most important problems of the branch managers working in the district and provincial organization in terms of their career development and professional development?

5) If you have problems other than these, please give a brief description of them with the solutions.

The findings obtained via the questions in standardized open-ended interviews are covered under five headings below. According to this:

1. Findings on the Problems of Occupational Rights

The problems mentioned by the participants regarding their occupational rights are given in Table 3.

Table 3. Findings related to the problems experienced in relation to occupational personal rights

Opinions	f (n=61)	%
Low salaries and wages	41	67
Low retirement-based indicators	25	40,9
Excessive workloads and responsibilities	14	22,9
Lack of severance, authority and other duty compensation	3	4,9
Lack of additional funds for teaching, representation and hospitality etc.	3	4,9

When Table 3 evaluated, one of the most emphasized issues regarding occupational rights is that the salaries of the branch managers are lower than the other educational managerial positions. 40 of the 61 branch managers in the study (67%) stated that their salaries and wages were rather low. When analysed, such views as branch managers have more workloads however, the wages were even lower than the school principals who are at sub-level management positions; they have overtime extra works but they are not paid for it; extra wage duties were not evenly distributed; although they are mandatory members of the local committees, they are not paid any fee for these duties (BM-2) have been expressed by the participants.

Some remarkable participant opinions on the subject are given below:

"Responsibility is great, business risk is high but the money you get is insufficient." (BM - 20);

"Although the branch management is a higher duty position and more risky task, the wage of branch managers (including the additional course payment) is lower than the teachers, assistant managers and the school principals. Salaries should be increased…" (BM-25);

".... Even though we are a part of education system, we cannot benefit from educational tuitions." (BM -60)

"...our indicator is 2200. The retirement indicator should be increased to 3600 due to the high workload and the high administrative responsibilities. Not only depending on the additional indicator, but also in different ways the salary needs to be improved." (BM-6);

1.   Findings Related to the Problems on Assignment and Duty Place Changes

The majority of the participants (93.4%) stated various problems on mandatory work place change implementation which is also called as duty rotation. Some of the participants stated that it should be abolished or be on a voluntary basis, on the other hand, some other participants reported counter views that is favour of the continuation of mandatory duty place change.

"...mandatory duty change service is not required. This obligation should be abolished; and all branch managers should be reappointed within a new regulation." (BM-19);

"...removal of the rotation system, if this is not possible; branch managers with 20 years or more seniority must be exempt from rotation (BM-60);

"Rotation is very important, especially for those branch managers working in the countryside. Rural workers work with the hope of duty place change. If the rotation is removed, there will be lots of dismissals." (BM -3);

"Rotation must be continued" (BM -53);

The problems on this issue are given in Table 4.

Table 4. Findings on the problems experienced in mandatory duty place changes

Opinions	f (n=61)	%
Mandatory service districts and mission periods in these zones are not regulated in the light of objective and current data.	22	36
The assignment criteria and professional merit are disregarded in some cases as some branch managers are appointed without having any proficiency exam.	10	16,3
The excuses of spouses and children are not considered while changing duty places.	6	9,8
The official health reports received for exemption from mandatory	3	4,9

duty place change are not examined in detail.		
As the appointments are made in June and July, branch managers are to work a year longer in their new duty district.	2	3,2

When the opinions examined, the participants think that the service districts is not based on objective and current criteria, consequently, the staff number of the branch managers needs to be updated in those working districts; it is necessary to restructure the service periods and also there are imbalances between task service scores:

"...mandatory working zones and districts are not well identified and organized... Solution is that the re-determination of working zones by objective criteria." (BM-52);

"...service zones and districts, the service periods must be redefined in the light of more objective and up-to-date data (BM-2);

"... branch managers in the 4th zone have the right to extend their duty period for another two years while those in zone 1 and 2 have no such rights. ..." (BM-5)

"It's not right to be appointed in such a short period, it should be more flexible" (BM-17);

Some participants (%16,3) argue that the assignment criteria and professional merit are disregarded in some cases as some branch managers were appointed without having any proficiency exam. Participants stated that the appointments should be made in accordance with the assignment criteria and written exam results.

"...interview exam is the most important problem. Branch managers must be just assigned according to written exams." (BM -15);

"Nobody should be appointed without having any proficiency exam because the branch office is a task assigned by entrance exam ... such assignments damage the sense of equity." (BM -25).

Some participants (9.8%) stated that they experienced difficulties due to works of their spouses and children's educational needs, they demand that such excuses should be taken into consideration in the appointment of branch managers.

"We do not have a family order because of rotation." (BM -21);

"Rotation must be optional. The excuses of spouses and children should be considered while changing duty places...." (BM-45);

In addition, the participants also stated views such as the official medical reports taken for exemption from rotation were not examined in detail; since the appointments are made in June and July; branch managers are to work a year longer in their new duty district.

3. Findings Related to the Problems on Branch Managers' Authority and Responsibilities

The problems expressed for this issue are shown in Table 5.

Table 5. Problems of branch managers regarding their authority and responsibilities

Opinions	f (n=61)	%
They have more responsibilities than their authority.	22	36
Their role and status are not clearly defined and not properly understood.	14	22,9
Hierarchical conflicts with district education directors and other educational managers in the capital of provinces.	12	19,6
Their work requires financial responsibility and is risky.	11	18
Having various work tasks and heavy workloads.	9	14,7
Inadequate number qualified personnel in the directorates.	9	14,7
Exposure to external interventions.	6	9,8
Difficulties in the hierarchical relationship with school principals.	6	9,8
Inadequate staff number of the branch managers.	4	6,5
Lack of specialization in task areas.	3	4,9

A significant number of the participants (f=22; 36%) think to had too many responsibilities, but they don't have the same authority in educational management system. Participants clearly stated that there was an imbalance between the authorities and responsibilities of the branch managers. In addition, branch managers considered their position as a risky task especially in terms of financial liability (18%). Participants also stated that they should be given a guarantee in the form of financial liability insurance as they are at risk by signing financial document such as tender etc.

"There is a lot of responsibility at work; authorization must also be given when giving those responsibilities." (BM -7);

"Authority and responsibility should be balanced. Necessary authorizations should be made in areas where responsibility is given." (BM -16);

"There's too much responsibility. Compensation, duty loss and so on. But you don't get neither financial nor morally value of it at work" (BM -45);

"The branch manager's work is very risky, so the branch managers should be protected and an insurance system should be introduced with small cuts from the salaries of the branch managers." (BM -25);

Another issue is that the task areas are dispersed and workload is heavy. Some participants (14,7%) stated to have more workloads as branch manager and had to work in different fields.

One participant (BM-58) stated that he couldn't follow the renewed legislation due to his workload and that he couldn't find the opportunity to see the problems on the spot in following quotation:

"I'm responsible alone for 7 sections in my district. I can't hold my head up because of official correspondence; I work as if I were a chief or a civil servant. I can't find the time to follow renewed or updated regulations etc. Unfortunately, I don't have the opportunity to get into the field of

education and see the problems on the spot. Our colleagues are forced to take very risky responsibilities. We have neither professional rights nor economic power compared to our duty."

Another participant stated in following quotation below that the heavy workload couldn't be completed within a daily working time and therefore, they also had to work at home and didn't have enough time for their own families.

"...the works demanded by the ministry units exceeds the level that can be done during the working hours. Outside of working hours at home, even night-time and weekend work is required, thus this lessens our resting times and we don't have enough time for our own families." (BM -14)

Another participant (BM-20) attributed the high workload to unqualified staff in quotation below.

"The workload is high, due to the shortage of qualified personnel, all the work remains to us. Everything is asked of us, and we are to be accountable..." (BM -20).

Participants also stated issues such as that the number of branch staff is low; that there are insufficient number of qualified staff and that there is the lack of specialization in the field of branch managers.

Participants also verbalized that they have to work in different areas of expertise, therefore, they had to specialize in those different fields; the chief, civil servant and other personnel in their office were not qualified and their number was insufficient, and therefore, the staff were incapable of helping them enough to carry out the intensive workload.

"...in districts' offices, the qualified staff should to be assigned to accounting and tender etc." (BM-39);

"There should be some branching and specialized areas such as support branch directorate, human resources branch directorate, it is impossible to be an expert in every field" (BM-17);

"... we have to keep a close eye on every task we give to the officer in our office as there are less qualified personnel..." (BM-1).

Another issue stated by the participants was that the roles and status of the branch managers were not clearly defined and not properly understood (22.9%) by other staff in local education system.

The participants stated that their hierarchical position was not fully understood, and often considered as "great chiefs", in a position above the office chiefs in the district directorates, therefore, there are hierarchical conflicts with district educational directors, provincial deputy educational

directors and other branch managers in the province capitals; and those directors in province capitals regard themselves in the position which is over the branch managers.

Some participants stated that they had conflicts with their district education directors since they work in the position of responsible supervisor above the branch managers in districts, although they are not appointed by proficiency exam unlike branch managers; Similarly, there are difficulties in hierarchical relationship with school principals, and branch managers were not considered as supervisor above school principals even though they were in higher managerial position in the local administrative system.

"Being seen as "the great chef" in office, but still not a director" (BM-4);

"Branch managers have to be successful in proficiency exam before being appointed but those who are not successful in such an exam might be district education director as those positions are assigned without exams. It means they are your supervisor. This also causes so many conflicts within the organisation" (BM-5);

"Branch managers have authority and responsibility, but they are still not the head of school directors" (BM-48);

Another issue was that branch managers could be exposed to interventions from outside the organization.

"Endless demands of districts governors, municipalities and NGOs" (BM-52)

"...of course, there should be accountability for management but external intervention should also be minimized" (BM -56);

"The Branch Managers are considered to be ordinary civil servants, despite the fact that they are key to the policies of the ministry. ... it is necessary to increase the authority of the branch managers and to reduce the interventions of other elements." (BM -35)

4. Findings Related to the Problems on Career and Professional Development

When the opinions examined, a significant number of the participants (45.9%) stated that there were no clear criteria for the branch managers to increase in career steps.

To solve the problems in this field, participants recommended that district educational directors, provincial educational deputy directors and provincial educational head directors should be appointed on the basis of examinations the appointing to these top directorate positions should only be done among branch managers; the opportunities for progress in the career steps from district to

province and to central governmental educational organizations the branch managers should be encouraged to have postgraduate and doctoral degrees.

The branch managers think that only the staff working as branch managers should be able to be selected for such top directorate positions as the district education directors, provincial deputy education directors and the provincial educational head directors, but on the basis of examinations and professional merit. Besides, the participants demand a system based on certain evaluation criteria which will let them progress upwards in the career steps from district to province and to central governmental educational organizations.

"...staff can generally be appointed to upper directors positions without having an exam (Provincial Deputy Director, District Education Directors, etc.) but these upper positions can be appointed by an exam among those branch managers" (BM-6);

"....there should be more opportunities for career progression...." (BM-11);

"...Branch managers should be able to become general educational inspector at ministry level through exam, and also to become district educational director through exam...." (BM-23);

"Master's degree must be compulsory for branch managers and appropriate conditions must be provided for them to have doctorate degree" (BM-27);

"... Postgraduate and doctoral studies of the branch managers should be encouraged, and at least once a year, they should be taken to the vocational and administrative seminars" (BM-44);

"...The most important problem on the career steps is the lack of objective criteria" (BM-34).

5) Findings on Other Problems of Branch Managers

Apart from the problems outlined in the four heading above, participants stated also that since local inspectorates were abolished, the remaining duties and responsibilities of the educational inspectorate in the provinces increased their workloads (BM-14;58); the supervisory duties given in motor driving courses haven't been evenly distributed (BM-25).

In addition, some participants recommended that the income tax limit bases should be increased (BM-39); branch managers should not be unionized because of their critical duties (BM-50); the workload should be lessened by creating statistics and R & D units in districts (BM-58); there should be more staff for technical and engineering in district education directorates (BM-61); the number of immigrant students should also be taken into account while determining the number of

branch managers (BM-9) and some certain number of duty positions should be granted for female branch managers in the provinces (BM-40);

"The abolition of the education inspectorate was a problem and the inspectorial works were left to the branch managers" (BM-14);

"... the workload on correspondence can be lessened by increasing the number of service staff; also by establishing an R & D unit, statistics etc. in the districts, branch managers' workload should be reduced. In this way, we can produce new projects in order to increase the quality in education. ...... due to the decrease in the number of education inspectors, the duties which were being done by inspectors such as staff discipline investigation, opening of new institutions etc. are to be done by us now." (BM-58)

"Central system exams and motor vehicles driving school exams are mostly held in bigger districts and provinces, so branch managers working in small districts don't benefit from additional income. .... a central revenue payment pool should be created and the test revenues in all provinces and districts should be paid via this system" (BM-25);

"Current 15% income tax base limit should be increased from 14,800 TL to 30,000 TL... " (BM-39);

"Certain number of duty positions should be granted for females in the provinces" (BM-40);

"Branch managers should not be unionized..." (BM-50);

"...the staff number of branch management needs to be readjusted and updated. Especially the participation of Syrian students and temporary education centres students in refugee camps" (BM-9);

"Directorates in districts and province should be given at least two cadres of technical teachers or engineers. It is important for some units." (BM-61).

Discussion, Conclusions, and Recommendations

As the results of the research are qualitative, they are not generalized to all branch managers working in the district and provincial organization of the MoNE in Turkey. Findings, conclusions and suggestions obtained according to the opinions of these 61 participants can be listed as:

1) The most important issue regarding professional rights is that of branch managers salaries are lower than other managerial positions. 67% of the participants stated that their salaries and wages

were low. The branch managers working in local educational directorates consider that their workloads is high, however the wages are rather low.

The staffs of the branch office in MoNE are considered to be the first level management team and they work within the general administrative services class in local education organizations. School management is not regarded to management position; it is a temporary administration task since all the managerial staffs at schools are considered to be teachers within education class but they are paid extra course fee for this managerial duty at school. The additional course fee given to the school principals working in the teaching staff is not given to the branch managers as they work within the general administrative services class. Considering these additional fees, when the participants calculated their monthly total wage incomes, they thought that they were even paid less than the school principals, although they work in a superior management position.

According to data of 2018, the salaries of the branch managers in local administration of MoNE vary between 4042 TL and 5103 TL. On the other hand, school principals receive teacher salaries because they are selected just among teachers with background of education as they are not in the general administration class. According to data of 2018, teacher salaries vary between 3321 TL and 3831 TL. However, according to the type of school they work, school principals receive additional tuition payments ranging from 24 to 26 hours per week. With this payment, they receive a total payment around 5000 TL per month. It is understood that the branch managers aren't paid for additional tuition as school directors have because the branch managers work in the general administration services class.

When the participants evaluate their total monthly payment, they are convinced that they receive less salaries and wages than school heads because the participants evaluated their monthly payment not only on salary payments, but also on the basis of other extra payments together. When considered from this point, it can be said that the branch managers who have lower seniority are paid relatively less salary and wages than the school principals who have higher seniority.

The result mentioned above has also shown consistency with a study conducted on the job satisfaction and social emotional loneliness levels of the branch managers. In the study by Şişman and Turan (2004), it was found that the branch manager candidates had primary financial problems.

2) A significant number of participants (40.9%) demand that the indicators of retirement ought to be raised to 3600. The additional indication of branch managers within the current system is 3000 for those who used to work in the teaching class and 2200 for those who used to work in other civil service areas. The additional indicator is a situation that affects the compensation and retirement pensions, rather than a situation that affects the salaries of employees. A civil servant who retired with

2200 indicators and the one retired with 3600 additional indicators had significant differences between their compensation and retirement pensions.

Requests for additional indicators in the local organization of MoNE have been a subject not only by branch managers but also by teachers and school administrators. For this reason, it is seen that political parties in different times have also taken into consideration the issue of correction of the additional indicators of the employees of the MoNE (Erkılıç & Dilbaz, 2017). From this point of view, this issue, also expressed by participants, is a popular problem known for long time in the local educational organizations of Turkey, still not resolved.

3) The branch managers think that their workload is too much. They stated that they are obliged to stay overtime due to their heavy workloads, but they are not paid overtime; the central exam supervision task, which is one of the few extra payment for them, is not equally distributed between the branch managers and the districts; although they are to join many committees and meeting as a demand of their position, they are also not paid any fees for such duties.

Such a result might have been raised from branch managers' comparing their salaries and wages they receive with the roles, status and responsibilities they undertake within the local educational organisations. Many branch managers have clearly stated that they have not received a proper remuneration despite the high level of responsibility of the task. In addition, the participants stated that the branch managers are obliged to fulfil their duties in the commissions formed in the provinces and districts but they did not receive any fees for these duties. The duties that are subject to the charge are limited to driving licence exams commission duties, but these tasks are more intensive in the central and large districts, whereas in smaller districts these tasks are rarely given. In this respect, the participants demand that such tasks should be given in the province-wide and be based on a common sharing system.

When their duty areas in the districts and provinces examined, besides the common duties in the field of education and training services, the branch managers have also various duties and responsibilities in different service areas such as special education and guidance; lifelong learning; private education institutions; strategy development; law; human resources; innovation and education technologies; support services; primary education; secondary education; vocational and technical education; religious education, MEBBIS (Information System of National Ministry of Education); secretariat; document and school transportation services (Sarıkamış MEM, 2018).

4) A significant number (36%) of the branch managers think that they do not have enough authority, although they have too many responsibilities. The participants clearly stated that there was an imbalance between the authority and responsibilities of the branch managers. Branch managers also consider their managerial position very risky task, especially in terms of financial liability. In addition,

the participants stated to have intensive and heavy workloads, and had to work in different areas most of which need to be expertise.

5) Participants believe that the staff number of branch managers is inadequate in local directorates, the number of chiefs and other qualified personnel is also insufficient, and that there is no specialization in the fields of duty of branch manager's work.

In the local directorates of MoNE, the branch manager staff numbers are determined based on the number of students at schools and other educational institution as cited in introduction section. According to this, the number of students per branch manager in the districts with a high number of students increases in direct proportion thus increasing the workload of branch managers.

Another noteworthy suggestion regarding this problem was the fact that, in the regions where the population of Syrian migrant students are concentrated, norm staff calculations should include temporary education centres and immigrant students in schools. From this point of view, Syrian migrant students especially in bordering districts and provinces of Turkey can be said another issue that is likely to increase the workload of branch managers.

6) The participants made suggestions for increasing branch manager salaries; raising additional indicators for retirement to 3600 additional indicators; improvement of wages by granting seniority, authority and special service compensation; increasing in-service training opportunities; and facilitating their postgraduate and doctoral studies.

7) It was concluded that the majority of the branch managers (93.4%) had problems related to mandatory duty place changes (rotation). Branch managers working in the districts and provinces are subject to mandatory assignment, and they are to work with certain period in five working zones which were formed according to the general working conditions of provinces and districts. After being appointed, branch managers are to work at least six years in zone 1; four years in zone 2 and 3; and two years in zone 4 and 5.

While some of the participants thought that this practice should be completely abolished, the majority of the participants expressed their distress and suggestions about the implementation process rather than the abolition of the practice. Participants think that service zones and service scores in these regions are not determined in the light of objective and current data, so service zones, service scores, service duration and the number of working staff in these regions should be regulated again.

This result is also consistent with the results of a previous study conducted on mandatory duty place change. Kayıkçı et al. (2014) found that the determination of service zones was not

appropriate, working duration in the service zones was incorrectly determined and the difference between the service scores obtained from service zones was rather high.

