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Contact Info.

Address : Fatih Sultan Mehmet Vakıf University, Faculty of Education, Department of Educational Sciences Istanbul - Turkey
Telephone   : + 90 542 325 1923
E-Mail   : info@iojes.net
Web Site : www.iojes.net

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The Effect of Arcs Motivation Model on Students' Academic Achievement and Motivation

Research Article

Ela Ayse KOKSAL[1], Sevil SOYKAN[2], Hulya KAHYAOGLU[3]

[1]Ömer Halisdemir University, Faculty of Education, Department of Science Education, Niğde, Turkey 0000-0001-7309-1458

[2]Ömer Halisdemir University, Faculty of Education, Department of Science Education, Niğde, Turkey 0000-0001-9515-2290

[3]Ömer Halisdemir University, Faculty of Education, Department of Science Education, Niğde, Turkey 0000-0003-2565-140X

ARTICLE INFO	ABSTRACT
Article History: Received: 08.10.2020 Available online: 11.08.2022	The purpose of this study is to investigate the influence of the ARCS motivation model on academic achievement, permanence, and motivation of the students in the 6th grade science and technology lesson. The study group of this research is 57 6th grade students attending to three classes at a middle school in Bor district of Nigde during 2014-15 academic year. Two of the classes are the control group in which traditional teaching was applied, and the other is the experimental group in which the instruction was prepared according to ARCS. The research used quasi-experimental design. The Achievement Test and Motivation Questionnaire were used as data collection tools in the study. The data obtained from the study were evaluated using the Mann-Whitney-U test in the SPSS package program. According to the results, there is no significant difference between the groups in terms of achievement, retention, and motivation. The high motivation of the students in the science lesson can be shown as the reason there is no difference between the groups in terms of motivation and success.

Keywords:
ARCS Motivation Model, Science Education, Academic achievement, Motivation, Middle School Students

Introduction

It is especially important for students to have high motivation in learning science concepts, increasing their academic success, raising science literate individuals and achieving many achievements related to science (Çavaş & Çavaş, 2014, p.138). However, what matters is how motivation will be maintained. The ARCS

(Attention, Relationship, Confidence and Satisfaction) motivation model, proposed by John Keller (1987), one of the proposed motivation theories, is a model that provides and maintains motivation. ARCS Motivation Model consists of four basic dimensions: attention, relation, confidence, and satisfaction. Each basic dimension has three sub-dimensions. The ARCS model is based on a synthesis of motivation concepts and a problem-solving approach in terms of instructional design, rather than the application of specific motivational solutions that are defended regardless of the specific characteristics of the given situation (Keller & Suzuki, 2004).

What is the ARCS Motivation Model?

Although people explain the events that motivate them or not, based on their own student experience, they do not have a logical and systematic approach to instructional design and teaching. People are talented or successful because of their experience or charisma, but what they can do is more limited than what they want to do. Their answer to the question about the shortcomings of their own knowledge is of two types:

1. It is hard to understand the factors affecting student motivation well. It is unclear as there are things to think about.

2. It is complicated to choose, select and adapt a motivational strategy or strategies.

The main purpose of the ARCS motivation model is to guide the answers to these questions (Keller, 2010, p.44).

ARCS' Categories

When we classified the concepts of motivation according to their common characteristics, four categories emerged. Keller introduced the ARCS model by making some changes in the original category titles as shown in Table 1 (Keller, 1984, as cited in Keller 2010, p. 44). These categories are a summary of the main dimensions of human motivation and the strategies that provide motivation in these dimensions.

Table 1. ARCS Categories, Explanations and Process Questions

Main Classes and Explanations		Process Questions
Attention	Catch attention of students, arouse curiosity to learn	How can I make this learning experience stimulating and interesting?
Relation	Meeting the personal needs of the students Having a positive attitude for the student	What value will this learning experience add to students?
Confidence	Helping students what they believe Feeling that they can achieve and be in control of their success	How do I help students achieve success through education and how do I get them to control their success?
Satisfaction	Empowering success with rewards (internal and external)	What can I do to help students have a pleasant experience and help students aspire to learn?

Note: From Table.1. ARCS Model Categories, Definitions, and Process Questions (Keller, 2010, p.45).

The first category of ARCS in the Table 1, attention, includes motivational variables related to arousing and maintaining students' curiosity. When used in terms of instructional design and learning, the dimension of attention has a different meaning. In a learning context, attention is how to attract and manage the student's attention. Attention occurs when the student use signs and instructions to focus on stimuli for learning goals. But before the teacher draws the student's attention, the student needs to gain attention, and this takes place in the motivational dimension. In other words, concern about motivation is to attract attention and maintain attention (Keller, 2010, p. 45). The second step is to make sure the student believes that the learning experience is related to him. The student might ask these classic questions: Why should I study this? I do not need this. Not about me. In these examples, the students do not think that the instruction is related to them. If the student thinks he / she needs the subject, he / she feels excluded from other students or learning environment. Before being motivated to learn, the student will believe that teaching is related to his / her individual goals and he /

she will feel belonging to the learning environment (Keller, 2010, p. 45). Relation is the second step outlined above. Teachers should relate students' learning aims with the subject area.