8) Participants are completely against the branch managers' being appointed without having exam according to Article 76 of Law No. 657 on Civil Servants. The participants stated that Article 76 should not be operated and the appointments should be entirely made in accordance with the official examination criteria.

9) The participants consider that branch managers' role and status are not clearly defined and not understood correctly (22.9%) in local educational directorates. Participants views indicated that the hierarchical positions of the branch managers were not fully understood, most of the time, they were considered as "great chef" in a position above the chiefs in the local educational directorates, therefore, there were hierarchical conflicts with the district education directors, provincial deputy directors and other branch managers in the province, moreover the branch managers working in the provincial centres and the deputy educational directors see themselves as chief of the branch managers and in a superior managerial position; the district educational directors, even though they were not appointed by a selection exam, were in the position of supervisor over the branch managers; similarly, they stated the difficulties in the hierarchical relationship with the school principals and that they were not considered as the heads of the school principals even though they were in a higher managerial position.

10) A significant number of the branch managers (45.9%) think that there are no clear criteria for their rise in the career steps. To solve the problems, the branch managers suggested that the district education directors, deputy educational provincial directors and provincial educational head directors should only be appointed among the branch managers based on the examination and professional merit. The opportunities for progress in the career steps should be operated according to certain criteria increasing from districts to provincial organizations and to the central ministerial organizations. Besides, the participants demand a system of rise in the career ladder that moves from local districts towards the managerial positions in the provincial centres and central ministerial organization as well as based on certain evaluation criteria.

11) Participants also stated that they had other problems since the local inspectorates were abolished and this increased their workloads; the supervisory duties given in motor driving courses haven't been evenly distributed; the income tax limit bases were not increased. Since the duties and authorities of the educational inspectors in the country have been changed, it is understood that the workload of branch managers increased especially in staff discipline investigation areas and opening new educational institutions which had been done previously by educational inspectors.

The duties in the driving license exams are concentrated mainly in the central districts or larger districts, accordingly, the branch managers working in these districts have more chance to get duties than their counterparts in smaller districts. The fact that income tax limit bases are low is another problem area that causes branch managers to be subject to an earlier upper tax rate.

12) The branch managers also need expert support on technical issues within their fields of duty. The participants have made suggestions and demanded that the statistics and R & D units should be formed as well as more technical staff or engineers should be hired in the districts and workloads should be reduced in this way.

Recommendations

1) The occupational rights of the branch managers working in Turkish local educational directorates should be improved especially their salaries, wages and indicators for retirement.

2) The staff number of the branch managers working in districts and provinces should be increased.

3) Branch managers should be specialized in different fields of duty. In addition, more number of staff in the fields which require different expertise and in the technical fields (such as accounting, construction, statistics, technicians, engineer etc.) should be hired in the districts and provinces.

4) The service zones, duration and scores within the scope of mandatory duty place change for branch managers should be updated and rearranged according to the socioeconomic development levels, population and the number of students of the districts and the provinces.

5) Arrangements should be made to enable branch managers to rise in career steps from district levels towards the provincial and central governmental levels based on a written examination and an objective performance evaluation system.

6) The role and status of branch managers in the hierarchical structure of MoNE at district and provincial organizations should be more clearly defined.

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Detecting The Opinions of the Secondary School Administrators Regarding the Use of Mobile Technologies for Educational Purposes[1]

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Abstract

The goal of this research is to detect the opinions of secondary school administrators regarding the use of mobile technologies for educational purposes. 15 secondary school administrators form the participants of this research. The data of the research are collected in the fall semester of the 2017-2018 educational year. The work is designed through the qualitative research model. The personal information form and the semi-structured interview form are prepared by the researcher while collecting the data. The data obtained have been resolved by using the content analysis method. According to the obtained findings from this research; secondary school administrators have expressed that they use mobile learning in their teaching practices "in need of momentary information", "momentary communication", and "in the transfer of the audiovisual data used in the courses to the smart board". The administrators have expressed that while choosing the mobile technologies they take into account the content of the course and the features of the action which is going to take place during the course. It has been stated that with the use of mobile tools for educational purposes, there has been seen positive changes in the teaching activities and that the courses has started continuing more effectively and efficiently, and that they benefit from the audiovisual materials more during the course, and that by moving away from the traditional teaching method the student starts learning more active and enjoys.

Key words: mobile technologies, mobile learning, secondary school teachers, secondary school administrators

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Introduction

In today's world, science and technology progress at an extraordinary pace and they add an indispensable comfort and ease in human life. While the constantly progressing science and technology expand their borders, it creates an awareness of the fact that the world is not as enormous as it is considered to be. Thanks to science and technology, a new tool, an appliance, a machine or software become an indispensable part of our families or jobs.

The connection between science and technology contains natural and compulsory parallelism. The findings of science pave the way to technology by forming its data. The findings of technology expedite scientific researches. Everything began changing fast especially after 1972 when computers were used actively in a more advanced way. Therefore, information processing and storage caused the information to take a step in its golden age. With computers stepping in, information is delivered very fast. It created the necessity of accessing information faster. Meanwhile, the integration of learning activities became easier. (Sharples, Taylor & Vavoula, 2007)

Prior to computer and internet, reaching a piece of information has required a great deal of effort and time. Even receiving to the simplest information could take days, even weeks. It was hard to scan other written sources from libraries and archives. Along with this difficulty the narrowed-boundary researches were being conducted. However, in today's digital age, the necessary time to reach the information has become measurable. The most significant factors that cause this are mobile phones, tablets, and laptops that have fast processors. They have become accessible to the wide crowds with their cheap models. These models can be accessed remotely with their wireless internets. Those gadgets have been accepted and adopted by people. While all of these advancements have been changing the lifestyles of the individuals, the integration of these to education has changed our way of learning. Our new learning method, mobile learning, is the learning that is formed by the joint use of mobile tools and technologies that have enabled the learning without any time or place restrictions. Mobile learning is defined as the educational practices provided via PDAs (individual digital assistant or smallcomputer) and smartphones. (Keegan, 2005). With mobile learning, in today's world, education can be practiced every time and everywhere without any time and place restriction. This situation causes an important paradigm change in education and removes the borders (Sendag, Gedik, Caner, & Toker, 2019). Mobile learning plays an important role in anywhere it is used in the scope of education.

Furthermore, the perspective on this method of learning has climbed to another level thanks to technological tools. The use of mobile tools in the scope of "learning everywhere concept" features the technology (Cárdenas-Robledo and Peña-Ayala, 2018). In this sense, the rise of the use of technological tools in society has increased the importance and applicability of mobile learning via

mobile phones, mini phones, and smart digital systems. According to the TUIK 2016 reports, %96,9 of the houses in Turkey have mobile phones. When the internet usage goals checked, it is seen that the internet is used for social media, again ranks the first, followed by video watching and newspaper & magazine reading. Thus, it has become inevitable that the devices used by the nowadays students are now used in education. In relation to e-learning, which is widely used in education m-learning (mobile learning), has also started to be widely used. In order to extend the use of technology in education, the Ministry of Education launched "the Fatih Project" in 2011. The smart boards were set almost all over Turkey in all high and secondary schools and the tablets were distributed to the students. With these smart boards in the classrooms, the students were able to use the technology both inside and outside the classrooms thanks to the fiber internet network. This enabled them to cement the base of mobile learning. This project is the biggest and comprehensive education movement about the integration of education with technology. (The Fatih Project, 2017)

With the technology's integration with education, the administrators of the educational institutions have been compelled to have some qualifications. It is expected that the administrators of the educational institutions have the necessary qualifications to use the technology and, as the educational leader, to lead the supervisory, instructional, and learning practices regarding the use of technology (Afshari et al., 2009). Tanzer describes the technology leader as "the person who makes the necessary coordination so that the technology would be used effectively and efficiently in the organization and the person who affects, directs, and manages the organization" (Quat: Akbaba-Altun,2008a). Just like the experts express, educational administrators need to follow an organized way while using technology efficiently (Afshari et al. 2009). It comes into question that the administrators of the educational institutions are to determine the technology leadership roles and its standards and be open to development. It is considered that with the rise of the use of technology in every field and moment of our lives there is going to be an effect in the field of education. Thus, if the mobile era is going to form the future, mobile learning may be the way of future learning. (Yılmaz, 2011).

Mobile learning covers e-learning. Removing the time and place restrictions provides major advantages in the concept of learning everywhere and every time. In today's age of information, the teacher and administrators are the leaders that guide how to use the information and interpret it. The teachers and administrators that are the practitioners of education must be encouraged to use the mobile learning tools. They should be given training at regular intervals in line with technological developments.

In this sense, with this paper, the opinions of the administrators regarding this topic which deals with the mobile learning and the use of technology at the schools and in the classrooms during the teaching activities are assessed.

The Purpose and Importance of the Research

The purpose of this research is to detect the opinions of the secondary school administrators regarding the mobile learning. The sub-purposes in order to reach the developing purpose are as follows:

The secondary school administrator;

- Which and how the mobile tools are used during the teaching activities?
- How do they decide which mobile tools they will use in the teaching activities?
- What are their opinions about the changes in their teaching practices that have occurred since they started using mobile tools?
- How do they define a successful or failed course supported by mobile tools?
- How do they define mobile learning in their own words?
- What are their opinions regarding the contribution of the Fatih Project to mobile learning?
- What are their opinions on the successful integration of mobile learning into teaching activities?
- What are their opinions on the use of mobile learning in teaching activities effects on the success of the student and the processing of the course positively and negatively?
- What are their opinions on the obstacles that appear during the integration of the mobile learning tools to the learning and teaching activities?
- What are their perceptions regarding the competences of word processing; calculation, supply, the creation of database and internet programs?

Method

In this section, there is information regarding the research model, the participants of the research, the data tools, the data collecting, and the data analysis.

The Model of the Research

In this research, which aims to detect the opinions of the secondary school administrators regarding the use of mobile technologies for educational purposes, the descriptive phenomenological method is used. This is one of the qualitative research methods. The aim of this phenomenological approach is to present the experiences of the individuals as they are. (Creswell, 1997) The main aim of

the educational phenomenological researches is to enhance the educational process by understanding the experiences. (Ersoy, 2016)

The Participants

In order to detect the participants of this research, the maximum diversity sampling is used. The goal here is to increase the diversity of the participant administrators that will choose a side during the research. The distribution rates regarding the research participants's demographic factors is presented in Table 1.

Table 1. The Research Participants's Demographic Factors

		f	%
Gender	Women	6	40
	Men	9	60
Professional Seniority	0-5 Years	-	-
	6-10 Years	4	26,7
	11-15 Years	2	13,3
	16+ Years	9	60
	Turkish	2	13,3
	Math	1	6,66
	Science	4	26,4
	Social Sciences	4	26,4
	Sports	2	13,3
	Religion	1	6,66
	Visual Arts	1	6,33
Duty Title	Administrator	15	50

The Data Collection Tool

The individual information form is prepared by the researchers for data collection. Along with this form, an interview form, which detects the secondary school administrators' opinions by taking the expert's opinions, is prepared. In the open-ended questions, the participants are asked which and how mobile tools they use, how they decided to use them, how they would define their own teaching practices since they started using the mobile tools, how they define a successful or failed class supported by mobile tools. Also, they are going to be requested to define the mobile learning with their own words, what the contributions of the Fatih Project are to the mobile learning, and what needs to be done in order to integrate the mobile learning successfully. The first 5 of the open-ended questions are taken from Tsai's (2017) work.

The Analysis of the Data

All the face-to-face interviews that are conducted by the researches are written down. The coding process of the data from the interview forms is done. The expressions voiced by the secondary school administrators, who have responded to survey form, have not been subject to any kind of change or edit. The opinions taken for every single question are processed in relative indexes on Excel and the collected data are prepared for analysis through making the question-based classification. It is seen that some of the administrators give more than one response to the questions. For this reason, the classifications are made by taking all the answers into account. While the data are analyzed every single form is given numeric codes starting from 1. Instead of the names of the participant administrators, the codes such as 1Y (Administrators), 2Y, etc. Sample expressions that reflect the administrators' opinions are presented in "quotations". In reliability calculation of the qualitative data Miles and Huberman's formula (1994) is used. Formula:

Percentage of Consensus = Consensus / (Consensus + Dissidence) x 100

As a result of the encoder calculations, the reliability is 0.80. Due to the fact that the participants report an opinion relevant to more than one single topic during the analysis of the qualitative data, the figures of total opinions of the administrators in the analysis process may be different than that of the administrators that take part in this research.

The content analysis data is used in the analysis of the obtained data. What intended is to achieve in the content analysis is to reach the concepts and relations that can explain the collected data. The themes are shaped by scrutinizing the common and different features among these codes. Later, by organizing the codes and themes the results are prepared. The direct quotations of the administrators' opinions are presented within quotations.

Results

1. Which and How Mobile Tools Are Used During the Course of Teaching Activities of the Secondary School Administrators?

The results, shown in Table 2, are prepared in line with the opinions of the secondary school administrators regarding which and how they use the mobile tools during their teaching activities.

Table 2. The Opinions of the Secondary School Administrators on How They Use the Mobile Tools During the Teaching Activities.

The Used Mobile Tool and Reason	How the Mobile Tools Are Used	f	%
Mobile Phone	Momentary Information Need	10	66,6
Mobile Phone	Momentary Communication	12	80
Mobile Phone/Tablet/Laptop	Mobile Phone/Tablet/Laptop	4	26,7
Mobile Phone/Tablet/Laptop	Following Dyned and Eba Applications	2	13,3
Mobile Phone/Tablet	Supporting the Topic	2	13,3

When Table 2 is analyzed, %80 of the administrators express that they use the mobile phones the most in "momentary communication." On the other hand, it is observed that %66,6 of the administrators use their mobile phones for "satisfying their need for momentary information." %26,7 of the administrators give their opinions that they "use the mobile tools in reflecting the activity of the class to the smart board." %13.3 of the administrators express that they use the mobile tools in the Ministry of Education's "Eba and Dyned Applications" %13.3 of the administrators remark that they "get the support of the mobile tools while teaching the subject."

2. How do the secondary school administrators decide which mobile tools they will use in their teaching activities?

The results, shown in Table 3, are prepared in line with how the secondary school administrators decide which mobile tools they will use in their teaching activities.

Table 3. The Opinions of The Secondary School Administrators on How They Decide Which Mobile Tool They Will Use in the Teaching Activities.

The Reason of Choosing the Mobile Tools	Chosen Mobile Tool	f	%
The Content of the Course	Laptop/tablet	12	80
The Course Activity	Laptop/tablet	12	80
The Mobile Tools That the Students Can Obtain with Their Own Facilities	Laptop/tablet	1	6,66
The Ease of Use in Accordance with the Brach	Mobile Phone/Laptop/tablet	1	6,66
In Need of Momentary Information Flow	Mobile Phone/	1	6,66
By Browsing International and Domestic Sources	Mobile Phone//Laptop/tablet	1	6,66
Striking and Splashy Applications	Mobile Phone/Laptop/tablet	1	6,66

When Table 3 is analyzed, %80 of the administrators give their opinions that they choose the mobile tools according to "the content of the course" and "the course activity." %6,66 of the administrators express that they choose "the mobile tools that the students can obtain with their own facilities." %6,66 of the administrators remark that they choose "the mobile tools that have the ease of

use in accordance with the branch." %6,66 of the administrators express that they choose the mobile tools that they can "communicate momentarily." %6,66 of the administrators say that they choose the mobile tools "by browsing international and domestic sources." %6,66 of the administrators express that they choose the mobile tools that "are striking and splashy."

As a result, when we look at the findings in this main theme it can be said that generally overwhelming majority of the administrators choose the mobile tools according to "the content of the course" and "the course activity."

3. What are the opinions of the secondary school administrators about the changes in their own teaching practices since they started using mobile tools in teaching activities?

The frequencies, shown in Table 4, are prepared in line with the opinions of the secondary school administrators on the changes in their own teaching practices since they started using the mobile tools in teaching activities.

Table 4. The Opinions of The Secondary School Administrators on The Changes in Their Own Teaching Practices Since They Started Using the Mobile Tools in Teaching Activities

The Change in the Teaching Practices	f	%
Yes, there has been a change	15	100
I started using more visual, auditory tools and materials	11	73,3
More effective learning	4	26,7
Went away from the mainstream teaching	10	66,6
The participation and activity of the students increased	2	13,3
Permanency increased	3	20
Time saving is provided	4	26,7
Abstract concepts are being learned better	1	6,66
I can do more activity and experiment in the class	4	26,7
Quality in education increased	3	20
Time spared for the student increased	2	13,3
The class became more entertaining	2	13,3
I ensured momentarily feedback	1	6,66
I started preparing the teacing activities on my own	2	13,3
The student creativity increased	2	13,3
Learning independetly of time and place	1	6,66
I started sharing the programs done and used by me with my friends	1	6,66
I started reaching out wide masses	1	6,66

When Table 4 is analyzed, all of the administrators report that with the entry of the mobile tools into our lives there has been a change in teaching activities. %73.3 of the administrators express that "I started using more visual and auditory tools and materials" %26.7 of them say that "more effective learning ensured and productivity of the course has increased", %66,6 of them report that they "went away from the mainstream teaching", %13.3 utter that "the participation and activity of the students has increased", %20 of them express that "permanency has increased", %26.7 remark that "time-saving is provided", %6.6 say that "abstract concepts are learned better", %26.7 utter that "I can do more activity and experiment in the class", %20 of them claim that "quality in education has increased", %13.3 say that "time spared for the student has increased", %13.3 say that "the class has become more entertaining", and %13.3 of them say that "the students have ensured momentarily feedback."

Besides, %13.3 of the administrators say that "I started preparing the teaching activities on my own", %13.3 of them say that "the student creativity increased" %6.66 say that "learning independently of time and place is provided" %6.66 say that "I started sharing the programs done and used by me with my friends" and lastly %6.66 claim that "I started reaching out wide masses."

Consequently, when we observe conclusions in the main theme we can see that generally there has been a difference after the administrators started using the mobile tool in teaching activities.

When the administrators started using the mobile tools in teaching activities there have been some differences such as "they started using more visual and auditory tools and materials" "going away from the mainstream teaching" and that "the more effective learning provided and productivity of the course increased."

4. How do the secondary school administrators define a successful or failed class supported by the mobile tools?

The frequencies, shown in Table 5, are prepared in line with the opinions of the secondary school administrators on how they define a successful or a failed class supported by the mobile tools.

Table 5. The Opinions of the Secondary School Administrators on How They Define A Successful or Failed Class Supported by the Mobile Tools.

A successful class supported by the mobile tools	f	%	A failed class supported by the mobile tools	f	%
If the pre-planned, and useful mobile tools for giving the targets of the class are used the class is successful.	5	33,3	It is failed if it is unplanned and does not give the targets.	2	13,33
If the student is active the class is successful.	3	20	The class lectured wholly by the mobile tools and where the teacher is passive is failed.	3	20
If the students answer correctly to the questions asked at the end of the class it is successful.	1	6,66	If the teacher lectures only with the mobile tools and does not have the control over the class the class is failed.	1	6,66
If time-saving is provided it is successful.	1	6,66	If the mobile tools are supported and updated according to the target of the class and its dynamics of them and if that suits the student profile of the class that class is successful. Otherwise, failed.	1	6,66
If it addresses all types of mind, it is successful.	1	6,66	If the result of the assessment and the evaluation test of the course, where the mobile tools are used, is negative. Then, the class is failed.	1	6,66
If it is updated and supported according to the dynamics of the classroom. It is successful.	1	6,66	If it drew the attention of the students in the classroom and got the attention it is successful. If not, failed.	1	6,66
It is successful until the point as many as students it reaches.	1	6,66	The students are distracted in a classroom where the disconnection occurs due to the problem of the internet connection.	1	6,66
If the students grasp the class, it is successful.	1	6,66			
If it notified the feedback, it is successful.	1	6,66			
If the student receives the targets, it is successful.	1	6,66			

When Table 5 is analyzed and when we see how the administrators define a successful or failed class supported by the mobile tools; %33.3 of them say that "If the pre-planned, and useful mobile tools for giving the targets of the class are used the class is successful" %20 say that "If the student is active the class is successful", and %6.66 state that "If the students answer correctly to the questions asked at the end of the class is successful."