Even if students in our audience believe that the content is relevant and are curious to learn about it, they still may not have the proper motivation due to too little or too much success waiting. They may have deep-seated fears that hinder effective learning of the subject, skill, or situation. Or at the other extreme, they may think they know wrong and miss vital details in their learning activities. For these situations, you must design the learning materials and environment, including the teacher's behaviour; thus, students are convinced that they can learn the content and show real success on an assignment (Keller, 2010, p.45). This step what Keller mentions is Confidence.

If these first three motivational goals (attention, relevance, confidence) are managed, students will be motivated to learn. Then, to have a constant desire to learn, they must have satisfaction with the outcome or outcome of the learning experience. Satisfaction can be caused by extrinsic and internal factors. Extrinsic factors are familiar to us. These include grades, improvement opportunities, certificates, and other financial rewards; internal factors can be powerful, although they are often overlooked. People love to experience their achievements to make them feel self-esteem, experience positive interactions with other people hear and respect their views and overcome difficulties that strengthen their sense of competence (Keller, 2010, p. 46).

In summary, these are the four components of the ARCS model that cover the main factors influencing motivation to learn. These factors relate to two important questions a teacher should ask herself on deciding or preparing to teach. First, what should be done to make instruction valuable and stimulating for students? Second, how to make students successful and feel they are responsible for their success? (Keller, 2010, p. 46).

ARCS model can be used easily to design and improve any type of instructional motivation (Small, 2011). The use of the ARCS model, which combines science teaching with motivational design, should be investigated to increase the motivation and success of our students in our country. For this reason, in one of the science lesson units, teaching has been prepared in accordance with ARCS. In this respect, the research will shed light on our teachers who are the implementers of the curriculum. The instructional design and motivational design of the research are important and teachers who feel incomplete at this point will be provided with in-service training and will create the awareness of eliminating their deficiencies at this point. This study aims to investigate the effect of teaching prepared according to the ARCS (attention, relationship, confidence, satisfaction) motivation model on students' academic achievement, motivation, and retention of learning in science and technology lesson. This research will guide teachers on how to maintain student motivation throughout the course to increase academic achievement in science class.

Method

The research is done with quantitative approach. The quasi-experimental model was used in the study. Before starting the treatment, demographic information form, achievement test (AT) and motivation questionnaire (MQ) were administered as pre-tests to the students in sixth grade. After the application, the same AT and MQ were applied to all students included in the study as a post-test. The teacher author made the experimental application for four weeks. The teacher author also performed traditional teaching in one of the control groups. The second science teacher in the same school also gave traditional instruction in the other control group. In addition, a retention test (RT) was applied to the students eight weeks after the application to determine the permanence of their academic achievements in the science course.

Research Group

The sample of the study was selected as a middle school in Bor district of Nigde province, affiliated to the Ministry of National Education in the 2014-2015 academic year. The teacher author enters two science

classes, and another science teacher enters only one class of the three sixth grade in this school. There were two control groups and one experimental group in the research. One of the classes the teacher author enters was determined as experimental group. While determining the experimental group, she chose the class with a high-class participation rate. While the teaching prepared according to the ARCS motivation model in the experimental group was done by the teacher author, one of the control groups was taught by the teacher author again and the other teacher at the school as well. Twenty students in the experimental group, twenty students in the first control group and seventeen students in the second control group were studied.

Data Collection

The research is quantitative and quasi-experimental research. In this study, to investigate the effect of ARCS motivation model on the academic achievement of sixth grade students in the particle structure of matter unit and on the permanence of their learning, the achievement test developed by the authors. In addition, motivation questionnaire was used to investigate the effect of ARCS motivation model on students' motivation towards science lessons.

The study is a pre-test-post-test control group study model, and it was conducted by selecting all three sixth grade classes from the middle school. One of the classes was chosen as the experimental group and the other two as the control group. Before starting the treatment, the AT was applied to the students in the experimental and control groups as a pre-test, and after the application, the same test was applied to all students as a post-test. After the groups were determined, the teaching method was taught to the experimental group according to the ARCS motivation model within the framework of the annual plan outcomes, and the control groups were taught by the teacher author and other science teacher at the school for four weeks using the traditional teaching method. In addition, to determine the permanence of the students' academic achievement in the science course, eight weeks later, the achievement test, which was used as a pre-test and a post-test, was applied to the experimental and control groups as a retention test.

Data Collection Tools

1. Motivation Questionnaire (MQ)

Motivational Strategies in Learning Questionnaire was used to determine the motivations of the students in the science course. The questionnaire was developed by Pintrich, Smith, Garcia, and Mckeachie (1991 as cited in Sungur, 2004) and translated into Turkish by Sungur (2004). The questionnaire is a seven-point Likert-type scale from the expression "it does not reflect me at all" to the statement "it fully reflects me". It consists of two parts as motivation and learning strategies. The motivation part of the questionnaire was used in this study. The part that says, "biology lesson" in the questionnaire has been changed to "science lesson". In the motivation part of the questionnaire, there are thirty-one items to evaluate the students' beliefs about their goals, valuing the lesson, their ability to succeed, and exam anxiety. In this part of the questionnaire, there are six sub-dimensions: internal and external goal orientation, valuing, control beliefs on learning, self-efficacy towards learning, and test anxiety. Questions 8, 14, 19 and 28 of the motivation questionnaire work in reverse and their scoring was done accordingly. Since the alpha coefficient alone is not sufficient, the contribution of each item in the factor to this coefficient was examined (Baş, 2010, p.147). For this, Cronbach's Alpha values were checked when the item in the Item Total Statistics Table was deleted (Baş, 2010, p.147). The reliability coefficients of the motivation survey are .896 for pre-test and .827 for post-test.