Besides, %6.66 of the administrators say that "If time-saving is provided it is successful" %6.66 say that "If it addresses all types of minds, it is successful" %6.66 say that "If it is updated and

supported according to the dynamics of the classroom. It is successful" %6.66 say that "If the students grasp the class, it is successful," %6.66 of them say that "If it notifies the feedback, it is successful" and %6.66 utter that "If the student receives the targets, it is successful."

The administrators define a failed class supported by the mobile tools in Table 6; %20 of the administrators define that "It is failed if it is unplanned and does not give the targets." Also, %20 of them say that "The class lectured wholly by the mobile tools and where the teacher is passive is failed" %6.66 of them claim that "If the teacher lectures only with the mobile tools and does not have the control over the class, the class is failed." %6.66 say that "If the mobile tools are supported and updated according to the target of the class and its dynamics and if that suits the student profile of the class, that class is successful. Otherwise, failed." %6.66 say that "If the result of the assessment and the evaluation test of the course, where the mobile tools are used, is negative. Then, the class is failed." %6.66 utter that "If it drew the attention of the students in the classroom and got the attention it is successful. If not, failed." %6.66 express that "The students are distracted in a classroom where the disconnection occurs due to the problem of the internet connection."

Consequently, when the findings in the main theme are examined it can be seen that the administrators define "a successful class" when a class is "pre-planned, and useful mobile tools are used", "when the student is active", "if the students answer correctly to the questions at the end of the class." On the other hand, it can be seen that the administrators define "a failed class" when in a class "the mobile tools are used excessively and inefficiently", or when a class "is presented wholly by the mobile tools and where the teacher is passive is failed." We can infer that the administrators should preplan their mobile learning tools and during the teaching activities, both the teacher himself/herself and the students ought to be active.

5. How do the secondary school administrators define the mobile learning with their own words?

The frequencies, shown in Table 6, are prepared in line with the opinions of the secondary school administrators on how they define the mobile learning with their own words.

Table 6. The Opinions of the Secondary School Administrators on How They Define the Mobile Learning with Their Own Words.

Definition	f	%
It is a world that we are curious about, and education is also an indispensable world.	2	13,3
Carrying the mobile tools along with the current technological devices and using them in education.	1	6,66
It is the technology which may provide 24 hours of learning without any kind of restrictions of time and place.	1	6,66
Modern learning.	1	6,66

It is the new way of learning where we reach the information faster than anything else and which appeals to 21st-century people.	1	6,66
It is a learning style that is supposed to exist currently. It is a need.	1	6,66
Learning with today's mobile tools.	1	6,66
We can call it the tool which is used for varying the course visually and auditory in the class.	1	6,66
It is a way of learning which appeals to more than one sense organs of the students.	1	6,66
It has become an indispensable thing in our lives. Not without mobiles.	1	6,66
It is a new way of teaching that has been improving nowadays because of the internet.	1	6,66
It is the modern and contemporary learning.	1	6,66
It is the multidirectional way of learning.	1	6,66
Limitless and spaceless learning via mobile tools.	1	6,66
It is a world that we are curious about, and eduction is also an indispensable world.	1	6,66

When Table 6 is analyzed, it is seen that the definitions given by the secondary school administrators are quite different from each other. It can be concluded that %13.3 of the administrators define the mobile tools as "It is a world that we are curious about, and education is also an indispensable world" %6.66 of them describe it as "Carrying the mobile tools along with the current technological devices and using them in education" %6.66 of them describe it as "It is the technology which may provide 24 hours of learning without any kind of restrictions of time and place" %6.66 define it as "Modern learning" %6.66 of them define it as "It is the new way of learning where we reach the information faster than anything and which appeals to 21st-century people" %6.66 of them describe it as "It is a learning style that is supposed to exist currently. It is a need" %6.66 of them say that "Learning with today's mobile tools" %6.66 of them claim that "We can call it the tool which is used for varying the course visually and auditory in the class" %6.66 of them say that "It is a way of learning which appeals to more than one sense organs of the students" %6.66 define it as "It has become an indispensable thing in our lives. Not without mobiles" %6.66 of them define it as "It is a new way of teaching that has been improving nowadays because of the internet" %6.66 of them define it as "It is the modern and contemporary learning" %6.66 of them define it as "It is the multidirectional way of learning" %6.66 of them define it as "Limitless and spaceless learning via mobile tools" %6.66 of them define it as "It is a world that we are curious about, and education is also an indispensable world."

Consequently, when we examine the findings in the main theme and when we look at the definitions of the mobile tools by the administrators it can be said that they perceive the mobile learning in various ways in their own intellectual worlds and that there is not a common definition among the administrators concerning the mobile learning.

6. What are the opinions of the secondary school administrators on the contributions of the Fatih project to the mobile learning?

The frequencies, shown in Table 7, are prepared in line with the opinions of the secondary school administrators on the contributions of the Fatih project to the mobile learning.

Table 7. The Opinions of The Secondary School Administrators on the Contributions of the Fatih Project to the Mobile Learning

The Administrator Opinions Concerning the Contributions of the Fatih Project to the Mobile Learning		
Opinions	**f**	**%**
Yes, it contributed to the mobile learning.	14	93,3
I added the content (EBA contents) richness to the course.	14	93,3
The use of smart board supported the course.	14	93,3
I supported the IT infrastructure at the school.	14	93,3
The numbers of examples given and questions asked in the classroom increased.	7	46,7
It excites the student in the course.	8	53,3
Sending homeworks.	5	33,3
The course is intriguing.	8	53,3
The speed of learning accelerated.	8	53,3
The will of learning increased.	8	53,3
Equality of oppurtunities(within the country) is provided.	6	40
It made the homework checking easier.	2	13,3
It provided time-saving.	2	13,3
Education continued in and outside the school.	3	20
Awareness increased.	2	13,3
It made the topics more concrete.	1	6,66
Listening activity in the course increased.	5	33,3
The language learning activity increased by EBA	2	13,30
S/he searches for images on the big screen.	1	6,66
S/he can study at home enjoyingly.	1	6,66
It gains time and the rest of it is transferred to the student.	1	6,66
Providing the permanent information.	1	6,66

When Table 7 is analyzed, the opinions of the secondary school administrators on the contribution of the Fatih project to the mobile learning are as follows; %93.3 of the administrators stress that "the Fatih project contributed to the mobile learning" and "it added the content richness to the course." Furthermore %93.3 of them suggest that "it contributed the use of smart board" and "supported the IT infrastructure at the school" while %46.7 of them say that "the numbers of examples

given and questions asked in the classroom increased" %53 of them utter that "it excites the students in the course" %33.3 of them express that "sending homework is easier" again %53.5 of them remark that "the course is intriguing", "the speed of learning accelerated", and "the will of learning increased." %40 of them claim that "equality of opportunities "within the country" increased. %13.3 of them say that "it made the homeworking checking easier" and "it provided time-saving." %20 of them remark that "education continued in and outside the school". Again, %13.3 of them say that "awareness increased" and %6.66 of them utter that "it made the topics more concrete".

In a result, when the findings in the main theme are examined it can be said that most of the administrators express that "the Fatih project contributed to the mobile learning", "it added the content richness to the course through EBA applications", "the smart board applications supported the course", "it supported the IT infrastructure in the course", "the numbers of examples given and questions asked increased", and "it excites students in the course." We can infer that "the Fatih Project" led by the Ministry of Education supported the necessary infrastructure for the mobile learning, the content of the course is enriched by the EBA applications, smart boards are widely used in teaching activities, and they excite the students.

7.What are the opinions of the secondary school administrators on the successful integration of the mobile learning to teaching activities?

The frequencies, shown in Table 8, are prepared in line with the opinions of the secondary school administrators on the successful integration of the mobile learning to teaching activities.

Table 8. The Opinions of the Secondary School Administrators on the Successful Integration of the Mobile Learning to Teaching Activities.

The Administrator Opinions on the Integration of the Mobile Learning to Teaching Activities		
Opinions	f	%
The teacher's skill of using the mobile tools.	9	60
Handling the infrastructure problem in the schools.	6	40
Giving lectures to the students about how to use the mobile tools.	4	26,7
Giving lectures to the teacher about how to use the mobile tools.	4	26,7
The ability of the students in using the mobile tools.	6	40
Preparing good course plan.	6	40
Providing and giving the hardware and the mobile tools to teacher and student.	1	6,66
Giving the necessary education while studying in the university.	1	6,66
Preparing the convenient content.	1	6,66
Reaching out to the faster and the more students thanks to the high-speed internet connection.	1	6,66

When Table 8 is analyzed, the secondary school administrators give opinions in order to provide the successful integration of the mobile tools to teaching activities as follows; %60 of the administrators suggest that "the teacher should have the skill of using the mobile tools." %40 of them say that "the infrastructure problem in the schools should be handled." %26.7 of them suggest that "giving lectures to the students about how to use the mobile tools", and "giving lectures to the teacher about how to use the mobile tools." %40 of them say that "the students should have the ability in using the mobile tools" and "the teacher should prepare a good course plan."

As a result, when the findings in the main theme are analyzed it can be said that so that the administrators would integrate the mobile tools to the mobile learning successfully the teacher, the administrator, and the students should have "the ability in using the mobile tools", they should be "given the necessary lectures about how to use the mobile tools" so that they can use them properly, "the infrastructure problem should be handled in the schools", "the teacher and the student should be provided and given the mobile tools", and the teachers should "prepare a good course plan."

8. What are the opinions of the secondary school administrators about the positive and negative effects of the use of mobile learning in the teaching activities in terms of student success and course performance?

The frequencies, shown in Table 9, are prepared in line with the opinions of the secondary school administrators about the positive and negative effects of the use of mobile learning in the teaching activities in terms of student success and course performance.

Table 9. The Opinions of the Secondary School Administrators About the Positive And Negative Effects of the Use of Mobile Learning in the Teaching Activities in Terms of Student Success and Course Performance.

Positive Opinions	f	%	Negative Opinions	f	%
The course draws attention, the interest in the course raises, can address to different sense organs, time gaining. Positive.	10	66,6	Students are engaged with the technological tools. Negative	1	6,66
That it can address well to visual and audio senses. Positive.	2	13,3			
It makes the transfer of many things in the teaching programs. Positive.	1	6,66			
It makes the teacher's job easier in the course, prevents the time-loss, increases visuality.	1	6,66			

When Table 9 is analyzed, there are the opinions of the secondary school administrators about the positive and negative effects of the use of mobile learning in the teaching activities in terms of student success and course performance. %66.6 of the administrators state that "the course draws attention, the interest in the course raises, the course can address to different sense organs, and it gains time." %13.3 of them say that they found it successful in the student success that "it can address well visual and auditory senses. The teacher and the administrators express that "face-to-face communication descended" and "the students are taking advantage of this occasion and spend most of their times on the mobile tools" and "the students are engaged with the mobile tools." All of these findings are found to be negative effects on the students.

As a result, when the findings in this main theme are analyzed we can say that "the course draws attention, the interest in the course raises, can address to different sense organs, and time-saving" and "it can address well to visual and audio senses" are the findings that support the idea of the use of mobile tools in the teaching activities and, on the other hand, negativity can be descended with an education about the mobile tools.

9. What are the opinions of the secondary school administrators on the obstacles that appear during the integration of the mobile tools into the learning and teaching activities?

The opinions on the obstacles that appear during the integration of the mobile tools into the learning and teaching activities are given Table 10.

Table 10. The Obstacles that Appear During the Integration of the Mobile Tools Into the Learning and Teaching Activities.

Technological Information	f	%	Pedagocial Information	f	%	Content Information	f	%
It is not always an obstacle.	0	0	It is always an obstacle.	0	0	It is not always an obstacle.	0	0
It is an obstacle most of the time.	1	6,7	It is an obstacle most of the time.	0	0	It is an obstacle most of the time.	0	0
It rarely is an obstacle.	9	60	It rarely is an obstacle.	11	73,3	It rarely is an obstacle.	6	40
It is not an obstacle.	5	33,3	It is not an obstacle.	4	26,7	It is not an obstacle.	9	60
Time Restriction	**f**	**%**	**Administrator Support**	**f**	**%**	**Personal Information**	**f**	**%**
It is not always an obstacle.	0		It is not always an obstacle.	1	6,7	It is not always an obstacle.	0	0

	f	%		f	%		f	%
It is an obstacle most of the time.	3	20	It is an obstacle most of the time.	0		It is an obstacle most of the time.	3	20
It rarely is an obstacle.	7	46,7	It rarely is an obstacle.	6	40	It rarely is an obstacle.	3	20
It is not an obstacle.	5	33,3	It is not an obstacle.	8	53,3	It is not an obstacle.	9	60
Professional Devepolment/Education	**f**	**%**	**IT development**	**f**	**%**	**Budget Contsraint**	**f**	**%**
It is not always an obstacle.	0	0	It is not always an obstacle.	0	0	It is not always an obstacle.	2	13,3
It is an obstacle most of the time.	3	20	It is an obstacle most of the time.	6	40	It is an obstacle most of the time.	5	33,3
It rarely is an obstacle.	2	13,3	It rarely is an obstacle.	4	26,7	It rarely is an obstacle.	5	33,3
It is not an obstacle.	10	3,3	It is not an obstacle.	5	33,3	It is not an obstacle.	3	20

10. What are the perceptions of the secondary school administrators regarding the competences of word processing; calculation, supply, the creation of database and internet programs?

The opinions of the administrators regarding the package programs that they use in their mobile learning tools and to what extent they do know those tools given in Table 11.

Table 11. The Competences of Word Processing; Calculation, Supply, The Creation of Database and Internet Programs

Word Processing (Word)	f	%	Tabulation-Statistics (Excel)	f	%	Presentation Preparing Program (Power Point)	f	%
I do not know	0	0	I do not know	0	0	I do not know	0	0
Beginner	0	0	Beginner	0	0	Beginner	0	0
Intermediate	3	20	Intermediate	4	26,7	Intermediate	3	20
Good	8	50,7	Good	9	70	Good	10	66,6
Advanced	5	33,3	Advanced	2	13,3	Advanced	2	13,3

Word Processing (Word)	f	%	Tabulation-Statistics (Excel)	f	%	Presentation Preparing Program (Power Point)	f	%
I do not know	0	0	I do not know	0	0	I do not know	0	0
Beginner	0	0	Beginner	0	0	Beginner	0	0
Intermediate	3	20	Intermediate	4	26,7	Intermediate	3	20
Good	8	50,7	Good	9	70	Good	10	66,6

Database (Access)	f	%	Internet Using	f	%	E-mail Using	f	%
I do not know	3	20	I do not know	0	0	I do not know	0	0
Beginner	4	26,7	Beginner	0	0	Beginner	0	0
Intermediate	8	53,3	Intermediate	2	13,3	Intermediate	2	13,3
Good	0	0	Good	9	70	Good	6	40
Advanced	0	0	Advanced	4	26,7	Advanced	7	46,7

The use of Outlook Express	f	%	Web Design Editorial (FrontPage, Dream viewer)	f	%
I do not know	0		I do not know	7	46,7
Beginner	3	20	Beginner	6	40
Intermediate	3	20	Intermediate	1	6,66
Good	5	33,3	Good	1	6,66
Advanced	4	26,7	Advanced	0	0

When Table 11 is examined, the administrators know the word-processing, calculation presentation programs, internet, e-mail usage moderately and well; the use of databases, the internet design is less known.

Discussion and Conclusion

What is intended in this research is to detect the opinions of the secondary school administrators on the use of the mobile tools for educational purposes in Izmit district of the city of Kocaeli. The use of mobile tools in education is generally perceived positively by administrators. The

obtained findings coincide with Çelikten's assessment which is that (2001) "Majority of the secondary school teachers and administrators ought to have an affirmative attitude towards the use of technology in the management process." Along with technology, the rise in the attention and participation of the students in the courses are essential advancements. These findings resemble that of Geçer and Topal (2013). It is observed that the administrators have rather complimentary views towards m-learning and that they agree with the opinions regarding the effectiveness and advantages of mobile learning. Yokuş supports it as follows; the reason for having at a high level of positive opinions towards the mobile learning for them is that they have already been downloading and using the mobile applications that have entered in every aspect of life.

In this research, one of the findings suggests that when the secondary school administrators asked which and how they use the mobile tools they, mostly, answered "meeting the momentary information needs" and "reflecting the content to the smart board via the mobile tools." We may say that in the teaching activities it is very important to meet the momentary information needs and connect momentarily. The prepared contents and activities are very significant, as well.

Among the findings, the administrators exude that thanks to the mobile tools now we give more places to visual and audio elements in the course and we use more widely the application and programs according to the content of the course. Thus, it increases the interest of the student in the course, it makes the students more active, the teaching is provided faster, the quality of the course raises, and the permanency of the information scales up. In the research conducted by Chen, Seilhamer, Bennett, and Bauer (2015), they asked the students' views about the perks of using the mobile tools and devices for academic purposes. In the result of the survey conducted, %72 of the students suggest that the mobile tools/devices make the accession to the class works easier, %65 say that it increases the communication with the other students, %60 say that it scales up the communication with the teachers, %48 suggest that it increases the information concerning the field of research, %43 claim that it raises the quality of the work and %42 express that it provides motivation in order to complete the class works. All these findings support the survey conducted.

The administrators that took part in this research expressed that the use of mobile learning and tools increased the learning quality. Seferoğlu's work (2009) also highlights similar findings.

Among the findings, we can see that when the administrators asked what kinds of problems mobile learning causes, most of them point out the technical and infrastructural problems. We encounter as the biggest problems such as preserving the mobile devices at the school, uploading the current applications and programs, and the incompetence of the administrators in the field of the integration of the mobile tools to the teaching fields. We can see similar findings in Şahin and Demir's (2015) and Turan's (2001) works.

In order the administrators to integrate the mobile learning in their teaching practices, as most of them stated, and so that the mobile applications could reach the educational targets the most important thing to do is that all of the stakeholders of the school such as students, parents, teachers, and administrators should pass the in-service training regularly and learn how to use mobile learning relevant to its purpose. We can see similar findings in Şahin and Demir's (2015) and Seferoğlu's (2009) works. Moreover, in Eren and Kurt's (2011) work it is stated that in presenting technology to the individuals, the school administrators should be oriented and encouraged for the in-service training concerning the procurement, presenting, and the use of the educational technologies. The findings carry parallelism with this statement.

There is also an emphasis that in the integration of mobile learning to the teaching activities pre-class planning should be done in advance. This finding parallels with Tan's (2007) work.

Most of the participants show affirmative views regarding the applicability of the Fatih project. Most of them defend the fact that the EBA applications, which form the content part of the Fatih project, should be up to date and the in-service training given to the administrators would make the mobile learning more effective and efficient. This obtained finding coincides with (Sincar et al., 2015)' finding which concludes that the effectiveness of the heavily-invested projects such as the Fatih project is related to the information and skills of the school administrators and teachers in using the technology and be aware of the importance of its use.

They remarked that it is necessary that chiefly, the students, the teachers, and the administrators should be given an in-service training and the technical infrastructure should be extended regarding the problems led by the mobile learning on the students, the teachers, and the administrators. We can come across similar findings in Şahin and Demir's (2015) and Seferoğlu's (2009)'s works. The mobile learning's ranking and development everywhere in the scope of learning will enable us to receive the information everywhere and every time by using mobile devices. In addition to this, it will contribute to meaningful learning with the pleasure and happiness that we feel outside the authoritarian learning contexts. (Tahir, Haron, & Kaur, 2018) It is very essential that the school administrators support the learning tools as the education leaders.

The administrators suggest that mobile learning in education is going to affect the future positively and it is going to be used in education more effectively. On the basis of all these, it is considered that it would be useful to examine the mobile learning in the future works and in the context of the opinions of the students, the parents, and the teachers.

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Family Triangulation Experiences of Turkish Young Women

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Abstract

This study aims to explore Turkish young women' family triangulation experiences. The phenomenological research design of the qualitative tradition was utilized. The sample of the study comprised 10 Turkish young women who were selected through convenience sampling. During the data collection, semi-structured interviews were preferred. Data analysis were also conducted via content analysis. Participants reported *insufficient problem/conflict solving ability* of their parents. Holding a parental role, defending the one parent as participants perceive he/she is weak, and feeling caught in the middle were the factors in relation to *mediating pattern*. The theme refers to the triangulation pattern that offspring is closer to either of parents than they are to each other. A number of participants described the children and fathers in their own families as *scapegoats* means a pulled out or outsider position in a triangular relationship. *Coalitions* were one of the most frequently reported theme and mainly indicated taking sides or alliances between three (offspring and parents). Triangulated children expressed anger, emotionally distant and disappointment toward their parents as they play a mediating role during the conflicts. Only one participant was able to act without dragging into conflicts and maintained a *balanced position* of triangulation. Moreover, all findings of the current study were briefly discussed in the context of the *value of children* theme as it is the fact that material/economic expectations of parents sharply decrease, and emotional expectations increase from children in Turkish culture.

Keywords: family triangulation, young women, family dynamics, intergenerational relationships

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Introduction

The concept of triangling basically refers to an involvement process of a third part (i.e. offspring, mother, father, grandparents, friends, therapists, neighbor, fantasized relationship, pets) in the relationship of two others (Kerr & Bowen, 1988) and received a notable attention by the early proponents of family system theories. The concept was termed with slightly different contents of definition such as 'perverse triangle' in Strategic Therapy (Haley, 1967); 'rigid triads' in Structural Therapy (Minuchin, 1974); and 'interlocking triangles' in Intergenerational Family Therapy (Kerr & Bowen, 1988). Nevertheless, among the family therapy practices, the approach maintained a central influence especially in North America (Brown, 1999), and 'triangling' was one central concept to Bowen theory used in clinical work.

The term of 'triangle' was preferred by Bowen (1978) to emphasize the emotional process in family system. The simplest definition of a triangle is the ". . . smallest stable emotional unit" in human relationships (Kerr & Bowen, 1988, p.134). Even though the term refers to a coalition-typed relationship form of three-persons, Bowen (1978) described several configurations of the process. For instance, in an anxious family system, one configuration depicted the two close members in a triangle are inside and one involves from outside. Because, "the *inside,* or *togetherness* positions are preferred when anxiety is low within the emotional unit of the family, and when anxiety is high the *outside* position is preferred" (Titelman, 2008, p.21). Another configuration is interlocking triangles refers to the shifting of triangles to the expanded multigenerational and multiple nuclear family emotional systems, when the primary triangles were not able to be kept the anxiety within. Primary and secondary triangles are the configurations as parts of larger interlocking triangles; while primary triangles include only parents and offspring, secondary triangles include non-members of primary triangles (i.e. grandparents, siblings, cousins, uncles, aunts)(Kerr & Bowen, 1988).

According to Bowen (1978), the most salient function of a triangle is keeping a dyadic relationship stable. During time of nodal events (i.e. marriage, birth, leaving, death, health), expanding the stress or tension to the third-party -generally, least differentiated significant others- decreases the anxiety which are mostly left unsettled. Families that are relatively higher in differentiation, triangles are less common. Children are usually least differentiated within family system and triangulated in a marital conflict to reduce the tension. However, being triangulated reversely may increase children's anxiety level (Kerr & Bowen, 1988).

Bell, Bell and Nakata (2001) configured triangles in four categories: The first is the 'balanced' form and refers to relatively distant and an equal pattern between three. Such a pattern means individuals in a dyadic relationship take their own responsibility of relationship without inclusion of a third part, and indicate a healthy manner. The second is the 'mediator' form, the feeling of being caught between parents is prominent because offspring is closer to either the father or the

mother than they are to each other. The third is the 'cross-generational coalition' form refers to taking sides or alliances between three and feeling emotionally distant against one parent. Contrary to first three forms, in the 'scapegoating', offspring is pulled out. Parents prefer to focus on the specific behaviors, characteristics or aspects of the offspring rather than focusing on the anxiety in their own relationship.

Literature related to family triangulation is mainly quantitative and empirical evidence indicate that concepts such as anxiety, depression and self are the common constructs in association to the triangles. Triangular patterns become more visible and anxiety more intense, chronic or vice versa (Bowen, 1978). Empirical literature revealed inconsistent findings in regard to effects of family triangulation. Beside the studies assume that family triangulation was not related to anxiety (Benson, Larson, Wilson & Demo, 1993) and career decision (Larson & Wilson, 1998); some research provide findings in regard to predictive power of the construct such as depression, anxiety, self-esteem, socioemotional development risk factors, internalizing behaviors, and intergenerational relationships (Buehler, Franck & Cook, 2009; Fosco & Grych, 2010; Franck & Buehler, 2007; Jacobvitz & Bush, 1996).

Family triangulation is a well-understood construct in the Western cultures. It is considered as one of the dysfunctional patterns within the family systems (Kerr & Bowen, 1988) and a threat to individualism or differentiation of self (DoS). The construct of DoS (Bowen, 1978) refers to a concurrrence ability or healthy functionality of individuals to maintain personal autonomy/individualism and (intergenerational) intimacy in close relationships. Bowen (1978) proposes that DoS is a universal concept and family systems with members of low level DoS are more prone to produce dysfunctional relationship patterns such as triangulation. Notwithstanding, family triangulation is a newly emerging concept for the most non-western cultures. Cross-cultural studies in investigation of the construct are very limited. In one of the few examples, Chan (2013) found that the construct is applicable to Chinese families since mother-son attachment predicted the father-son conflict and also there was an existence of unspoken conflict between father-mother conflict. Similarly, in a cross-cultural study, Bell, Bell and Nakata (2001) compared Japan and US samples results indicated that triangulated daughters in both cultures had a low level self-differentiation. Even though the construct provides salient theoretical approaches, quantitative findings do not produce consistent results in several contextual domains. On the other hand, how it is manifested in Turkish cultural context is still not recognized. Manifestation of family socialization processes prominently differentiate from western culture as Turkish culture holds both individualistic and collectivistic characteristics (Kağıtçıbaşı, 2005). Contrary to individualistic perspective, Kağıtçıbaşı (2007) assumed the intergenerational hierarchy is not a handicap for personal authority or individualism in Turkish culture. However, Chung and Gale (2009) assumed that cultural differences (i.e. individualism-collectivism) can be misleading when considering the familial factors in a dualistic

manner rather than a continuum perspective. Thus, no matter which cultural background is considered, DoS characteristics can hold some common characteristics between theory and practice (Chung & Gale, 2009). The motivation underlying the purpose of the study was to understand in line with the Bowen's assertion that DoS -central concept of Bowenian approach- is universal. More specifically, we focused in this study on a remarkable synchrony between Bowenian construct of family triangulation and the ways that triangulation patterns emerge in Turkish cultural context in line with Bowenian approach asserts the universality. Hence, in this current study we examine how the construct manifest and provide an in-depth understanding in Turkey. Expanding the literature in the light of current research may contribute on the cultural considerations of the construct as well. The current study investigated to answer what the family triangulation patterns that Turkish young women' used to experience are.

Method

Design of the Research

To deeply define and portray experiences of Turkish young women of family triangulation, phenomenological design as a qualitative research methodology was used. Phenomenological design is used when a phenomenon is recognized but needs to be examined in depth (Yıldırım & Şimşek, 2013). The phenomenon in the current study was family triangulation. Research process was discussed with the main concepts of phenomenological design. These main concepts are lived experiences, intentionality, epoché, phenomenological reduction, imaginative variation, and co-researchers (Yüksel & Yıldırım, 2015).

Lived experience. Lived experiences in phenomenological research are significant for the beginning and termination of the research (Creswell, 2007). Researcher(s) and participants should have experience with the phenomenon. Both researches had some family triangulation issues in their lives. Also, one of the researcher's interests are working as a therapist with family triangulation issues and research with the same topic. Thus, both researchers had several experiences about the family triangulation.

Intentionality. In the phenomenological method, intentionality emphasizes the conscious actions in deciding the research topic. Moreover, the topic of the current study is a conscious choice of the research refers to the fundamental characteristics of the phenomenology. Intentionality has two dimensions, *Noema* and *Noesis*. While Noema is an experience that reflects perceptions, emotions, thoughts, memories, and judgments about the topic; Noesis is the act of experience such as, feeling, thinking, remembering or judging (Çilesiz, 2011). For this reason, the concepts of Noema and Noesis will be examined in line with the family triangulation phenomenon.

Epoché. Epoché mean is to stay away from presupposition or judgments about the phenomena. In this process, the interview questions were asked to the participants to develop a new perspective by avoiding the possible presupposition and judgements of the researchers. Since the researchers wanted to keep their presupposition or judgments out of the research, the analysis process was started by excluding the information and assumptions already asserted by the researchers.

Phenomenological reduction. In order to define the phenomenon, the researchers must remove irrelevant components that are not directly about phenomenon. During phenomenological reduction, overlapping, repetitive, and vague expressions are removed by the researchers. In this research, it refers to the transcribing process of the voice recordings into text. At this point, in order to define the case, expressions that are not related to the subject, repetitive or difficult sentences are removed and unnecessary data was cleaned.

Imaginative variation. It is the process of approaching the phenomenon from different perspectives by using the power of creativity. Imaginative variation depends on researchers' imagination. Asking questions about phenomena and finding possible meaning about the phenomenon is the main purpose of this process. At this stage of the current study, analysis conducted and themes were emerged. This process had continued until the meaning of the family triangulation was achieved in young Turkish women.

Co-researchers. Participants are not actively a part of analysis in phenomenological research. Since the perceptions and experiences of the participants lead to the formation of the study, the researchers call them co-researchers and share the information or themes achieved with the participants. Therefore, the categories and themes obtained in the study were shared with a number of volunteer participants in the study.

Participants

To define and portray Turkish participants' experiences of family triangulation, researchers interviewed with 10 young women. The reason for choosing female participants is that gender is an important variable in the literature and daughters are more triangulated compared with boys (Eme & Danielak, 1995; Etkin, Koss & Davies, 2014; Vuchinich, Emery & Cassidy, 1988). Although having son over daughter in Turkish families used to be traditionally preferable (Kağıtçıbaşı, 2007), this preference have changed toward having daughter over son in order to psychological value of children (i.e. companionship, sense of accomplishment) in urban middle class Turkish families (Kağıtçıbaşı & Ataca, 2005). Therefore, we assumed that focusing on daughters' experiences is more valuable and reflective since "... daughters had greater expressive and instrumental role than sons." (Ataca, 2009, p.122) in Turkish families. Daughters were considered as companions for mothers either they are young or older (Ataca, Kağıtçıbaşı & Diri, 2005). Therefore, age or marital status were not included as participation criterions in the current study, we asked participants to consider past and present family

triangulation experiences. Convenience sampling model was used to choose participants. All participants had middle socioeconomic status, lived in Ankara and voluntarily participated in the research. Participants' ages ranged from 25-30 and all of them have at least a bachelor's degree or existing graduate students. 5 participants were married, and 5 were single.

Instruments

As a data collection tool, interview questions were prepared by the researchers based on the literature to define triangulation patterns. Opinions of other experts' opinions from the counseling psychology field were taken about interview questions. Then, a pilot interview was conducted and questions were revised. The final version of the data collection tool which had 8 semi-structured questions was determined. Questions on the interview form were about Turkish young women' attitudes and feelings toward tension and conflict between their parents; the potential reasons where the parents complain each other to their children, and the potential reasons where family members sometimes feel emotionally distant to each other etc.

Procedures

After the planning of the study, researchers announced the study through e-mail or acquaintances. Candidate participants were asked verbally whether they would like to participate in the study or not, and written consent was obtained if they agree to participate. Researchers set a time, date and place for the interview with interested and voluntary participants. Participants were given the right, not to answer the question they feel uncomfortable and the right to leave the interview at any time. After receiving informed consent of participants, 20-30 minutes voice-recording interviews were conducted. Researchers had no information on participants' nuclear and extended family structures before the interviews. Participants were expected to be able to define the structure and relationship dynamics within their families. All the information was gathered through interviews.

Data Analysis

The study based on content analysis of transcribed voice-recorded interviews. First, transcription papers were coded by researchers and transcripts were controlled with field notes. All data were examined sentence by sentence, codes were placed in important points, clustered, and themes emerged. In qualitative research, credibility, transferability, dependability, and confirmability should be satisfied through several strategies (Marshall & Rossman, 2006). For trustworthiness, experts in the counseling psychology field were taken about preparing interview questions, a pilot interview was conducted, questions were revised and in-depth semi-structured interview questions were determined, the data interpreted with the participants, sufficient time spent with participants for interview, researchers follow the key elements of epoché to avoid making personal judgments to detailed transcriptions and analysis. Interpretation of categories from researcher to researcher or

assessing categories in different times are another condition of trustworthiness. Thus, different parts of the data set were sent to 3 experts in the field and they were asked to analyze it two different times. The analyses of the researchers and the analyses obtained from the experts were compared and it was concluded that the content analyses made by the researchers were appropriate.

Results

As a result of the data analysis of the semi-structured interview questions directed to the participants, seven themes emerged. These themes are problem/conflict solving ability among parents, mediator role of children during parents' conflict; family members with problems (identified person), coalitions, emotional reactivity, the value of children to parents, and acting without dragging into conflicts

Problem/Conflict Solving Ability Among Parents

The results revealed that most parents have problem solving problems in their marital relationships. Problem/conflict solving problems was perceived to be directly connected to the communication and anger management skills. Moreover, participants considered the parents' attitudes towards each other as being compliant, reactive, discreet, accusive, and emotionally distant. In their opinion, parents were not able to express feelings and prefer to avoid taking responsibility of marital problems, as one of the participants expressed that:

> "they don't handle the conflict, they just clash, it's annoying, instead talking, they prefer to initiate conflict and all fighting, shouting, violence, crash and vandalism tag along behind, quite irritating. They may probably avoid the solution of the problem, I mean they may find somehow more difficult even try to solve own problems or the reason would be the side taking if one believes that he/she is right, and who complains would be trying to justify oneself." (P-2)

Mediator Role of Children During Parents' Conflict

A number of participants, in a similar manner, played a mediator role as parents' approach to the problem was not constructive with poor conflict management skills. The mediating roles were perceived and expressed in different forms. Few felt obliged to be involved in line with parents' expectations in the problems. They maintained a third part role and try to calm the anxiety that arose within the family context. A few others were also played a 'mediator' role but no expectation they felt about parents nevertheless involved in the conflicts conscientiously, as participants said that:

> "I feel sad when I see my mother sad and I actually involved in trying both her
> and   myself to unburden of sadness." (P-5)

"After marriage now it was naturally decreased (expectation) but I intensively used to feel as we live together. I mean there were some problems and we were expected to be solved. Actually we (me and other siblings) were expected to contribute to the parental conflicts so I felt an emotional pressure to get involved in." (P-2)

The common point was that children' effort to maintain the balance between parents and to stay closer to parents than they are one to another. Mediator role participants experienced were mainly related to three sub-themes: *holding a parental role, feeling caught in the middle*, *defending the one parent as they perceive he/she is weak and downtrodden.*

Holding a parental role. It was understood that the need to warn parents (e.g. talk and advise to each parent separately about the parents' problems), maintaining a catalyzer position (e.g. with the involvement of the child parents become more able to manage the conflict), maintaining a sedative or peacemaking position (e.g. children try to calm parents and ease to regulate emotions) were the factors more associated with holding a parental role. A number of participants experience role conflict in the cross generational relationships as parents expect support and emotional fulfillment from children rather than his/her spouse. Participants stated such an expectation and indicate role-reversal between children and parents.

"I think I have a mission to calm things down when my parents have conflicts. I become nervous at first, then, gradually become calmer and talk to dad and mom to calm both down. During the intense conflicts, I left home with my sister many times because I did not want her to witness the conflicts. Later, I usually take on the responsibility calming things down and yes I certainly used to talk both sides." (P-4)

"Probably, they want to compensate the emotional intimacy with us as they failed to provide each other, I believe that everyone has emotional needs and when they are not able to meet these needs from his/her spouse, they may prefer to be met these needs from children during conflicts. I intensively feel it in my mother especially after I left home." (P-5)

Defending the one parent as they perceive he/she is weak and downtrodden. Participants' practices during the conflicts emerged in a similar manner. For example, some participants take place in a conflict between mother and father because they justify mother's vulnerable position and felt obliged to interfere in decreasing tension. They were drawn into the conflict between father and mother:

"my attitude is usually to stand by the one that I find right and listen to him/her. Because one was clearly right and the other was not. So, I was on my mom's side

because I thought that she was the right side. I think I have a mission to calm things down." (P-4)

"I remembered, I was on my mother's side, I even intervened. Here is an example. There was a fight going on in the home. I put my mother to bedroom to prevent possible violence towards my mother, leaned against the door, my father broke the glass, glass felt down on me." (P-10)

Feeling caught in the middle. Feeling caught experiences were found as focusing on emotional part of mediating role, as indicated above. It seems that whether participants were expected to be involved in conflicts or not, they felt obliged to take action against the tension parents hold. Participants were examples that clearly asserted the feeling:

"Sometimes, I have nothing to do, because when one of them is right, I'm confused to defend him/her, for instance, when father is right and mom not, I become suspicious to defend my father, because my mom would be sad or reverse, I felt caught in the middle at such times." (P-5)

"If you ask me who is right and who is not, I'm not sure indeed, I have a deep feeling of caught in the middle." (P-9)

"As a result of one of the usual conflicts, my father demoralized and went to our summer cottage. It was the first time he left the house and did not come for a few days. That time my mother was so sad. I called my father and he was so sad too. I felt caught in the middle." (P-2)

Family members with problems

The results revealed that troubled family members are generally identified by the emphasis on children's problems, as participants stated. Interestingly, children were not only family members to focus on the personal problems. Fathers were reported by three participants as identified person with lack of problem-solving abilities such as crisis management, communication and functionality, as participants said that:

"my older brother, he was the family member that constantly scared us in that period of time. He was the main topic of the family meetings. He was not happy with work, he was planning to quit and wanted to live in a village keeping two cows, and wanted to be in a world of his own. So, he was coming new life plans each and every day: quitting work, starting a patisserie, keeping a cow. He was constantly saying that I'm going to die or suicide, I'm not going to marry, I don't want to see my father etc. We were afraid that he might hurt himself org et depressed." (P-1)

"my older brother felt pushed out (due to alcohol problems). My younger brother is domestic, he is so smart, everything was asked to him, even my father would never do anything without his opinion. My younger brother actually is a good man. But the older one probably felt resentful because almost the whole family followed younger's advices than older brother when a decision was used to be made. Every family has a shrewd one and a madman, he was always regarded as the madman of the family. (P-6)

"we are two sisters, and my father is known as the third child of the family. More or less, each family member experienced how to stand on his/her own feet or mature enough. However, we both still manage my father's crisis situations." (P-3)

"I thought my father (his alcohol problems), causes the problems. Because the problems impressed my mom negatively, my older sisters prefer to take mom's side as they find my father problematic all." (P-2)

Coalitions

One of the most frequent forms of relationship patterns in participants' families are coalitions. The coalition patterns emerge in two forms (Bell, Bell & Nakata, 2001). First form can be defined as the mother and children are pulled in and father pulled out in a triangular relationship. Reversely, second form indicates father-children are pulled in and mother pulled out. Results indicated that in the current study participants mainly reported the first form of the coalition. To illustrate, here is an example of both forms within a family:

"I feel closer to my father because I can tell all kind of my problems to him. My mom also listens to me but in a more subjective manner, father is more objective and I tell him even when I have private issues. My sister is emotionally closer to my mom. There is such a division or parceling between parents and children." (P-9)

Additionally, content analysis demonstrated that participants mainly experienced coalition patterns with side taking through parents' effort to win over children, get a supporter or confidant, and complaining about the spouse to children, as P7 asserted below. Children keeps positions such as "shoulder to cry on", "wailing wall" or "emotional supporter to parents":

"mothers cannot tell something to their spouse. I think, something special (topic) that should be shared with only her spouse (father), but mom can share it to others or her children just because of getting (emotional) support." (P-7)

The value of children to parents

Based on the family dynamics, cross generational relationship patterns addressed the value of children and emerged in two sub-themes: *expectations from children* and *sex role stereotypes*.