2. Achievement Test (AT)

Achievement Test (AT) consists of 20 multiple-choice questions. The questions were prepared to include the acquisitions of Let's Know about the Particulate Nature of Matter Unit of 6th grade science lesson. The validity of the test is high since AT is prepared together with the authors who are expert in the field and in

accordance with the gains of the specified unit. It was administered as a pre-test-post-test and eight weeks later as a retention test. While scoring AT, correct answers are scored as one point, and other markings are scored as 0 points. The internal reliability coefficient of the pre-achievement test is $\alpha=.401$. The internal reliability coefficient of the final achievement test is $\alpha=.645$. In the retention test, the internal reliability coefficient is $\alpha=.659$.

Treatment

1. Procedures Applied to the Experimental Group

The teaching based on the ARCS motivation model was applied to the experimental group students for four weeks by the first researcher. Basic sub-dimensions of ARCS were taken into consideration while applying all four hours of each week. A separate ARCS application was made in each class hour. In other words, in each lesson, ARCS's attention, relevance, confidence and satisfaction stages were applied together with its sub-dimensions. Information about what was done in each lesson during the implementation is presented in Table 2.

Table 2. ARCS Sub dimensions used in Experimental Group Instruction

stage	dimension
attention	perceptual arousal, variability, research arousal, diversity, warning for questioning,
relation	proximity- familiarity, motif suitability, guidance to the destination
confidence	learning requirements, personal control, success opportunities
satisfaction	natural and positive results, equity

2. Procedures Applied to Control Group

During the study, the teacher author and other science teacher at the school taught each of the control groups with the traditional teaching method. Key concepts related to the subject are read from the textbook at the beginning of the course. It is asked what students think about these concepts and what the concepts evoke. There is no wrong or correct interpretation of what students say. Then, questions are asked about any item (eraser, pencil, etc.). It is asked whether this item is holistic, that is, it consists of a single piece. Student answers are listened to. Then a sheet of paper is cut into small pieces and comments are made as to whether it can be cut into even smaller pieces. Solid iodine is dissolved in alcohol and the results are interpreted to show that all substances consist of particles that cannot be seen by the naked eye.

In the second part of the course, the students are asked to think about the particle structures of solid, liquid, and gaseous substances. Examples about them are made. For example, one, two, three, four students are seated in a row, and they are asked in which situation they are more comfortable. Then, if another twenty students are brought to their classes, they are asked if they will act freely in the first case or when twenty more students arrive. Thus, they are provided with an idea about the movement of solid, liquid and gas particles. It is ensured that the students reach the conclusion that the quick sensing of the perfume sprayed in the room by everyone is related to the diffusion property of the gases. Molecular structures and properties of solid, liquid, and gaseous substances are written and noted on the board. The lecture is completed by reading the subject from the book.

In the last part of the course, evaluation questions related to the subject are asked to answer. Homework is given by writing different questions about the subject so that the students can come to the next lesson.

Data Analysis Process

To draw valid conclusions from the data, it is important to first examine the quality of the data, in other words, to work with qualified data. There are four main objectives of analysing data before multivariate

analyses (Mertler & Vannatta, 2015): The first of these is to examine the accuracy of the data. The quality of the data results depends on the data quality. The second point concerns the assessment of missing values (missing data) and their effects. Whether or not there is a pattern of missing values is much more important than what its quantity is (Tabachnick & Fidell, 1996). The third point concerns the evaluation of the effects of extreme values. Outliers mean the extreme value of a subject in a variable or the extreme value of a combination of variables. Extreme values often cause critical problems in multivariate analysis. The fourth point is that all multivariate statistical techniques are based to some extent on suppositions. Therefore, the fourth purpose of examining the data before analysis is to evaluate the harmony between the data and the assumptions of the analysis technique to be applied. Although some multivariate analyses have their own assumptions, all techniques are based on three basic assumptions: Normality, Linearity, Homogeneity of Variances (Homogeneity) (as cited in: Büyüköztürk, Çokluk, & Şekercioğlu, 2012).

In the study, the Mann-Whitney U Test was used to evaluate the difference between the mean scale scores of the experimental and control groups. While evaluating the science journals, content analysis was performed in qualitative data analysis. This analysis was made with the consensus of the teacher author and her advisor. For example, in the first question of the diary, the student was asked whether he listened to the lesson, and if he did, what was effective in listening to the lesson.

Results and Discussion

The mean and standard deviation values of the scores obtained by the students from the pre-, post- and retention applications of the achievement tests and the pre- and post-applications of the motivation questionnaires are shown in Table 3 and 4. The achievement test consisted of twenty questions. The average score in this test varies between 6.05 and 9.58. This shows that students can only answer half of the test. The success of all groups increased from the pre-test to the post-test (1st control group students changed their mean score from 6.40 to 9.00; 2nd control group students changed their mean score from 6.05 to 8.17; experimental group students changed their mean score from 7.10 to 8.10. However, except for the 1st control group (with a decrease from 9.00 to 8.75), the achievements of other groups changed positively from post- to retention- test (2nd control group students averaged their score from 8.17 to 9.58; experimental group students increased their mean score from 8.10 to 8.90). The Mann-Whitney U test was used to determine whether there was a difference in achievement scores of groups. Comparison of the mean scores of the experimental group and 1st control group showed that the students started to (U=167.00, p=.36) and ended (U=174.50, p=.48) the instruction with same cognitive level. When the mean retention test scores were examined, no significant difference was found between the 1st control group and experimental group (U=192.00, p=.82). Comparison of mean scores of the experimental and 2nd control group showed that the students started to (U=132.00, p=.24) and ended (U=168.50, p=.96) the instruction with same cognitive level. When the mean retention scores were considered, no significant difference was found between the experimental and control groups (U=192.00, p=.82 and U=130.50, p=.22, respectively). These results showed that teaching based on the ARCS motivation model has no effect on students' achievement and their retention levels (SPSS Kullanımı, 2015).