Expectations from children. The most distinct expectation about the children is that he/she provides an emotional support with being more intimate, confidant, catalyzer, wailing wall, complaining, and a shoulder to cry on. These overlapping codes were emerged in the mediator role of the children theme as well. However, in accordance with the changing value of children in Turkey (Kağıtçıbaşı, 2007), these codes are more widely refers to an emotional support rather than a mediating position that children provide for parents.

> "My mom believes that daughters should be confidant to mothers. She always said that, I gave birth to you, so, if I'm not going to tell you about my problem, to whom I do. I raise you for such days." (P-1)

Sex role stereotypes. Moreover, sex role stereotypes indicated that daughters were predominantly regarded as confidants and boys were the figures that mothers dedicated themselves. On the other hand, the pattern of being 'mother's son and father's daughter' within family dynamics was pointed out during the interviews, as one of the participants indicated that:

> "We usually do this in the family like, I was on my father's side and my brother was on my mother's side. We are like father's daughter and mother's son. But it is not the same in the conflicts. In the conflicts we follow a different path, maybe it comes from the subconscious that I usually take my mother's side. My brother is standing at the same distance from both, and positions change." (P-5)

Emotional Reactivity

Considering the family dynamics, it was seen that several emotional and behavioral responses to the patterns mentioned above were emerged among participants. Anger, despair, emotional pressure, distant, desensitization, ignoring, fear of parental loss, withdrawal, and moving away from home were the responses to the involvement in parental conflicts that frequently observed during the content analysis. In this regard, participants expressed that:

> "There are times I feel bad, if I don't fully understand who's right or who's wrong. If I understand, I'm next to the victim and I'm very angry at the other side and it hurts my relationship with that parent. The problem is their own, but sometimes I couldn't see the truth and feel strange from that parent. For example, there are times I felt strange to my father. Now, I wish I didn't give those reactions but when I was with the victim, I got a little distant to the other side." (P-4)

"when my mother told me something about my father (some special matters) I always used to say to my mother not to talk behind his back with me because I do not want to get away from him" (P-7)

"I was feeling helpless there because you can't do anything." (P-10)

However, the most salient and intense emotional response was the *emotional cutoff* among family members. It seemed that emotional contacts were damaged because of unresolved emotional issues among family members. The examples of emotional cut-off were frequently more observed in cross-generational relationships. Here, one participant stated an example between father and son:

"(my father) tells a lot to my brother's face that 'don't complain, your life is not a life to complain.' My brother also offensive toward my father. 'I was a soldier just because of you, I didn't actually want to be a soldier, you let your two daughters to go to college but didn't let me because of college expenses'. His accusation and my father's jealousy (I think) opened the gap between them. I think they are experiencing something like emotional distance because they never speak (to each other)." (P-1)

Acting without dragging into conflicts

Contrary to the above-mentioned mediating role patterns of children in conflicts, results indicated that a number of participants maintained a balanced position. It refers to parents' ability to manage the disagreements or tension without not including the children as a third part, as one of the participants conveys her experiences:

"I live with my parents and now I understand better that they can respect each other even though they have different perspectives on events, so having disagreements does not mean that they do not love each other, they leave or distribute the family, so I leave them to their own resources without getting involved, taking side, calming down or attempting to overcome the problem, I developed an attitude that I am more acquiescent and aware, even when I have suggestions to the problems it is because of accelerating the resolution process rather than prove who is right and who is not." (P-3)

Discussion

This study aimed to understand the family triangulation patterns that Turkish young women' used to experience and describe common characteristics between Bowenian theory and Turkish cultural background. We initially concluded based on the main themes, Bowenian construct and Turkish cultural background have commonalities and findings might provide insightful explanations for family therapists in Turkey. In relation to triangulation, the emerging main themes were: problem/conflict solving ability among parents, mediator role of children, coalitions, family members

with problems, emotional reactivity, acting without dragging into conflicts, and the value of children to parents.

One distinct theme related to relationship patterns in families was the problem/conflict solving ability among parents. Except one interviewee, all woman defined their parents as poor problem solvers. Rather than applying functional conflict management skills, they used to be compliant, reactive, discreet, accusive, and emotionally distant against each other. In fact, these problems are common among Turkish family members. In line with communication skills, for instance, Turkish family members found themselves insufficient mostly in anger management and conflict management (Gür & Kurt, 2011). If it is assumed that divorce itself is a salient indicator of conflict management skills between couples, TÜİK (2018) statistics indicated that 10.9% increase in divorce rates compared to 2017 can support insufficient problem solving abilities among Turkish married couples. Moreover, a number of interviewees identified the underlying reason as avoiding to take their own responsibility of marital problems. Such a pattern among a couple relationship serves as a spark of another dysfunctional problem: children who are usually least differentiated within family system become more prone to be triangled. Once the children were dragged into the conflicts, triangulation patterns become more visible in the family system, as interviewees constantly defined. For instance, feeling caught in the middle was one of the salient sub-themes emerged. The feeling caught in the middle was also emphasized in Turkish literature as an emotional reactance to parental conflict (Sağkal & Türnüklü, 2017). However, we recognized some other themes such as holding a parental role in relation to mediator pattern. Children used to warn, talk, advise, calm and provide emotional support to the parents. However, when defending the weak side, it seems participants had difficulty to maintain the equally distant position between parents, because of emotional reactivity. Although participants would fail to keep a balanced position while they defend one's vulnerable position, we considered that the underlying intention is maintaining the parents' relationship stable. These all patterns that were mentioned so far can be best understood in Bowenian concepts of emotional fusion (Kerr & Bowen, 1988), because when interpersonal boundaries between family members are poor and not well-defined, family members become more prone to share the same an emotional response to the circumstances (i.e. crisis, conflicts) within the family system. This is the opposite counterpart of DoS, because family members are not allowed toward emotional autonomy. For instance, in the cases that participants commonly share, they felt obliged to involve in conflicts whether there was a demand from them. They felt obliged to respond the tension between parents, defuse and mediate the relationship. If participants chose not to intervene they would probably felt more emotional pressure and regret. Theoretically, within a differentiated family system, parents would be handling their conflicts constructively, expressing emotional issues clearly, members' demand of DoS were welcomed as Kerr and Bowen (1988) define, "The more differentiated a self, the more a person can be an individual while in emotional contact with the group" (p. 94.). However,

signal of this well differentiated and balanced triangular relationship pattern were only emerged in one participants' response in relation to parents' problem solving abilities in the current study.

The findings further demonstrated that coalitions pattern mostly occur between mothers and children with side taking through mothers' effort to win over children, get a supporter or confidant, and complaining about the spouse to children. Although the studies are very limited, we found consistent findings in Turkish literature indicated that during parental conflicts children are prompt to take sides (Sağkal & Türnüklü, 2017). However, mothers were also more prone to being a side of the conflicts within families. A number of participants criticized the fathers to be insensible and apathetic when conflicts arise between children and mothers. In this pattern, while fathers can be positioned as 'outsider', children keep positions of "shoulder to cry on", "wailing wall" or "emotional supporter to parents". Such an attempt of mothers may have been derived from the family triangulation as a lack of DoS within family system. As children became a part of the triangular relationships, it seems a father-children conflict inevitably may have also produced. This is not a strange form in other cultures as well, Chan (2009) emphasized a similar pattern in Chinese families where the father-son conflict arises from an alienation of son and mother. Of course, this is not only the case for father-son conflict, similarly, a father-daughter conflict would take place: "... An example would be a client who was struggling to understand her negativity towards her father. When questioning included her mother's role in these emotions, the client began to see that her view of her father was influenced by her position in a triangle. As her mother's ally in this triangle, she viewed her father as the inadequate husband who left her mother feeling needy." (Brown, 1999). We clearly found this form in P-1's case that a distinct conflict (i.e. blaming, jealousy) and emotionally distant relationship between father and son has been resulted with mother's self-commitment (i.e. constant strive to make him happy and satisfy needs) to the son. Vuchinich, Emery and Cassidy (1988) also found that mothers and daughters are sides of triangulations more frequently compared with fathers and sons in the US. However, fathers are culturally more prone to be outsider in family relationships since urban Turkish youth hold stronger emotional bond with mothers than fathers (Hortaçsu, Gençöz & Oral, 1995; Sunar, 2002). In line with triangulation patterns in Turkish families, it seems that fathers' 'outsider' position become more obvious with another theme of the study: family members with problems. The theme theoretically associated to the scapegoat (Bell, Bell & Nakata, 2001) pattern where parents concentrate on the problems in children, traits or choices rather than the anxiety on their marital issues. Similarly, the concept of identified patient (Satir, 2016) points out a parental dysfunctionality or the definition of a family member who most suffer from the marital relationship. In the current study, fathers were also defined as identified patients as a number of participants complained and criticized their father with being 'madman of the family', lack of 'communication skills' and 'crisis management'.

Furthermore, we recognized as through the content analysis that participants pay emotional prices for the involvement of triangulations. These prices refer to the emotional reactivity in the

Bowenian approach and emerged in the current study with feelings of anger, despair, emotional pressure, distant, desensitization, ignoring, fear of parental loss, withdrawal and most distinctly emotional cutoff. Beyond understanding the emotional reactions of participants, this finding is important because individuals with higher levels of emotional reactivity -an indicator of low level of DoS- become more prone to higher levels of psychological symptoms (Bartle-Haring & Probst, 2004). This finding was also consistent with Turkish literature indicated that during the parental conflicts/arguments children feel sadness, fear, anxiety, anger etc. (Sağkal & Türnüklü, 2017). We concluded that the emotional cutoff was most risk-bearing factor emerged in the study. Because, as far as the estrangement or distance from one or both parents might provide the individuals an emotional alleviation or recovery from an undifferentiated relationship, long-term outcomes become more destructive as well. Individuals might feel lack of significant relationships and their benefits (i.e. physical, emotional, economical support) in their life-span, but not their own significant-others whom they were estranged (Aglias, 2018), they were probably suffering from the lack of a differentiated relationship itself.

In sum, we thought that findings reflect psychocultural factors and especially the last theme (children value to parents) should be considered and discussed with an indigenous approach. For instance, Chan (2009) indicated that due to cultural background "Western triangulation focuses on a level of differentiation among family members to become a healthy family. In a Chinese family, differentiation is against the harmony value in Chinese culture. A social worker working with Chinese family needs to be critical when applying the concept of differentiation." (p. 51). In Turkish culture, however, Kağıtçıbaşı and Ataca (2005) provide an important perspective and understanding in regard to Kağıtçıbaşı's family change model comprising the topic of children value. According to the study, while psychological value of the children sharply increased with the economic and educational improvements in Turkey, utilitarian/economic value of children (i.e. labor force, old-age security) dramatically decrease. Therefore, it can be concluded that most parents' expectations from children demand emotional support rather than economical. As we review the sub-themes of the children value to parents, it can be easily recognized that expectations from children were intensely accumulated on the emotional needs of parents. In terms of sex roles, daughters specifically seem to be family members who play an expressive role during the family triangulation patterns, especially for mothers. However, this conclusion should be considered cautiously since the current study reflects only daughters' experiences and perceptions.

Only one participant (P-3) was out of these undifferentiated patterns reflected the acting without dragging into conflicts theme. Her parents were able to manage disagreements, and no expectation or attempt to include the children as a third part reported where the pattern were defined as 'balanced' triangulation (Bell, Bell & Nakata, 2001).

This qualitative study is designed to provide an understanding of family triangulation patterns in Turkish cultural context and the results are limited with middle class and mainly well-educated gender of females. Further studies can be repeated with other levels of socio-economic status, education levels and males' experiences. Although the current study offers several implications for family therapists in Turkey, the study is limited to the perceptions and experiences of family triangulation. On the other hand, Turkish women' self-reported interview data might be supported with other data sources such as interviews with other family members (i.e. mother, father, siblings) to reveal the patterns in relation to construct more clearly.

In sum, participants' experiences of family triangulation seem reflective and informative based on the Bowenian approach. However, when the family therapists in Turkey consider the applicability the construct in theory and practice, indigenous factors should not be overlooked since Turkish cultural background consists both individualistic and collectivistic characteristics (Kağıtçıbaşı, 2005). The construct may need further refinements or adjustments since the findings of the current study reflective and share commonalities with the theory.

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21st Century Skills of CEIT Teacher Candidates and The Prominence of These Skills in The CEIT Undergraduate Curriculum

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Abstract

In the age of globalization and information and technology, changes as in all the fields of human life are being actualized in the education systems, too. It is of great importance for the teachers who are the most notable agents to transfer the changes to the next generations to be equipped with skills and knowledge so called 21st century skills in their pre-service education and start their profession. In this respect, the prominence of these skills in pre-service teacher education curriculum is a subject to be considered. With the constant emphasis on technology age, Computer and Instructional Technologies (CEIT) teacher candidates should have 21st century skills in terms of their contribution to their students as well as the schools they will work in. In this study, the "Multidimensional 21th Century Skills Scale" developed by Çevik and Şentürk (2019) was applied to 123 teacher candidates studying in CEIT Department of Gazi University, Gazi Faculty of Education in 2018-2019 Spring Semester. The CEIT curricula were also examined in terms of their inclusiveness about the 21st century skills. The analyses of the scale indicated that CEIT teacher candidates' scores are generally high for the scale overall but highest in Career consciousness and lowest in Critical Thinking and Problem-Solving Skills sub-dimensions. It is also seen that 21st century skills are generally reflected in the CEIT curricula with the courses and their contents especially in the updated curriculum which shows that curriculum development processes were performed according to the changes and needs in the world. Further studies could be conducted for the efficiency of the updated curriculum in the following years.

Key words: 21st century skills, CEIT teacher candidates, CEIT curriculum, curriculum development.

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Introduction

21st century, in which globalization and information and communication age is being lived, has various effects on the humankind. Challenges in social, economic and individual fields, climate change, the changing nature of business life with the effect of globalization and innovation, the difficulty of individuals' finding jobs in changing workplace environments, the rapid development of technology and individuals and educational processes' lagging behind this speed effect everybody's life in some way (Bialik & Fadel, 2015). All these changes being lived in the 21st century is a matter of fact that should be deeply considered all humanity and especially the educational systems. How could the educational systems educate the individuals who will keep up with all these changes and what is more important, how will the teachers who will educate these individuals be trained in their pre-service education?

New paradigms bring together new concepts. In fact, individuals are faced with a concept the content of which is not such a new one: the 21st century skills. Even in the literature it is stated that 21st century skills are the ones that students should be, do and have in order to be successful but these are the skills that should have been acquired also in the 20th century but could not have been achieved (Craig, 2012). Kaufman (2013) states that these skills are not any newly skills, however the skills the value and importance of which have just been understood. It is a fact that why we still talk about these skills is lagging behind the technological advances and not being able to integrate it to all aspects of our lives.

21st century skills have been defined by many institutions such as the national organization "Partnership for 21st Century Skills" which collaborates with many industries (Domine, 2011). However, when a common classification is taken into account, it is seen that these skills are divided into three basic skills field and basic skills, the basic skills composing of learning and innovation, media and technology and career skills (Yalçın, 2018). Also known as the "survival skills" (Wagner, 2018), these skills focus on transferring the skills and knowledge instead of just having information on specific subjects. When taken into account in terms of education, we see that these are the skills that will continue the learning processes inside and also outside the school (Bal, 2018; Çevik & Şentürk, 2019; Pellegrino, 2017).

The 21st century skills that could be approached as "critical thinking, problem solving, information and communication literacy, financial literacy, global competences, adaptability and flexibility" (Bialik & Fadel, 2015; Cansoy, 2018; Geisinger, 2016; Kaufman, 2013; Larson & Miller, 2011; Partnership for 21st Century Skills, 2015) are the skills that could be seen as the tools that would help the students solve the problems they encounter in the global economy as save their lives through collaboration (Domine, 2011).

In a such rapid changing world, the questions of how the needed skills will be taught to the individuals as well as which competences the teachers who will teach them has to have are a matter of fact for a long time (Schleicher, 2012). Teachers are no more the transmitter of the knowledge but should be the models for their students in many aspects especially in producing solutions to problems and needs by using information and communication technologies. It is also an important mission for the teachers to integrate information and communication technologies into the curricula (Adeosun, 2014; Domine, 2011; Jan, 2017; Temelli, 2018; Uşun, 2009).

In an age that the Z generation should be educated, teacher candidates should be able to start their profession equipped with ICT as well as the pedogogical and professional training served to them (Boholano, 2017). Therefore, teacher training programs should reflect 21st century skills and attain them to teacher candidates and should be continuously updated in direction with the changes in the world as a prerequisite of curriculum development processes. Turkish Council of Higher Education has made revisions and updates in teacher training curricula in the light of the changes in the world (Tekerek, Karakaya & Tekerek, 2018; YÖK, 2018a).

21st century skills that all teacher candidates should attain have particular importance for CEIT teacher candidates who have to be role models for their students as well as colleagues in the schools they work in. It is known that CEIT teachers are experts who use the technology in their professional lives the best (Dursun, 2015; Toplu & Göktaş, 2012). The responsibilities of the teacher candidates who will graduate from this department in attaining students, teachers and the society with the ICT skills is undeniable (Karataş, 2010). Certainly 21st century skills are not only about ICT however it is a fact that as the technology leaders the CEIT teacher candidates should be graduated with also the other skills in order for educating the students of the technology age and respond to their needs. In this research the 21st century skills of CEIT teacher candidates as well as the prominence of these skills in CEIT undergraduate curricula were examined.