Table 3. Mann Whitney U Test Results for the Differences in the Achievement Levels of Students According to Independent Variable

Variable	Group	*n*	*X*	*S*	*U*	*p*	*X*	*S*	*U*	*p*
pre	1.c	20	6,40	2,37	167.00	.36	160,20	29,64	171.50	.44
	exp	20	7,10	3,00			172,15	15,41		
	2.c	17	6,05	2,19	132.00	.24	169,70	22,67	194.00	.87
post	1.c	20	9,00	4,40	174.50	.48	160,15	36,05	178.50	.56
	exp	20	8,10	3,12			173,60	16,94		
	2.c	17	8,17	3,00	168.50	.96	170,52	23,83	168,00	,95
retention	1.c	20	8,75	3,89	192.00	.82				

exp	20	8,90	2,69		
2.c	17	9,58	3,72	130.50	.22

The motivation questionnaire consisted of thirty-one items in total. The average scores of the students from this questionnaire vary between 160.15 and 173.60. The motivation of the 2nd control and experimental groups increased from the pre- to the post- test (2nd control group students increased their mean score from 169.70 to 170.52; experimental group students increased their mean score from 172.15 to 173,60). However, the mean score of the 1st control group students decreased from 160.20 to 160.15. The Mann-Whitney U test was used to determine whether there was a difference in motivation scores of groups. Comparison of the mean scores of the experimental group and 1st control group showed that the students started to (U=171.50, p=.44) and ended (U=178.50, p=.56) the instruction with same affective level. Comparison of mean scores of the experimental and 2nd control group showed that the students started to (U=194.00, p=.87) and ended (U=168.00, p=.95) the instruction with same affective level. These results showed that teaching based on the ARCS motivation model has no effect on students' motivation levels (SPSS Kullanımı, 2015).

Table 4. Mann Whitney U Test Results for the Differences in the Total Motivation Levels of Students According to Independent Variable

Variables	Group	*n*	*X*	*S*	*U*	*p*
pre	1.control	20	160,20	29,64	171.50	.44
	experimental	20	172,15	15,41		
	2.control	17	169,70	22,67	194.00	.87
post	1.control	20	160,15	36,05	178.50	.56
	experimental	20	173,60	16,94		
	2.control	17	170,52	23,83	168,00	,95

In this study ARCS' effect on both achievement and retention of learning were investigated. ARCS is used as a strategy to motivate students. And motivation is one of the factors contributing to success (Hart, 2012).

This research showed that the model did not influence achievement, retention of learning, and motivation. It can be said that not only in the experimental group, but the teachers in the control group have also used motivation strategies. Because teachers in all branches conduct activities that motivate students in the learning-teaching process (Karataş, Ardıç, & Kaya, 2015 as cited in Karatas, Ardic, & Kaya, 2016).

The finding of this study in terms of achievement is in accordance with Aslan, Silbir and Karaman (2016), Naime-Diefenbach (1991) and Wu, Tsai, Yang, Huang, & Lin (2012). ARCS' effect on achievement is reported in numerous studies (Balantekin & Bilgin (2017; Cengiz, 2009; Feng & Tuan, 2005; Ghbari, 2016; Karakis, Karamete, & Okçu, 2016; Karsli, 2015; Song & Keller, 1999; Tahiroglu, 2015; Turel & Ozer Sanal, 2018) and retention of learning (Kutu, 2011). In fact, there are also a couple of studies in which ARCS affects achievement and retention differently (Cengiz & Aslan, 2012; Cetin & Mahiroglu, 2008; Gokcul, 2007; Kayak & Mahiroglu, 2010). In some studies researchers found achievement difference in item types (Cengiz & Aslan, 2012). Therefore, ARCS model has differing effect on achievement and retention. It was also shown in a content analysis (Tezel & Soyturk, 2017) that the ARCS model had no effect on the retention of learning.

The finding on motivation is although in accord with literature (Dede, 2003; Naime-Diefenbach, 1991; Wu, Tsai, Yang, Huang, & Lin, 2012) it is contrary to some studies (Balantekin & Bilgin (2017; Feng & Tuan, 2005; Karsli, 2015; Kutu, 2011; Kutu & Sozbilir, 2011; Saltana & Khalil, 2017; Song and Keller, 1999; Tahiroglu, 2015; Turel & Ozer Sanal, 2018). The differing effect of motivation in these studies according to Keller depends

on tactics used and if problem-solving process provided with ARCS is a prescription of one culture would not be effective for another culture (Simsek, 2014).