Aim of the study

The aim of this study is to investigate the 21st century skills of the CEIT teacher candidates and examine the undergraduate CEIT curricula (before 2018 and the updated 2018) that would provide the attainment of these skills in terms of their prominence of 21st century skills.

In accordance with this basic aim, answers to these research questions were searched:

- Is there a meaningful difference between the scores of CEIT teacher candidates they got from the "Multidimensional 21th Century Skills Scale" in terms of the scale overall and the sub-dimensions Information and Technology Literacy Skills, Critical Thinking and Problem Solving Skills, Entrepreneurship and Innovation Skills, Social Responsibility and Leadership Skills and Career Consciousness in terms of:

o   Gender,

o   Grade level,

o   The graduated high school,

o   General academic achievement?

• Do the CEIT undergraduate curricula before 2018 and after 2018 include 21st century skills?

Method

The Model of the Study

Survey model was used in this descriptive study. Survey model is among the research approaches which aims to present a situation, event or the individuals as they are (Karasar, 2015). In this study document analysis method was used in order to determine the prominence of 21st century skills in the CEIT curricula before and after 2018.

Study Group

The study group of the research consisted of 123 CEIT teacher candidates attending Gazi University Gazi Faculty of Education in 2018-2019 Semester. As the whole study group was reached no sample was taken in the study. For the other research problem of the study CEIT curricula documents were examined.

The demographic data of the CEIT teacher candidates according to the demographic information of the scale is presented in Table 1:

Table 1: Demographic Information of the Study Group

Gender	Grade Level								Total	
	1		2		3		4			
	N	%	N	%	N	%	N	%	N	%
Male	5	4.07	5	4.07	23	18.70	26	21.14	59	47.97
Female	12	9.76	9	7.32	20	16.26	23	18.70	64	52.03
Total	17	13.82	14	11.38	43	34.96	49	39.84	123	100.00

When Table 1 is examined it is seen that the study group is consisted of 47.97% male and 52.03% female CEIT teacher candidates. The highest contribution came from the 4th grade (final year) teacher candidates, respectively followed by 3rd grade (sophister), 1st grade (freshman) and the least contribution from 2nd grade (sophomore) teacher candidates.

Data Collection Tool

In this study, the multi-dimensional 21st century skills scale developed by Çevik and Şentürk (2019) was used. The scale was developed for high school, associate degree and undergraduate

students in 15-25 age group. 146 items from the item pool selected in accordance with expert opinions and via exploratory analysis the validity studies resulted with five sub-factors with 41 item scale. The five sub-factors (Information and Technology Literacy Skills, Critical Thinking and Problem Solving Skills, Entrepreneurship and Innovation Skills, Social Responsibility and Leadership Skills and Career Consciousness) were confirmed with confirmatory factor analysis conducted with Lisrel 8.80 program and finally in the third stage, mean scale scores and standard deviation values of the scale in the first and second applications were found to be 3.89, 18.21 and 3.58 and 22.19, respectively via the test-retest method (Çevik and Şentürk, 2019). The Cronbach Alpha value of the scale for this study was found as .91 as a result of the analysis conducted.

Data Analysis

The analyses of the research were conducted with SPSS 21.0 program. As a result of the normality test for the Multidimensional 21st century skills scale the value was found (.062; p>.05) according to Shapiro Wilk result and this value indicated that it had normal distribution, therefore independent samples t-test and one-way ANOVA was used. As the number of the samples in the clusters were high, Mann Whitney U test and Kruskal Wallis H test was applied. Scheffe test from post hoc tests were applied in order to determine in which groups the between-groups differences were.

Findings

In this section of the study, the findings obtained are given below:

1.   The Findings About the 21st Century Skill Scores of CEIT Teacher Candidates in the Scale Sub-Dimensions and the Scale Overall

In this part of the findings, the scores the CEIT teachers got from the scale were presented in Graphic 1 normalized according to 100 points in terms of the scale overall and the sub-dimensions:
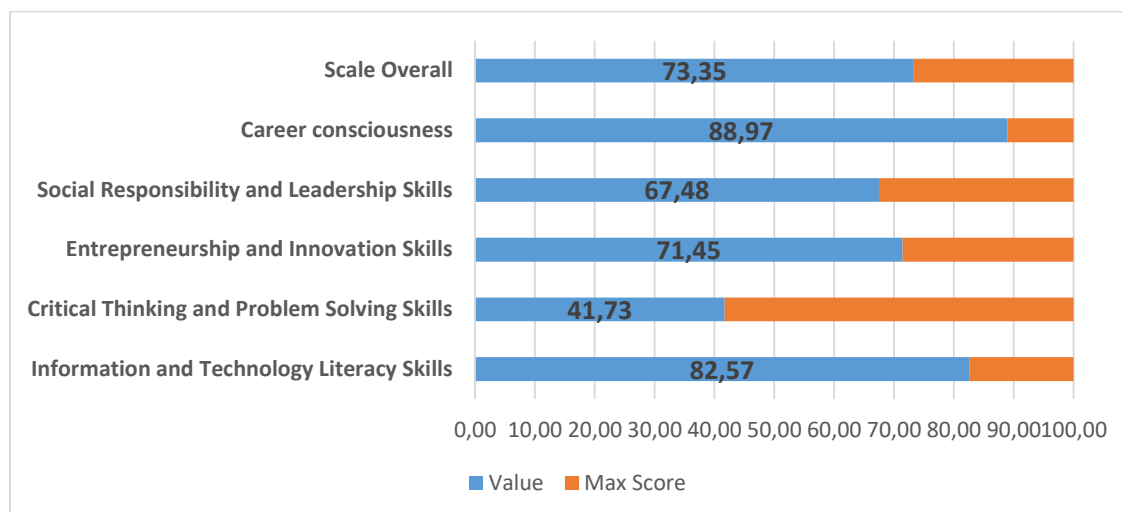
When Graphic 1 is examined it is seen that CEIT teacher candidates' scores are generally high for the scale overall. In terms of sub-dimensions, respectively Career Consciousness, Information and Technology Literacy Skills and Entrepreneurship and Innovation Skills scores are high. Compared to aforementioned skills Social Responsibility and Leadership Skills are high but relatively lower than the other sub-dimensions. However, it is seen that CEIT teachers' scores are the lowest in Critical Thinking and Problem-Solving Skills sub-dimension.

2. The Findings Related with the Gender Variable According to the Scores Obtained from the Multidimensional 21st Century Skills Scale

Independent samples t-test was applied to determine whether there is a meaningful difference between the scale scores of teacher candidates according to gender. The results are given in Table 2.

Table 2. t-test results of the scores taken from the Multidimensional 21st century skills scale according to gender variable

Dimensions	Gender	N	X	SS	t	p
Information and Technology Literacy Skills	Male	59	63.16	7.73	1.91	.057
	Female	64	60.54	7.41		
Critical Thinking and Problem Solving Skills	Male	59	12.54	6.27	.043	.966
	Female	64	12.50	4.49		
Entrepreneurship and Innovation Skills	Male	59	37.84	7.59	3.06	.003
	Female	64	33.76	7.17		
Social Responsibility and Leadership Skills	Male	59	13.76	2.82	1.12	.264
	Female	64	13.25	2.23		
Career consciousness	Male	59	27.32	2.64	2.28	.024
	Female	64	26.10	3.18		
Scale Overall	Male	59	154.64	19.37	2.52	.013
	Female	64	146.17	17.89		

When the findings in Table 2 are examined it is seen that there is no meaningful difference between the scores of teacher candidates and their gender according to the "Information and

Technology Literacy Skills" sub-dimension (t= 1.91; p>.05). The mean scores of male teacher candidates on "Information and Technology Literacy Skills" sub-dimension was (X= 63.16), whereas it was (X= 60.54) in female teacher candidates.

There was found no meaningful difference between the scores of teacher candidates and their gender in the sub-dimension of "Critical Thinking and Problem-Solving Skills" (t= .043; p>.05). While male teacher candidates' mean scores towards "Information and Technology Literacy Skills" were (X= 12.54), this score was (X= 12.50) in female teacher candidates.

The findings of the study indicated that there was meaningful difference between the scores of teacher candidates and their gender under the sub-dimension of "Entrepreneurship and Innovation Skills" (t= 3.06; p<.05). The mean scores of male teacher candidates were (X= 37.84) whereas it was (X= 33.76) in female teacher candidates.

In the sub-dimension of the Multidimensional 21st century skills scale, the Social Responsibility and Leadership Skills, there was no meaningful difference between the scores of the teacher candidates and their gender (t= 1.12; p>.05). The mean scores of male teacher candidates in this sub-dimension was found to be (X= 13.76), whereas it was found as (X= 13.70) in female teacher candidates.

There was meaningful difference between the scale scores and gender variable of teacher candidates according to the last sub-dimension "Career Consciousness" of the Multidimensional 21st century skills scale (t= 2.28; p<.05). The score means of male teacher candidates towards career consciousness were found as (X= 27.32) whereas it was found as (X= 26.10) in female teacher candidates.

When the scores of the Multidimensional 21st century skills scale is examined it is seen that there was meaningful difference between the scores and gender of the teacher candidates (t= 2.52; p<.05). While the score means of male teacher candidates were found as (X= 154.64), it was found as (X= 146.17) in female teacher candidates.

According to these findings, it could be summarized that there was no meaningful difference between the scores the teacher candidates obtained from the scale and their gender in the sub-dimensions "Information and Technology Literacy Skills", "Critical Thinking and Problem-Solving Skills" and "Social Responsibility and Leadership Skills". However, there was found a meaningful difference as a result of the analyses done between the scores of teacher candidates and their gender in terms of "Entrepreneurship and Innovation Skills" and "Career Consciousness" sub-dimensions as well as the overall scale in favor of male teacher candidates.

3. The Findings Related with the Grade Variable According to the Scores Obtained from the Multidimensional 21st century skills Scale

In order for determining whether there was a meaningful difference between the scores of teacher candidates obtained from the Multidimensional 21st century skills Scale and the grade they attended, one-way ANOVA analysis was conducted. The findings are presented in Table 3.

Table 3. One Way ANOVA analysis Results of the scores taken from the Multidimensional 21st century skills scale according to grade variable

Dimensions		Sum of squares	fd	Mean of squares	F	p
Information and Technology Literacy Skills	Between groups	1089.18	3	363.06		
	Within groups	6062.13	119	50.94	7.12	.00
	Total	7151.31	122			
Critical Thinking and Problem-Solving Skills	Between groups	121.98	3	40.66		
	Within groups	3436.71	119	28.88	1.40	.24
	Total	3558.69	122			
Entrepreneurship and Innovation Skills	Between groups	839.11	3	279.70		
	Within groups	6261.48	119	52.61	5.31	.002
	Total	7100.60	122			
Social Responsibility and Leadership Skills	Between groups	26.31	3	8.77		
	Within groups	758.43	119	6.37	1.37	.253
	Total	784.74	122			
Career Consciousness	Between groups	55.65	3	18.55		
	Within groups	1032.60	119	8.67	2.13	.09
	Total	1088.26	122			
Scale Overall	Between groups	4694.78	3	1564.92		
	Within groups	39477.38	119	331.74	4.71	.004
	Total	44172.16	122			

When Table 3 is examined it is seen that there was a meaningful difference between the scores of teacher candidates and their grades they attended in terms of the sub-dimension of "Information and Technology Literacy Skills" (F= 7.12; p<.05). When the score means of the grades are analyzed it is seen that the scores of freshman teacher candidates were (X=59.47), sophomore teacher candidates as (X=61.85), sophister teacher candidates as (X=58.74) and final year teacher candidates were (X=65.28). In order to determine the difference among the grades, Scheffe test from Post Hoc tests were conducted and it was seen that final year teacher candidates were more dominant

than the freshman and sophister teacher candidates in the sub-dimension "Information and Technology Literacy Skills".

There was no meaningful difference between the mean scores of teacher candidates and the grade they attended in the sub-dimension of "Critical Thinking and Problem-Solving Skills" (F= 1.40; p>.05). When the mean scores of the grades the teacher candidates attend are examined, it is seen as (X=12.82) in freshman, (X=10.28) in sophomore, (X=13.53) in sophister and (X=12.16) in final year teacher candidates.

A meaningful difference was found between the mean scores of teacher candidates and the grade they attended in "Entrepreneurship and Innovation Skills" sub-dimension of the scale (F= 5.31; p<.05). When the grade level means are examined it is found as (X=33.41) in freshman, (X=32.28) in sophomore, (X=34.18) in sophister and (X=38.85) in final year teacher candidates. In order for determining the difference among the grades, the results of the applied Scheffe test from the Post Hoc tests the final year teacher candidates could be observed higher than the sophomore and sophister teacher candidates in the sub-dimension "Entrepreneurship and Innovation Skills".

No meaningful difference was found between the mean scores of teacher candidates and the grade level they attended in Social Responsibility and Leadership Skills sub-dimension (F= 1.37; p>.05). Examining the mean scores of the grade levels the teacher candidates attended, it was found as (X=13.41) in freshman, (X=13.42) in sophomore, (X=12.95) in sophister and (X=14.02) in final year teacher candidates.

There was found no meaningful difference between the mean scores of teacher candidates and the grade level they attended in "Career Consciousness" sub-dimension (F= 2.13; p>.05). When the mean scores of the grade levels the teacher candidates attended, it was found as (X=25.88) in freshman, (X=26.57) in sophomore, (X=26.13) in sophister and (X=27.48) in final year teacher candidates.

When the scores of the Multidimensional 21st century skills scale is examined it is seen that there was meaningful difference between the scores of teacher candidates and the grade level they attended (F= 4.71; p<.05). The mean scores of the grade levels the teacher candidates attended are found as (X=145.00) in freshman, (X=144.42) in sophomore, (X=145.55) in sophister and (X=157.81) in final year teacher candidates. For determining the difference among the grades, the results of the Scheffe test from Post Hoc tests revealed that final year teacher candidates are more dominant than sophister teacher candidates in 21st century skills.

4. The Findings Related with the Graduated High School Variable According to the Scores Obtained from the Multidimensional 21st Century Skills Scale

Whether there was a meaningful difference between the scores of teacher candidates obtained from the Multidimensional 21st century skills Scale and the high school they graduated from, Kruskal Wallis H analysis was applied. The findings are presented in Table 4:

Table 4. Kruskal Wallis H Analysis Results of the Scores taken from the Multidimensional 21st century skills scale according to the Graduated High School Variable

Dimensions	High School Type	N	*Mean rank*	fd	X^2	*p*	*Meaningful difference*
Information and Technology Literacy Skills	Anatolian High School	33	56.08				
	General High School	6	45.17				
	Vocational High School	84	65.53	2	3.08	.21	
Critical Thinking and Problem Solving Skills	Anatolian High School	33	67.61				
	General High School	6	47.00				
	Vocational High School	84	60.87	2	1.97	.37	
Entrepreneurship and Innovation Skills	Anatolian High School	33	52.82				
	General High School	6	66.92				
	Vocational High School	84	65.26	2	3.01	.22	
Social Responsibility and Leadership Skills	Anatolian High School	33	50.55				Vocational High School-Anatolian High School
	General High School	6	47.58				
	Vocational High School	84	67.53	2	6.52	.03	
Career Consciousness	Anatolian High School	33	58.53				
	General High School	6	52.92	2	.99	.60	
	Vocational High School	84	64.01				
Scale Overall	Anatolian High School	33	53.88				
	General High School	6	52.17	2	3.17	.20	
	Vocational High School	84	65.89				

When Table 3 is examined it is seen that there is no meaningful difference between the scores of teacher candidates and the high-school they graduated from in terms of the sub-dimension of "Information and Technology Literacy Skills" (X2 = 3.08; p>.05). No meaningful difference was found in "Critical Thinking and Problem-Solving Skills" sub-dimension (X2 = 1.97; p>.05) as well as in the "Entrepreneurship and Innovation Skills" sub-dimension (X2 = 3.01; p>.05) and in "Social Responsibility and Leadership Skills" sub-dimension (X^2 = 6.52; p<.05).

In order for determining the meaningful difference between the school types, the results of the paired comparison of Mann Whitney U test, teacher candidates who graduated from Vocational High School have been using "Social Responsibility and Leadership Skills" more actively and are more developed in these skills than those who graduated from Anatolian High School.

There was no difference found also in the "Career Consciousness" sub-dimension of the scale according to the graduated high school (X^2 = .99; p>.05). When the scores of the Multidimensional 21st century skills scale overall is examined it is seen that there was meaningful difference between the scores of teacher candidates and the high school they graduated from.

It could be stated that there is no difference among the teacher candidates in 21st century skills according to the high school they graduated from. So, the study shows that there is no significant separation in terms of the high school the teacher candidates graduated from.

5. The Findings Related with the Academic Achievement Variable According to the Scores Obtained from the Multidimensional 21st Century Skills Scale

For determining whether there was a meaningful difference between the scores of teacher candidates obtained from the Multidimensional 21st century skills Scale and their academic achievement Kruskal Wallis H analysis was applied. The findings are presented in Table 5:

Table 5. Kruskal Wallis H Analysis Results of the Scores taken from the Multidimensional 21st century skills scale according to Academic Achievement Variable

Dimensions	Academic achievement average	N	*Mean rank*	fd	X^2	*p*
Information and Technology Literacy Skills	1.00-1.75	2	6.75			
	1.76-2.50	26	71.25	3	6.72	.08
	2.51-3.25	78	60.83			
	3.26-4.00	17	59.74			
Critical Thinking and Problem-Solving Skills	1.00-1.75	2	94.25			
	1.76-2.50	26	49.58	3	5.84	.12
	2.51-3.25	78	63.58			
	3.26-4.00	17	69.97			
Entrepreneurship and Innovation Skills	1.00-1.75	2	31.50			
	1.76-2.50	26	59.63	3	1.71	.63
	2.51-3.25	78	63.18			
	3.26-4.00	17	63.79			
Social Responsibility and Leadership Skills	1.00-1.75	2	67.75			
	1.76-2.50	26	75.75	3	5.38	.14
	2.51-3.25	78	58.95			
	3.26-4.00	17	54.29			
Career Consciousness	1.00-1.75	2	9.00			
	1.76-2.50	26	62.94	3	6.24	.10
	2.51-3.25	78	60.71			
	3.26-4.00	17	72.74			
Scale Overall	1.00-1.75	2	13.00			
	1.76-2.50	26	62.90	3	4.38	.22
	2.51-3.25	78	61.53			
	3.26-4.00	17	68.53			

When table 5 is examined it is seen that there is no meaningful difference between the scale scores of teacher candidates and their academic achievement average on the sub-dimension "Information and Technology Literacy Skills" of Multidimensional 21st century skills scale (X^2 = 6.72;

p>.05). According to the findings seen in the table, there is no meaningful difference between the scale scores of teacher candidates and their academic achievement average on the sub-dimension "Critical Thinking and Problem-Solving Skills" ($X^2 = 5.84$; p>.05).

No meaningful difference was found between the scale scores of teacher candidates and their academic achievement average on the sub-dimensions; Entrepreneurship and Innovation Skills ($X^2 = 1.71$; p>.05); Social Responsibility and Leadership Skills ($X^2 = 5.38$; p>.05) and Career Consciousness ($X^2 = 6.24$; p>.05). also no meaningful difference was found between the scores of the teacher candidates from Multidimensional 21st century skills scale overall and their academic achievement average ($X^2 = 4.38$; p>.05).