The scores of the experimental and control groups from the motivation questionnaire showed that both groups had a high motivation and no significant difference occurred between the groups because of the curriculum. Since 2013, the Ministry of National Education has been implementing the curriculum based on the constructivist approach which reveals the importance of the concept of motivation, which is thought to affect student participation in the lesson (Tezel & Soyturk, 2017). The emergence of the effect of ARCS model on motivation in some studies does not guarantee that the model is always effective on motivation because the state of being motivated depends on the interest, need, level, socio-cultural, ethnic and economic structure of the student and apart from these, it may differ according to many variables such as the content and difficulty level of the course, teacher's attitude, methods and techniques used (Tahiroglu, 2015).

This study has showed that motivation does not guarantee achievement. According to Song and Keller (1999) motivation to learn does not predict achievement but learning readiness, performance, and motivation in the future. According to them, motivation reflects cognitive (IQ, GPA, ability, aptitude) and affective (attitude, value, learning style) domains. These factors should be known beforehand to adapt ARCS.

It is reported that ARCS when used with context-based teaching positively affects retention of learning because giving examples from daily life keep students motivated to learn chemistry (Kutu & Sozbilir, 2011). Moreover, use of context-based learning had a significant effect on achievement and retention of the same unit for the same grade level (Ruscuklu, 2017). On the other hand, context-based practices are although successful in increasing student achievement, they sometime increase or decrease motivation (Kabuklu & Kurnaz, 2019).

It should be stated that some factors have limited the success of the model (Balantekin & Bilgin, 2017) such as the characteristics of school, its' surrounding, and student and teacher (Dede, 2003). Because the instruction in the control group was given in accordance with the constructivist learning adopted in the available curriculum and there was a cooperation between the students and teachers (Kutu & Sozbilir, 2011) may have prevented the formation of a statistically significant difference between the groups in dependent variables. These findings are limited to the students of one middle school and replication studies should be done with other samples and subjects as well.

The experimentation took four hours in this study. This duration can be short to see real effect of ARCS on achievement and motivation (Li & Keller, 2018). Implementing ARCS strategies for the other subjects (Li & Keller, 2018) will extend the time and increase the likelihood of tracing a significant effect. Teachers play key role in the success of ARCS model. They should perform as actors, vary the tone of their voice and body movement to increase students' attention, hence they should be trained for a longer period (Wu, Tsai, Yang, Huang, & Lin, 2012).

ARCS Motivation Model has been designed for the development of computer aided instructional (CAI) materials (Balantekin & Bilgin, 2017). external learning systems or materials such as mobile learning systems or educational games can be used (Li & Keller, 2018) for this purpose. In this study, the model was adapted to teaching sixth grade science subject, Let's Know about the Particulate Nature of Matter. The effectiveness of the CAI assisted ARCS model can be studied to make comparisons among the teachings.

REFERENCES

Aslan, A., Şılbır, L. & Karaman, S. (2016). Motivasyonel ifadelerle zenginleştirilmiş metinlerin öğrencilerin anlama ve öz yeterlilik düzeylerine etkisi. *Journal of Instructional Technologies and Teacher Education, 5* (2), 72-79. Retrieved from https://dergipark.org.tr/tr/pub/jitte/issue/25090/264801

Balantekin, Y., & Bilgin, A. (2017). ARCS motivasyon modelinin öğrencilerin motivasyonlarına, tutumlarına ve akademik başarılarına etkisi. *İlköğretim Online,* 16(1), 161-177.

Baş, T. (2010). Anket. (6. Baskı). Ankara: Seçkin Yayıncılık.

Büyüköztürk, Ş., Çokluk, Ö., & Şekercioğlu, G. (2012). *Sosyal bilimler için çok değişkenli istatistik.* (2. Baskı). Ankara: Pegem Akademi Yayıncılık.

Cengiz, E. (2009). ARCS motivasyon modelinin fen ve teknoloji dersinde öğrencilerin başarısına ve öğrenmenin kalıcılığına etkisi. Unpublished MSc Thesis. Atatürk University Institute of Natural Sciences, Erzurum.

Cengiz, E., & Aslan, A. (2012). ARCS motivasyon modelinin vücudumuzdaki sistemler ünitesinde akademik başarı ve öğrenmenin kalıcılığına etkisi. *Kastamonu Eğitim Dergisi,* 20(3), 883–896.

Çavaş, P. H., & Çavaş, B. (2014). Fen Bilimlerinde Öğrenme Öğretme Süreci., Ş. S. Anagün, & N. Duban (Editors). Fen bilimleri öğretimi. Birinci Baskı. Ankara: Anı Yayıncılık

Çetin, Ü., & Mahiroğlu, A. (2008). ARCS motivasyon modeli uyarınca tasarlanmış eğitim yazılımının öğrencilerin akademik başarısına ve öğrenmenin kalıcılığına etkisi. *Kırşehir Eğitim Fakültesi Dergisi,* 9(3), 101–102.

Dede, Y. (2003). ARCS motivasyon modelinin öğrencilerin matematiğe yönelik motivasyonlarına etkisi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 2*(14), 173–182.

Feng, SL., & Tuan, HL. (2005). Using ARCS model to promote 11th graders' motivation and achievement in learning about acids and bases. *International Journal of Science and Mathematics Education,* 3, 463–484

Ghbari, T. A. (2016). The effect of ARCS motivational model on achievement motivation and academic achievement of the tenth grade students. *The New Educational Review, 43*(1), 68-77. DOI: 10.15804/tner.2016.43.1.05

Gökçül, M. (2007). Keller'in ARCS Güdülenme Modeline Dayalı Bilgisayar Yazılımının Matematik Öğretiminde Başarı ve Kalıcılığa Etkisi. Unpublished MSC Thesis.Çukurova University Institute of Social Sciences, Adana.