These findings indicate that the academic achievement average of the teacher candidates does not show any meaningful difference with their 21st century skills. So, it could be said that even though the academic achievement levels of the teacher candidates are different, there is no significant divergence in their 21st century skills.

6. Findings Related with the Prominence of the 21st Century Skills in CEIT Undergraduate Curricula

The sub-dimensions of 21st century scale used in the study were taken as the themes of study's this part. The curricula were analyzed with descriptive analysis. The course names and content were examined and the ones which contained 21st century skills teaching were presented in Table 6:

Table 6: Courses on 21st century skills in CEIT Curricula

21st century skills	Pre-2018 Curriculum	2018 Curriculum
Information and Technology Literacy Skills	Information and Communication Technologies in Education (I-II) (Compulsory, 1st grade course)	Media Literacy (Selective)
Critical Thinking and Problem-Solving Skills	Programming Languages 1-2 (Compulsory, 2nd grade course) Programming in internet environment (Compulsory, 3rd grade course)	Critical and Analytic Thinking (Selective) Algorithm design and development (1st grade course) Mobile programming (4th grade course)
Entrepreneurship and Innovation Skills	Innovation and Entrepreneurship (Elective, 4th grade course) Creativity education (Elective, 2nd grade course)	Economy and Entrepreneurship (Selective)
Social Responsibility and Leadership Skills	Community Service Practices (Selective) Project Development and Management 1-2 (Compulsory, 4th grade course)	Community Service Practices (Selective) Project Development and Management (4th grade course)

Career Consciousness	Carrier Planning in Computer Education and Instructional Technologies (Elective, 4th grade course) Project Development and Management 1-2 (Compulsory, 4th grade course)	Career Planning and Development (Selective) Project Development and Management (4th grade course)

<div align="center">(YÖK, 2018; GBP, 2012)</div>

The table shows that the both CEIT curricula refers to 21st century skills. However, it is remarkable that with the new curriculum "Critical Thinking and Problem Solving Skills" are highly taken into account. The findings of this study showed that CEIT teacher candidates have the lowest scores in this skill. This shows the well-directed curriculum development studies that would fulfill the gap in the system.

When the courses in the new curriculum is further examined, it was found that approaches such as STEM, ROBOTICS and coding that are seen as the changing paradigm in education are corresponding with 21st century skills. It is seen that the approaches adopted by our education system are reflected in the CEIT 2018 curriculum. It also occurs that "skills teaching" is focused on in courses like; Programming Teaching Approaches, The Foundations of Teaching Technology, Learning and Teaching Approaches in Informatics, Informatics Teaching Programs, Technology Planning and etc. Moreover, the new curriculum foresees that CEIT teacher candidates would be trained such that in addition to being informatics teachers, they would work for technology planning of schools, organize technology-based classes and help the other teachers for technology integration and guide them in following the up to date developments which are all components of 21st century skills as change agents.

Discussion, Conclusion and Implications

The rapidly changing and developing world requires no more the sole information but the skills and information that could be transferred to all fields of life. To attain these skills to the students is the mission of education systems and training the teachers who will educate the students in this new way is one of the most important duties of Faculties of Education. It is of great importance for all teacher candidates to have these so called 21st century skills and also their teacher training including to educate them towards gaining these skills.

In this study the 21st century skills of CEIT teacher candidates were examined in an age when the technology is rapidly developing and the importance of integrating technology into the curriculum is very high. The "Multidimensional 21th Century Skills Scale" developed by Çevik and Şentürk (2019) was applied to the teacher candidates which composed of Information and Technology Literacy Skills, Critical Thinking and Problem Solving Skills, Entrepreneurship and Innovation Skills, Social Responsibility and Leadership Skills and Career Consciousness sub dimensions and the scores

of the teacher candidates were evaluated in terms of gender, grade level, the graduated high school and academic achievement.

According to the results the overall scores of CEIT teacher candidates from the scale are high. This finding shows similarity with the study of Özdemir-Özden, Karakuş-Tayşi, Kılıç-Şahin, Demir-Kaya & Bayram (2018) and Kozikoğlu & Altınova (2018). In terms of sub-dimensions, respectively Career Consciousness, Information and Technology Literacy Skills and Entrepreneurship and Innovation Skills scores were found high compared to Social Responsibility and Leadership Skills hence the lowest dimension was seen in Critical Thinking and Problem-Solving Skills sub-dimension. This low score of teacher candidates would be complemented with the new course on this skill in the 2018 curriculum.

There was no meaningful difference between the scores of the CEIT teacher candidates and gender under the sub-dimensions of "Information and Technology Literacy Skills, Critical Thinking and Problem Solving Skills and Social Responsibility and Leadership Skills" but difference in favor of male teacher candidates under "Entrepreneurship and Innovation Skills, Career Consciousness Skills" and the scale overall which showed similarity with Dilek and Karagöz (2018) but difference with the study of Kozikoğlu and Altınova (2018). Also, this finding differed from that of Özdemir-Özden et. al. (2018)'s study in which Career Consciousness Skills of female teachers were high.

A meaningful difference was found between the grades of the teacher candidates between their scores form the scale in which final year teacher candidates had higher scores of 21st century skills than the sophister (third grade) teacher candidates. A similar result was seen in the study of Özdemir-Özden et. al. (2018) in which sophister teacher candidates had higher scores than the sophomore teacher candidates.

When the high schools the teacher candidates graduated from were taken into account no meaningful difference was seen which implied the importance of undergraduate programs for attaining the students with the 21st skills that in addition showed the importance of this study implying the effects of undergraduate curricula on teacher training. However, in the study by Dilekli and Karagöz (2018) a meaningful difference was found in the high schools of the teacher candidates they graduated from. In this study no meaningful difference was found according to the teacher candidates' academic achievement.

The analysis of the CEIT curricula before 2018 and 2018 indicated that 21st century skills are taken into account in the courses. However, the new curriculum is updated and changed according to the recent necessities and developments which is indicating that curriculum development principles are taken into account. Nevertheless, the role of the faculty staff in delivering the courses/curriculum should not be forgotten. The faculty staff, with the necessity of lifelong learning are also believed to have the requirement of updating themselves and their teaching in order not to fall behind the

developments. Further studies could be conducted in the following years as the teacher candidates would graduate from the 2018 curriculum. Then some comparative research could be made whether the new curriculum has positive effects on the 21st century skills attainments of the teacher candidates which would also guide the curriculum development process in future.

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Strategic Management and Leadership of Education: Central and Local Perspectives in Turkey

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Ministry of National Education

Abstract

This study seeks to assess how Turkey's Ministry of National Education has implemented strategic management and planning by examining the views of upper-level administrators employed in Ministry's central and provincial administrative bodies concerning the strategic management which is a legal obligation for all educational institutions across the country. Semi-structured interviews were conducted with 10 upper- and middle-level administrators. The findings on participants' responses to the research questions were subject to descriptive analyses. The findings of the study are interesting as reveal that the top down reforms and legal obligations do not guarantee adequate and effective implementation in practice. Upper- and middle-level administrators emphasize that a strategic management and planning culture has not been established in Ministry of National Education and the strategic management and planning process has become a weak formality, which increases the workload rather than being an effective management tool. The study revealed that instead of strategic management and planning being to a technical process, measures need to be taken to facilitate its transformation into a cultural process. Strategic management and planning needs to consider together as a whole every stage of each process. The centralist approach should be abandoned and local mechanisms' areas of influence need to be increased. It is an important research area that more comprehensive evaluation of the centralist strategic management approach based on strategy transfer from the center to the local level.

Key Words: Strategic leadership, Strategic management, Educational policies, Upper-level education administrators.

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Introduction

Education policies are institutionalized based on a variety of both short- and long-term planning endeavors, like development plans, government programs, and strategic plans. As a result of Public Finance Management and Control Law No. 5018, adopting and implementing strategic management and planning are also a legal requirement for Turkey's Ministry of National Education (MoNE). After having implemented its first strategic planning in 2010, MoNE moved into its second strategic planning term in 2014. It is expected that as the second planning term approaches its end, it is expected that a wealth of experience will have been gained at the corporate level during this almost 10-year period. Consequently, an extensive amount of literature discussing the efficiency of the strategic corporate planning process at different corporate levels and problems occurring during the planning process has come into existence (Akbaba & Yıldızbaş, 2016; Arslan & Küçüker, 2016; Balkar & Ekici, 2015; Balcı, Çanakçı, & Tan, 2012; Balkar & Kalman, 2018; Eren, Orhan, & Dönmez, 2014). Strategic planning is essentially a process based on continued education (Akgemci, 2008). This learning process is, from the standpoint of middle- and upper-level managers in particular, significant in terms of a strategic management and leadership abilities.

Strategic management is a management model based on gradual planning and realization within a specific vision of corporate goals and the identification, selection and implementation of an organization's long- term goals and objectives. It is about planning for both predictable as well as unfeasible contingencies. It involves the strategies that managers undertake so as to improve performance and achieve a competitive advantage for their organization. In areas pertaining to the corporate mission, this model envisions short-, medium-, and long-term plans being devised after conducting effective situation and future analyses that evaluate environmental factors to predict potential development and after identifying strengths, weaknesses, risks, and opportunities. These plans are then used to prepare budget and performance programs in order to realize corporate goals. In strategic planning, every action is based on a justification designated in situation analyses and is planned to accomplish a long-term ultimate goal (Dinçer, 2013; Eren, 1998). As such, it can be argued that consistent policies are interwoven with well-planned strategic management.

On the other hand, the implementation of consistent, long-term education policies finds itself at the fore of among those aspects of MoNE that are heavily criticized. The constantly changing implementations in various fundamental policy areas, ranging from student selection and placement exams to the appointment of teachers and administrators, are criticized by all stakeholders in education, and particularly by students, parents, and teachers (Akın, 2016; Tonbul & Sağıroğlu, 2012). As such, it is important to examine the reasons as to why consistent education policies have yet to be devised and implemented considering the near 10-year strategic management experience. The focus of this study is two-fold. Not only does it seek to investigate the strategic management processes adopted

by MoNE, it also endeavors to examine how administrators employed in both central and provincial administrative bodies perceive strategic leadership and its practical consequences in their administrative duties.

Leaders able to define strategies and bring them to life constitute one of the most important components of the strategic management process. Strategic leaders are upper-level administrators who, by using strategic analyses and decision-making skills, define and implement the steps to be taken for a specific strategy in a given strategic management process (Finkelstein & Hambrick, 1996; Akgemci, 2008). Not only does the literature asserts that administrators should not simply follow environmental developments, it discusses their strategic leadership roles of bringing about innovation by making future predictions and of improving the organization. Since strategic leaders' basic responsibility is concerned with maintaining the competitive advantage, it is important that they be future-oriented and have administrative abilities and qualities more than other characteristics (Ülgen & Mirze, 2004). Leaders' effectiveness or ineffectiveness affects the strategic management process and therefore the overall success of the organization. In discussing the importance of strategic management, Eren (1998) emphasizes that in order to realize specific goals, it is essential not only to choose strategies that every member of the organization will accept but also to have the necessary skills to implement chosen strategies. Expected from strategic leaders is the ability to change the form of leadership to fit changing environmental conditions and to direct workers to new goals. According to Harvey, Drolet and DeVore (2014), strategic planning is the operational version of leaders' vision. Strategic leaders are individuals who through their knowledge, experience, abilities, and opinions, effectively prepare and implement plans. Strategic leaders establish relevant organizational structures, distribute resources, convey strategic opinions, and influence people (Guillot, 2003). Davies and Davis (2004) emphasize that certain organizational and individual abilities are influential in strategic leaders' success. Organizational abilities include strategic orientation, transforming the strategy into action, creating shared values, effectively evaluating strategic opportunities, and developing the organizations' strategic capacity whereas individual abilities include having an intrinsic disposition toward change and development, using scientific information, and being accommodating and creative.

Only through adopting a *strategic management* and employing *strategic leaders* that enable the organization to survive over the long term and maintain its competitive edge and not through simply managing its daily and routine affairs can educational organizations' accommodation of changes and their ability to maintain effectiveness be realized (Besler, 2004; Güçlü, 2003). Upper-level administrators and boards of directors are able to take on strategic leadership in the organizations (Besler, 2004; Finkelstein, Hambrick, & Cannella, 2009). As such, it is expected that upper-level administrators in central and provincial administrative bodies take on strategic leadership in MoNE. As mentioned above, since it is subject to criticism for inconsistencies in its education policies, it is important to predict just how MoNE will evaluate how strategic management, planning processes, and

upper-level administrators' roles are to be realized. Although a wide literature on strategic management processes in schools in Turkey (Akbaba & Yıldızbaş, 2016; Akın, 2016; Balkar & Kalman, 2018; Memduhoğlu & Uçar, 2012), examinations of central and provincial government perspectives are limited. This study seeks to make an original contribution to the literature on strategic management by examining the views of upper-level administrators employed in MoNE's central and provincial administrative bodies since they determine and implement strategies and by comparing the dominant perspectives held in central and provincial regions. Examination of strategic management policy and implementation, which is a legal obligation for all educational institutions across the country is deemed important, especially from the point of view of upper-level administrators in central and provincial administrative bodies.

Objective

This study seeks to evaluate MoNE's strategic management and planning implementations while the second planning term (i.e., 2015-2019 Strategic Plan) approaches its end and to examine the views of upper-level administrators working in the Ministry's central and provincial administrative bodies concerning leadership roles and the Ministry's strategic management process. In line with this aim, answers to the following questions were sought:

1. What are administrators' views on the preparation, implementation, and evaluation of strategic planning processes?

2. How effectively do administrators fulfill their strategic leadership roles at the organizational level?

Method

The current study is a qualitative descriptive study. In-depth interviews were conducted between February and April of 2018 with middle- and upper-level administrators related to MoNE's strategic management process working in central and provincial administrative bodies. This section includes all the details about the study group, data collection tool and analysis of the data.

Study Group

Participants of the study consist of one General Director, three heads of department and one assistant superintendent working in the central organization of Ministry of National Education and one provincial director and four assistant superintendents who work in a provincial directorate of national education. In the study, criteria sampling and maximum variation sampling, both purposive sampling methods, were used. These sampling methods were used to obtain the most extensive amount of information by reaching those individuals most able to provide meaningful contributions to the research problem (Yıldırım & Şimşek, 2005). The basic criteria for selecting members of the sample group was that individuals be currently working as middle- or upper-level administrators in either

central or provincial MoNE administrative bodies since at least one year. In order to obtain a variety of views and evaluations, the researchers were careful to select a wide variety of participants. To achieve this, participants working in the Ministry's varying departments at different capacities in the hierarchy were carefully selected. One of the participants employed in the central Ministry was the Department Head of Education Policies and from the provincial directorates was an Assistant Superintendent of Strategy Development. It was deemed important to include these individuals in the study due to the above-mentioned departments' coordination duties in the strategic planning process. In order to compare the perspectives held by individuals in the central and provincial administrative bodies administrators working at different levels were included. When the distribution of the administrators by gender was examined, 2 were female and 8 were male. At the time of interview, 3 of the 10 administrators had 2-4 years' administrative seniority, 4 had 5-6 years' administrative seniority, and 3 had 6-8 years' administrative seniority at the ministry or provincial directorate of national education. In addition, participants had at least 10 years teaching and administrative experience in the schools.

Data Collection Tool

Interviews were used to collect data in the current study. We prepared a semi-structured interview form soliciting responses to administrators' strategic management process, their roles in the process, and to what extent they had fulfilled these roles. This form was composed of two sections and was created after having performed a review of the literature. After examining MoNE's strategic plans and the implementation process and conducting interviews with Ministry administrators, we developed the first draft of the form, which was then submitted to field experts experienced in strategic management and planning. This draft was amended per the experts' opinions and was brought to its final form. A pilot interview was conducted with an administrator and the comprehensibility of the questions was evaluated.

The two fundamental questions to which responses were sought on the form were: (1) "What are administrators' views on the preparation, implementation, and evaluation of strategic planning processes?" and (2) "How effectively do administrators fulfill their strategic leadership roles at the organizational level?" Follow-up and alternative questions were prepared for each question included in the form. The structured interviewed lasted approximately 30-45 minutes and were recorded so that participants would feel more at ease expressing their opinions.

Analysis of the Data

Descriptive method was used to analyze the data. While interpreting participants' responses to the interview questions, they were accompanied by actual statements made by the participants during the interviews. In descriptive analyses, the data obtained is first summarized into pre-defined themes and interpreted. Participants' statements are often included verbatim not only to provide a clear reflection of their views but also to increase the study's reliability. Since the objective it to present to

the reader the study's findings and their interpretation in an orderly manner in this type of analyses, the study's data are first systematically and clearly described. These descriptions are subsequently explained and interpreted, cause and effect relationships are examined, and a number of conclusions are reached (Yıldırım & Şimşek, 2005). Codes were giving to the participants during the data's analysis. Regarding participants working in the central Ministry, the general director was coded as (GD), department heads as (M1, M2, M3), and the assistant superintendent as (MAS) whereas regarding those working in the provincial directorate, the superintendent was coded as (PD) and the assistant superintendents as (P1, P2, P3, P4). Their duties and positions were highlighted when necessary. According to Yıldırım and Şimşek (2005), descriptive analyses are appropriate for studies with a pre-defined conceptual structure. The current study takes the preparation, implementation, and assessment phases of strategic plans as the foundation for the conceptual structure for the strategic planning process (Eacott, 2008; Eren, 1998). A five-dimension conceptual structure related to strategic leaders' organizational roles and emphasized by Davies and Davies (2004) was taken as the basis for strategic leadership.

In addition to seeking expert opinions at every step of the study (i.e., preparing the semi-structured interview form and defining the themes) to ensure the validity and reliability of the research data, notes taken by the researchers during interviews were shared with the participants, seeking their confirmation. The assessments related to the findings were frequently supported and explained by verbatim statements. Furthermore, all of the study's methodological processes were explained in detail and the conclusions were presented in such a manner to allow them to be compared. Finally, it is important to emphasize that both of the researchers involved in the preparation and implementation of strategic plans at central and local level in their professional backgrounds and gained extensive experience.

Findings

The findings obtained through analyses of the interviews are discussed in this section. The findings are grouped into two themes. This themes are titled as *Strategic Management and Planning Process* and *Strategic Leadership Roles*.

A. Strategic Management and Planning Process

The views of administrators employed in central and provincial administrative bodies on strategic management and planning processes have been examined under the following three categories compromising the three stages of strategic planning: (i) Improving the Preparing Process, (ii) Strengthening the Implementation Process, and (iii) Revising the Assessment Process.

i. Improving the preparation process.

When participants' views concerning the preparation stage of the strategic planning process are evaluated in a general manner, it is revealed that participants perceived the preparation process of strategic plans to be a technical process, pertinent legislation to be implemented by responsible authorities, and that the will of upper-level administrators devising National Education policies was not sufficiently reflected in this process. Planning processes at the provincial level adopt a centralist mentality, basing their own plans on those prepared by the central Ministry. Participants' statements highlighting this specific issue are included as follows:

We have a strategic planning commission composed of relevant upper-level departments. This commission collects the necessary information and carries out the preparation process by conducting interviews, surveys, document analysis, etc. (M3)

We fulfill all of our duties based on the mandates and instructions delineated by the Ministry. We prepare our strategic plans following the framework laid out by the Ministry. We conduct our business at the provincial level based on the Ministry's strategic goals. (P4)

Another point pertaining to the preparation process highlighted by participants is that the process changes based on the upper-administrator currently in authority. One participant expressed his views concerning this issue as follows:

The important thing is how the administrator approaches the issue. If a memo coming from the Strategy Department is to be forwarded to a sub-unit and they say to prepare and send it, previous documents' quantitative data are updated and, for want of better words, the dust is wiped off and sent away. (GD)

Another important dimension mentioned by participants is that the process's administration is not sufficiently coordinated and is conducted in haste.