Hart, C. (2012). Factors associated with student persistence in an online program of study: A review of the literature. *The Journal of Interactive Online Learning, 11*(1), 19–42.

Kabuklu, Ü. N., & Kurnaz, M. A. (2019). Fen eğitimi alanında Türkiye'de yapılmış bağlam temelli öğretim konulu çalışmaların tematik inccelemesi. *Asian Journal of Instruction, 7*(1), 32-53.

Karakis, H., Karamete, A., & Okçu, A. (2016). The effects of a computer-assisted teaching material, designed according to the assure instructional design and the ARCS model of motivation, on students' achievement levels in a mathematics lesson and their resulting attitudes. *European Journal of Contemporary Education, 15*(1), 105-113.

Karatas, K., Ardic, T., & Kaya, İ. 2016). ARCS Motivasyon Modeli'ne Dayalı Öğretim Ölçeği Geçerlik ve Güvenirlik Çalışması. *Kastamonu Eğitim Dergisi,* 24(4), 1821-1838.

Karsli, G. (2015). ARCS Motivasyon Yönteminin 8. Sinif Hücre Bölünmesi Ve Kalitim Ünitesinde Öğrencilerin Motivasyonu, Başarisi Ve Tutumlarina Etkisi. Unpublished MSC Thesis. Ağrı İbrahim Çeçen University Institute of Natural Sciences, Ağrı.

Kayak, S., & Mahiroğlu, A. (2010). ARCS güdüleme modeline göre tasarlanan eğitsel yazılımın öğrenmeye etkisi. *Türk Eğitim Bilimleri Dergisi,* 8(1), 67-68.

Keller, J. M., & Suzuki, K. (2004). Learner motivation and e-learning design: A multinationaly validated process. *Journal of Educational Media, 29*(3), 229-239.

Keller, J. M. (2010). *Motivational Design for Learning and Performance. The ARCS model approach.* (First Edition). Heidelberg

Kutu, H., (2011). Yaşam temelli ARCS öğretim modeliyle 9.sınıf kimya dersi "hayatımızda kimya" ünitesinin öğretimi. Unpublished PhD Dissertation. Atatürk University Institute of Educational Sciences; Erzurum.

Kutu, H., & Sözbilir, M. (2011). Yaşam temelli ARCS öğretim modeliyle 9.sınıf kimya dersi "hayatımızda kimya" ünitesinin öğretimi. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi,* 30(1), 29–62.

Li, K., & Keller, J. M. (2012). Use of the ARCS model in education: A literature review. *Computers & Education, 122*, 54-62. https://doi.org/10.1016/j.compedu.2018.03.019

Mertler C. A., & Vannatta, R. A. (2005). Advanced and Multivariate Statistical Methods: Practical Application and Interpretation, 3rd edition. Los Angeles: Pyrczak Publishing,

Naime-Diefenbach, B. (1991). Validation of attention and confidence as independent components of the ARCS model. Unpublished PhD dissertation. The Florida Stae University, College of Education.9124631

Ruscuklu, P. (2017). Yaşam temelli öğrenme yaklaşımının 6.sınıf öğrencilerinin "maddenin tanecikli yapısı" ünitesindeki akademik başarı ve kalıcılıklarına etkisi. Unpublished MSc Thesis. Uludağ University Institute of Educational Sciences, Bursa.

Saltana, N., & Khalil, A. (2017). Application of Arcs Model for Utilizing Blogs to Enhance Learners' Motivation in Higher Education. Pakistan *Journal of Distance & Online Learning, 3*(2), 53-70.

Simsek, A. (2014). Interview with John M. Keller on motivational design of instruction. *Contemporary Educational Technology, 5*(1), 90-95.

Small, R. V. (2007). Motivation in instructional design, ERIC Clearinghouse on Information & Technology, 1-5. EDO-IR-97-06. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.991.9428&rep=rep1&type=pdf#page=101

Song, S. H. & Keller, J. M. (1999). The ARCS model for developing motivationally-adaptive computer-assisted instruction. ED436181. https://files.eric.ed.gov/fulltext/ED436181.pdf

SPSS Kullanımı (2015). Mann-Whitney U Testi. Retrieved 11 August 2022 from spsskullanimi.blogspot.com/2015/02/mann-whitney-u-testi.html

Sungur, S. (2004). *An Implementation of Problem Based Learning in High School Biology Courses.* Unpublished PhD Dissertation. Middle East Technical University Institute of Natural Sciences, Ankara.

Tabachnick, B. G., & Fidell, L. S. (1996). Using Multivariate Statistics, 3rd edition. New York: Harper Collins.

Tahiroğlu, M. (2015). ARCS motivasyon modelinin ilkokul 4. sınıf öğrencilerinin sosyal bilgiler dersine yönelik motivasyonlarına ve başarı düzeylerine etkisi. *Journal of World of Turks,* 7(2), 261-285.

Tezel, Ö., & Soyturk, F. (2017). Türkiye'de ARCS motivasyon modeli uygulamalarina yönelik gerçekleştirilen çalişmalardan bir derleme. *Journal of Research in Education and Teaching, 6*(1), 49-58.

Turel, Y. K., & Ozer Sanal, S. (2018). The effects of an ARCS based e-book on student's achievement, motivation and anxiety. *Computers & Education,* 127, 130-140. https://doi.org/10.1016/j.compedu.2018.08.006

Wu, PL., Tsai, CH., Yang, TH., Huang, SH., & Lin, CH. (2012). Using ARCS Model to Promote Technical and Vocational College Students' Motivation and Achievement. *International Journal of Learning, 18*(4), 79-91.

The Effect of an Educational Program to Support the Emotional Development of Children on Mothers*

Research Article

Neslihan TEKIN¹, F. Abide GUNGOR AYTAR²

¹*Kırıkkale University, Faculty of Education, Department of Basic Education, Early Childhood Education Department, Kırıkkale, Turkey* iD 0000-0003-4462-0693

²*Gazi University, Faculty of Education, Department of Basic Education, Early Childhood Education Department, Ankara, Turkey* iD 0000-0002-0327-3317

ARTICLE INFO	ABSTRACT
Article History: Received: 16.02.2021 Available online: 02.09.2022	The purpose of the current study was to investigate the effect of the educational program to support the emotional development of their children on mothers' coping with the negative emotions. The study was carried out through pre-test, post-test, and retention test in a control-group experimental design. In the study, The Educational Program to Support the Emotional Development of Children was carried out in the mothers in the test group for a 90-minute session a week for 13 weeks. In the evaluation of the efficiency and retention of the Education Program over the test groups, the Coping with Negative Emotions Scale was used. In the analysis of data, t test was used for Split-plot Two Factor ANOVA, Paired Samples and Repeated Measures. In conclusion, it was found that the education given to mothers made positive support to their behaviors in coping with the negative emotions of their children. **Keywords:** Maternal emotional socialization, parent education, emotional development

Introduction

Family always has an important place in a child's life. While a healthy family becomes a valuable resource in difficult times, a broken family system can sometimes create problems that will pass from one

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generation to the next. Although the performance of families varies with social variables, the family always provides physical, emotional, and economic support to its members (Caulfield, 2001; Ryder, 1995).

From the point of view of children's emotional development, it is known that children and parents mutually affect each other, just as infants do in the bonding process. One's reactions and behaviors are shaped by the other's reactions, behaviors, and even views. Therefore, while focusing on how social behavior develops in children, it is necessary to focus on socialization first (Onur, 2004). According to Postman (1982), socialization is defined as the acquisition of cultural values and attitudes (Caulfield, 2001), According to Kağıtçıbaşı (1979), the human being becomes a member of the society when they learn that they are part of their family, kinship and neighborhood, city and village, and finally their country (Kağıtçıbaşı, 1979). While the child's first emotional interactions with their family lie on the basis of their socialization, their emotional interaction is closely related to their social development, emotional development, and attachment style. A securely attached baby interacts socially, trying to keep up with those around them, smiling and reacting joyfully. Social development includes socialization, cultural development, relating to others, and developing social skills (Denham, 1998; O'Hagan and Smith, 2004). Although the socialization process lasts for a lifetime, most of the behaviors it affects are seen especially in the pre-school period (Onur, 2004).

As a result of the increase in the interaction with the environment with the growth of the child in the preschool period, a noticeable difference is observed in the emotional socialization of children (Denham, 1998). Their emotional development is as important as their development in other areas, in the healthy adaptation and socialization of children in their ever-expanding environment. Parents, who are the first environment of children, play an active role in their children's emotional development and guide their emotions. The home environment that is offered to children with care, love and trust allows them to attain a positive development in the emotional field, and the practices of parents about emotions are also determinative in children's expression and understanding of emotions (Denham, 1998; Eisenberg, Fabes & Losoya, 1997; Southam-Gerow, 2014). Especially family and then peers, siblings, non-parent adults and culture play a very important role in teaching children emotion, causes, consequences, expression and regulation (Eisenberg et al. 1998; Eisenberg et al 1997). For this reason, the communication of the family with their children and being a model for them is an important factor in shaping the emotional skills of the children (Ramsden & Hubbard, 2002) because children learn from their parents which emotions are acceptable and which emotional reactions are more functional for their purposes (Kaya-Bican & Sarıtaş-Atalar, 2017).

When the models related to the socialization of emotions in children are examined, it is seen that the most basic model is the developmental model of Denham (1998). According to Denham, those who socialize children contribute to their developing social competences, namely the way their emotions are expressed, their understanding of emotions, and emotion regulation. This is attained via three social learning mechanisms involved in the emotion socialization process, namely, modeling, reactions, and coaching. These three aspects of socialization include how socializers show or not show their own emotions (modelling), how they teach or not teach about emotions (emotional coaching), how they respond to others' emotions (reactions) (Denham, 1998). According to Denham (1998), children are constantly trying to understand the emotional expressions of others and what they see, and to take an example. It is emphasized that the beginning of children expressing emotions and modeling is when the parent shows an emotion and the child observes it. For those who socialize children's emotions, this need not be done deliberately. Similarly, random approaches of parents to children's emotions can also affect children's emotional competence (Denham, 1998). According to Southam-Gerow (2014), socialization of emotions is the process of instructing the child about emotional knowledge and regulation by people who are important to the child, especially parents, deliberately or unconsciously.