Because coordination in the strategic planning process is not sufficiently facilitated, some people are expected to implement the plans that prepared by others. This makes it impossible to properly manage the process. (M2)

An examination of participants' views on strategic plans' preparation process illustrates that (i) needs and expectations surveys, (ii) PEST and SWOT analyzes, and (iii) decisions made in routine meetings serve as important guides in defining long-term goals related to duties having a legal foundation. Similarly, participants stated that contemporary developments and stakeholders' expectations are important in designating goals. It was seen that in general, participants were aware of the technical terms used in strategic planning and that Ministry employees had acquired direct experience in technical processes during the second planning term in particular. The assistant superintendent of the provincial education directorate shared his opinion on this matter:

I can safely say that although the assigned positions duties weren't far-reaching enough and that performance goals were not realistic during the first planning term, better plans were prepared in regard to these issues during the second term. (P1)

ii. Strengthening the implementation process.

When evaluating Ministry administrators' views on the implementation process of strategic planning, strategic plans are perceived more as a general policy document and understood to be of an intentional and recommendational nature rather than being implementation-focused. Participants emphasized that although strategic plans are devised to fulfill medium- and long-term projects, the process does not follow the administration's strategic plan during the implementation phase. Participants' views in regard to this specific issue follow:

When a strategic plan is added to our agenda and at the end of every year by the strategy department head, information and assessment reports regarding the projects being conducted are added to our agenda upon request. In the current process, there is no work defining where we are in the current strategic plan. (M2)

Another point highlighted in regard to the implementation process pertains to the planning approach. Errors in the approach adopted during the preparation phases of a plan negatively affect the implementation phase. One central Ministry administrator stated the following about this specific issue:

We sometimes witness a wrong approach when defining performance goals. For example, a goal seeking to increase the number of students receiving special education was introduced. Here, the goal shouldn't be to increase number under every circumstance; it's to provide students in need of special education with the ability to receive an appropriate education. So the inclination of putting forward a numerical goal where numbers gradually increase may cause mistakes that would render it impossible to even implement this plan. (M1)

Similar to their views on the preparation process, participants also emphasized the importance of strategic leadership in the implementation process. Participants' views on this issue reveal that the strategic management process espoused by the most upper echelons of the administration was far from being realistic.

At long as the same general director is around, it might be possible for the vision to be reflected onto the strategy. However, no administrator stays in his position long enough to make and institute either a medium- or long-term plan. For this reason, administrators give priority to projects that will bring short-term results instead of long-term strategic plans. Moreover, every new administrator means a new strategy and implementation. (MAS)

iii. Revising the assessment process.

Participants' views on the assessment process emphasize that evaluating unrealistic goals is not meaningful. Studies examining end-of-term assessments conclude by stating that there are justifications for goals that have gone unrealized. Participants' views on this issue follow:

Today when we evaluate the performance goals written up three years ago, we see that they've already been surpassed or that we didn't designate their numbers very realistically. We can even see that sometimes goals that are no longer valid. (M3)

In 2014, we placed a goal that sought to increase the achievement scores for transitioning to middle school whereas we now see that we've eliminated the test altogether. (P2)

Although there are strengths in the physical structure, deficiencies in assessing performance constitute our weakest point. (PD)

I think that the institutions culture of preparing long-term plans and then instituting and assessing them hasn't fully caught on yet. (M1)

Participants stated that budget deficiencies constitute the most serious limitation when attempting to implement the long-term goals defined by MoNE. This perception is further reinforced as a result of the weak relationship between budget management and strategic planning. The assessment process evaluating the weak relationship between performance goals included in strategic plans and budget management has turned into a mere formality. Participants' views on this subject follow:

We have difficulty finding resources to materialize the goals we've placed in strategic plans. Actually, our problems and deficiencies in physical and human resources terms are clear. However, the solution to the majority of these problems is a financial matter. (M2)

We see ourselves miles away from being a clear and transparent institution that gives priority to accountability and self-assessment. (M3)

Every year, our Ministry carries out an administration-related performance program and submits it to public opinion. Even if this program isn't a part of the strategic plan, we can't say it's completely separate. Five years can be a long period of time in today's world. For this reason, we're obliged to make changes in our strategies and goals. (GD)

It is observed that studies assessing performance are not effective and that neither a mechanism nor a culture evaluating performance markers based on the goals defined in strategic plan studies exists.

B. Administrators' Strategic Leadership Roles

This section of the study seeks to highlight how leadership factors into strategic management processes and make relevant conclusions. In order to do this, participants' organizational-level strategic leadership roles have been examined. As such, interviews were structured following the following dimensions conceptualized by Davies and Davies (2004): (i) *Being Strategic Oriented*, (ii) *Transforming Strategy into Action*, (iii) *Creating Shared Values*, (iv) *Effective Assessment of Strategic Opportunities*, and (iv) *Supporting Strategic Capacities*.

i. Being strategic oriented.

Central Ministry administrators' roles pertaining to *being strategic oriented* revolve more around an administrative understanding in which a long-term, visionary approach shaping the education system's future is dominant than around daily and short-term policies (Davies & Davies, 2004). This approach requires operational planning done in accordance with a powerful vision. Central Ministry administrators' views on their roles pertaining to *being strategic oriented* reveal that they find the strategic orientation professed by the upper-administration to be insufficient.

> *I've been a department head for two years. Other than two meetings that I attended representing the general director, I've never attended a meeting with the minister or undersecretary. We have frequent meetings with the undersecretary's assistants, but these meetings are assessment meetings that focus on specific issues. This makes it difficult for us to understand the general policies related to the strategic approach of the highest-level administrators. (M2)*

> *Our agenda is so busy that it's sometimes difficult to look up ask where we're heading. (P3)*

> *I don't think that the processes for devising policies or for defining strategies in the Central Ministry are run with a sufficiently comprehensive decision-making mechanism. If there even is a strategic orientation, it's not visible. (P4)*

> *I think that since decisions are bound to the upper-administration's approval, long-term planning projects are significantly deterred. We act based on whatever the strategic framework devised by the Central Ministry is. Administrators at the provincial or school level don't have extensive enough zone of influence. (PD)*

Criticism toward strategic orientation and especially toward the upper-level administration's ability to convey their strategies to subordinates and the provincial superintendent's criticism regarding centralized structure of the strategic planning process are noteworthy. As a result, it can be argued that, intensive routines restrict the strategic orientations of the administrators.

ii. Transforming strategy into action.

Leaders' roles pertaining to *Transforming Strategy into Action* revolve around sharing the strategic orientation behind institutional processes with employees both verbally and in writing and around facilitating the structural development to realize these strategies (Davies & Davies, 2004). Some of the participants' views on the roles in question indicate that strategic leaders in MoNE's strategic management processes are in included as long as they are part of the highest level of administration. The participant working as general director discussed this point as follows:

Decisions are made by the Minister or Undersecretary in weekly upper-administration meetings. All of the general directors and sometimes relevant department heads attend these meanings. Here, we implement whatever decisions have been made by first systematically ordering them from easiest to hardest and level of feasibility, and of course considering the strategic priorities. (GD)

It is understood from participants' statements that in spite of these upper-level strategic meetings, there are difficulties in conveying these strategies to lover administrative levels. The participant employed as department head made the following comments regarding this point:

We even learn about certain issues after the fact. We hear about important Ministry policies only after they've started to be implemented. Sometimes we find out from social media or other websites. As the most senior administrators in the Ministry, we have extreme difficulty trying to explain some of our policies when going to the provinces. (M2)

In addition to these issues, we find that several studies have been conducted on propagating and implementing strategies in the ministry's central and provincial administrative bodies. Views on this issue are as follows:

We implement our policies in the field by trying to change negative attitudes toward work, convincing, increasing awareness of the roles undertaken, frequently reminding about the importance of our mission, motivating, following up, defining steps problems, and performance criteria for each goal, and preparing projects. (M3)

We revise goals based on the feedback we receive before implementing them and we try to increase the rate strategies implemented and the amount of monitoring and evaluation studies. (P2)

It is understood from participants' statements that the strategic planning process is top down which does not fit the nature of strategic management. The emphasis of the participants points out that the strategic planning process is carried out with a centralized approach. In addition, some participants directly stated that strategic planning was centralized.

iii. Creating common values.

It is impossible to realize organizational change without supporting mission, strategy, culture, and behavior (Wilson, 1997). Strategic leaders gather workers around a mutual vision and form a shared group of values to realize this vision. When participants' views on MoNE's attempt to create shared values are examined from a strategic management perspective, it is seen that instead of a policy approach that takes organization culture into consideration, an approach based on the chain of command is dominant in propagating strategy in the field. Participants' views on this issue follow:

We spend a lot of effort trying to break resistance to change. To achieve this, we have come together with teachers and administrators and shared the Ministry's vision and road map during province, district, and school visits. (GD)

I think that teachers' reactions aren't taken into consideration for a large number of decisions made by the Ministry. It's not enough to simply share the vision; we need to aim at create a well-balanced structure that not only successfully realizes the institution's goals but also fulfills workers' needs. (PD)

We don't have a systematic structure where we can relay our thoughts or recommendations about policies to higher levels. Maybe only like the National Education Council can conduct broad-based studies on at irregular intervals but it's not clear as to what degree they are reflected on policies. All stakeholders who may be affected by the Ministry's decisions should be included in the decision-making process. (P3)

I think it's necessary from a group studies, a team mentality, and collaborative work strategy standpoint. However, efficiency and functionality should be discussed here. (M1)

iv. Effective assessment of strategic opportunities.

The effective assessment of strategic opportunities concerns itself with strategic leaders' management of competent interventions in the proper time frame. Participants' views on this subject reveal criticisms about strategies' effectiveness in regard to the timing methodology of MoNE. Below are participants' views highlighting this issue:

We follow changes and developments in the field of education both in Turkey and throughout the world and try to adapt them to education institutions. Sometimes a number of important steps may be taken toward reading the strategic transformation occurring throughout the world. I think it's important to have a vision like the FATİH project (Movement of Enhancing Opportunities and Improving Technology) in terms of Industry 4.0 and 21th Century Skills discussions. However, we need to discuss the implementation process and our capacity to manage it. (GD)

I think that if we made a medium-term assessment of the Ministry's policies, it would be difficult to say that there's any strategic harmony. It's hard to know what intervention we're going to initiate this year or what implementation we're going to do two years from now. I can certainly say that in this case, strategic opportunities are not taken advantage of in an effective time frame. So, there's definitely a need for a common mind to be used throughout all processes and for collaboration in such processes at the higher level (P1)

v. Supporting strategic capacities.

One of the basic requirements to improving institutions' strategic capacity is to develop human resources able to transform strategy into action. Two further areas in which a strategic leader needs to be involved in order to define strategic goals and to reorganize the organization are administrative processes and organizational culture. Since these two areas in particular are so intimately related with human resources, they find themselves among the duties and roles of top priority of a strategic leader's determining and improving workers' strategic capacities. When participants' views are examined from a strategic human resources management standpoint, it is observed that MoNE continues to apply traditional methods in managing processes in this area. Participants' views on this issue are as follows:

During the last term in particular, we have added very high caliber young individuals by devising our assistant specialist team. The Ministry gives a great deal of importance to effectively training that these young individuals. I'm of the opinion that these young people will be able to make vital contributions in the coming years. (GD)

Our colleagues in the Ministry who work more effectively than others certainly stand out. Of course one who succeeds in delivering the water isn't the same as one who breaks the jug. Every administrator needs a team whose members in whose potential, talents, and work ethic he can trust. This is how it is now as a result of our new faculty policy, even for upper-level administrators. Those who work inefficiently are let go. (MAS)

I can't really say that we've adopted a different method than the one we were using 20 years ago in terms of developing our human resources. Maybe there's been increase in the number of in-service programs and informative meetings and knowledge flow has improved in parallel with advances in technology. However, no systematic improvement mechanism has yet to be developed. (PD)

We use technology to share information more efficiently within our respective departments. We use messaging programs to share informal information in addition to online informative meetings. (M3)

We conducted a few training programs on strategic planning with school principals and other faculty members, but the lack of functional oversight negatively affected the learning process and the planning process didn't fully reach its goal. (P1)

Despite the spread of digital communication technologies and other specific developments, the means used by the central Ministry's to develop its human resources do not exceed traditional in-service training policies. The participants emphasized that a major problem is that school principals in particular do need receive the necessary level of training and education in regard to strategic management policies. In addition, the need for new approaches and practices in in-service trainings was an important emphasis.

Discussion

In this study, the views of upper-level administrators employed in Ministry's central and provincial administrative bodies were comparatively examined, unlike many studies (Akbaba & Yıldızbaş, 2016; Akın, 2016; Altınkurt, 2010; Balkar & Kalman, 2018; Frantzen, 2018; Memduhoğlu & Uçar, 2012; Williams & Johnson, 2013) in which the challenges of the strategic planning process in educational institutions were evaluated by the local/school perspective. A joint examination of the findings on MoNE's strategic management and planning process and on the strategic leadership roles of both middle- and upper-level administrators employed in the Ministry's central and provincial administrative bodies reveals that upper-level administrators have some strategic leadership roles but these roles cannot be reflected onto ministry policies in a planned manner. The strategic planning process is perceived as an independent job carried out by specific responsible departments. Furthermore, middle-level administrators criticized not only the deficiencies in disseminating strategies defined by upper-level administrators to lower levels but also the strategic approach adopted by upper-administrators and their failure to develop shared values. These critiques indicate that the hierarchal structure in the Ministry's bureaucracy is excessively strict and that transfer of strategic knowledge between different hierarchal levels is weak. According to Mintzberg (1994) the lack of participation of administrators in the process is an important problem in the strategic planning. Rigid hierarchy is not out of keeping with the nature of strategic management. Because of the gaps between central vision and school implementation (Peters-Hawkins, Reed, & Kingsberry, 2018), an effective strategic management requires a model that institutions can identify and implement their organizational goals, strategies, performance measures, and actions in a more free environment (Layland & Redding, 2017). The results of the present study are consistent with similar studies that criticize the rigid hierarchical and centralized structure of strategic management of MoNE (Arslan & Küçüker, 2016; Şahin & Arslan, 2008). Similarly, Çoban, Özdemir, and Pisapia (2019) argue that administrators in MoNE could not indicate strategic leadership attitudes during the organizational change management. It is known that a mechanical strategic planning approach does not succeed in

achieving the expected goals. According to Cook (2001) the first and most important stage of strategic planning is organization's beliefs and culture. As a consequence, it is understood that a strategic management and planning culture has not been established in the MoNE, and in this sense, there is nothing wrong in saying that, Turkish experience has not falsified Cook's (2004) predictions related to *creating artifactual* systems and *authoritarian organizations* in planning process. Even if there is no evidence that strategic management increases the authoritarianism in MoNE, it can be argued the rigid hierarch has not been decreased by way of strategic management and planning.

From an administrative standpoint, considering that there is no strategic transition or breaking period in political/managerial terms and the strategic mind that determines and applies educational policies has been based on the same government programs for about 15 years, it is noteworthy that the upper- and middle-level administrators composing the research group, that they did not see themselves as members of a strategic management team, and that they had a critical perspective. This can be interpreted as the fact that the Ministry could not present a strategic vision to be shared by all of its stakeholders, especially the upper-level central and local administrators. On the other hand, as in some countries such as Denmark, new governance models that *treating schools as self-governing institutions managed directly from the MoNE* increase the importance of strategic planning as a managerial tool (Moos, 2014). Moreover, the importance of strategic planning for *local governments* has not decreased in countries such as the United States, where decentralization prevails (Baker, Campbell, & Ostroff, 2016; Frantzen, 2018; Strunk, Marsh, Bush-Mecenas, & Duque, 2016). Within this context, the Turkish experience about strategic management of education reveals that centralized and constitutionally obligated process carry some important risks and the central government's commandments, top down reforms, and legal obligations do not guarantee adequate and effective implementation in practice.

Central Ministry administrators' views on MoNE's strategic management and planning processes reveal that participants consider there to be gaps in the causal relationship that connects the preparation, implementation, and assessment processes to each other. An ineffective preparation process causes the implementation and assessment processes to turn into formalities, which consequently turns strategic management and the planning process into an insufficient formality that serves only to increase workload instead of an effective management tool. In this context, participants' emphasis on the lack of information and education provided on strategic planning is also an important point. As emphasized by Mintzberg (1994), one of the important problems of strategic planning is the limitations of the analytical information flow in the organization. Insufficient information and training in the strategic planning process is noted by many researchers (Arslan & Küçüker, 2016; Memduhoğlu & Uçar, 2012). In the scope of strategic planning, Altınkurt (2010) concluded that, insufficient information causes resistance and distrust among administrators. According to Erdoğan (2004), the root cause for unsuccessful policies in Turkey's is that knowledge and awareness levels are

insufficient in the training provided to human resources. However, continued education-based teamwork is necessary in order to ensure the effectiveness of strategic management (Akgemci, 2008). Yet, a well-functioning strategic management has not yet been reached due to, among other reasons, the fact that strategic implementations in MoNE require a paradigmatic change in management.

Conclusions and Recommendations

At the conclusion of two planning terms, although employees in the central Ministry have gained knowledge and experience on certain technical processes, the root problems raised by the participants concerning strategic management and the planning process may be listed as follows: (i) Strategic plans do not reflect the strategic mind of upper-level administrators, it is perceived as an advisory policy document rather than a practice-oriented plan and a technical reporting process carried out by the related unit, board or commissions. (ii) The relevant bodies have not attained the necessary level of knowledge and awareness concerning strategic planning, (iii) Education stakeholders are not adequately included in the strategic plan preparation process and inter-department coordination is weak, (iv) Environmental changes and local dynamics are not sufficiently assessed during the strategic planning process and planning processes at the provincial level simply follow plans developed by the Ministry, thereby breeding a centralist mentality, (v) Inadequate attention is paid to ensure that performance programs and goals incorporated in planning projects are realistically defined and strategic goals align with budget programs, (vi) Studies evaluating performance have yet to be effectively conducted and no study on strategic plans has developed a mechanism evaluating performances by gauging whether strategic plans followed pre-defined goals, and (vii) Shared values pertaining to MoNE's strategic management have not been created, management processes change depending on the department/administrator, and an approach that facilitates strategies' dissemination into lower levels while taking organizational culture into consideration has not been created. Finally, it could be concluded that as Peter Drucker famously stated "*culture eats strategy for breakfast*".

The study revealed that instead of strategic management and planning being to a technical process, measures need to be taken to facilitate its transformation into a cultural process. As a result, the following recommendations can be made: (i) Strategic management and planning needs to consider together as a whole every stage of each process, including the preparation, implementation, and assessment processes, (ii) Both strategic leadership and this process should be pursued and adopted by the highest level of administration in particular, (iii) The centralist approach should be abandoned and local mechanisms' areas of influence need to be increased in strategic management, (iv) Researchers should examine in greater depth the link between the Ministry's strategic plans and strategy documents, such as activity, performance, and budget reports, especially in the context of assessment processes, and (v) In addition, within the scope of strategic management, it is an important

research area that more comprehensive evaluation of the centralist management approach based on strategy transfer from the center to the local level.

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