In studies on children's emotional development, it has been shown that the way families express emotions and respond to children's emotions as models are important determinants of preschool children's

emotional and social competencies (Denham et al., 1997). It has been also shown that the children of families whose parents are emotionally positive show more positive emotions than their peers, but children whose parents have a more negative emotional attitude are more socially inadequate in kindergartens (Eisenberg et al., 1998; Denham et al., 1997; Denham et al., 2001; Denham & Kochanoff, 2002; Altan, 2006).

In fact, the literature highlights the importance of family practices for the social-emotional development of children and demonstrate the importance and necessity of family education in this area. Havighurst et al. (2004) reported that after the education program they applied to the families for the emotional development of children, the parents made positive contributions to the emotional development of their children. For this reason, family education programs that support the emotional development of children are of great importance for families. This study was planned in order to determine the effect of the education program applied to mothers to support the emotional development of their children on mothers' coping with negative emotions of their children.

Method

Purpose of the Research

The purpose of the research was to examine the impact of the educational program aimed at supporting the emotional development of children implemented by mothers in dealing with their children's negative emotions.

Model of the Research

This study was conducted with pre-test, post-test, and retention test in an experimental design with control group. In the study, pre-test, post-test, and retention test were applied to the mothers to measure the effect of the education given to the mothers in the experimental group. A control group was formed to examine the effect of the education given to mothers. No education was given to mothers in the control group. Pre-test & post-test and control group model are among the most used models especially in social sciences. In this model, there are two groups formed by a random sampling method. Then, one of the groups is used as the experimental group and the other as the control group. Measurements are made before and after the experiment in both groups. (Büyüköztürk et al.2012; Köse, 2010; Kaptan, 1998)

Study Group

The study group comprised a total of 62 volunteering mothers (31 mothers in the experiment group and 31 mothers in the control group) from the public kindergartens of the Ministry of National Education in Etimesgut, Ankara, with children of 48-72 months.

When the demographic information of the parents who participated in the survey was analyzed: 32.26% of the mothers in the experimental group were university graduates, 32.26% were high school graduates, and 58.06% of the mothers in the control group were university graduates. When the education levels of the fathers were examined, it was determined that 51.61% of the fathers in the experimental group and 41.94% of the fathers in the control group were university graduates. When the working conditions of the parents were examined, 70.96% of the mothers in the experimental group and 38.70% of the mothers in the control group were housewives, 41.94% of the fathers in the experimental group were civil servants, 41.94% of the fathers in the control group were civil servants. Regarding the marital status of the parents, it was seen that all the mothers and fathers in the experimental and control groups were married, and 41.94% of the families in the experimental group had two children, while 45.16% of the families in the control group had one child and 45.16% had two children.

When the demographic characteristics of the children were examined, it was seen that 100% of the children in both the experimental and control groups lived in the nuclear family. It was determined that 54.84%

of the children in the experimental group and 51.61% of the children in the control group were boys. All of the children in both the experimental and control groups participating in the study were born naturally. It was found that the majority of the children in both the experimental group (51.61%) and the control group (64.52%) had previously attended a preschool education institution. It was observed that 41.94% of the children in the experimental group and 74.19% of the children in the control group were the first child.

When the mean of the demographic characteristics of the mothers were examined, it was seen that the mean age of the mothers in the experimental group was $\bar{x}$ = 36.45, and the mothers in the control group were $\bar{x}$ = 35.16. The mean age of the fathers in the experimental group was $\bar{x}$ = 39.52 years, while the mean age of the fathers in the control group was $\bar{x}$ = 36.87 years.

When the demographic characteristics of the children were examined, it was found that the mean age of the children in the experimental group was $\bar{x}$ = 60.87 months, and the mean age of the children in the control group was $\bar{x}$ = 63.26 months. It was observed that the children in the experimental group received $\bar{x}$ = 18.63-month pre-school education on average, while the children in the control group received $\bar{x}$ = 19.20-month preschool education on average.

Data Collection Tools

Personal Information Form

The demographic information of the parents and children participating in the study was collected with the Personal Information Form prepared by the researcher. The personal information form consists of two parts and involves open-end and multiple choice questions. In the first part, the age, educational status, occupation, family marital status, family types and monthly income information of the mothers and fathers are included. The second part includes the age, gender, kinship status, number of siblings, birth order, and previous pre-school education.

Coping with Negative Emotions Scale (CNES)

Coping with Negative Emotions Scale (CNES) was developed by Fabes, Eisenberg and Bernzweig (1990) to measure the emotional socialization behavior of families. The scale consists of 12 scenarios. These scenarios are prepared for families to report their reactions to their children's negative emotions. In the scenarios, there are 6 forms of supportive or non-supportive reactions that families will give to their children's emotions. These consist of "Problem-Focused Reactions", "Emotion-Focused Reactions", "Expressive Encouragement", "Minimization Reactions", "Punitive Reactions" and "Distress Reactions". Families evaluate themselves with a 5-point Likert-type scale for 6 responses in each scenario (5 = Definitely I Do This, 4 = Most Likely I Do This, 3 = Maybe I Do This, 2 = I Will Not Do This, 1 = I Never Do This).

The internal consistency reliability coefficients of the CNES were reported by Fabes, Eisenberg and Bernzweig (1990) as .80 for "Problem-solving-focused Reactions", .85 for "Emotion-focused Reactions", .78 for "Expressive Encouragement", .89 for "Minimizing Reactions" and .69 for "Punitive Reactions". The CNES adapted by Altan (2006) to Turkish was found to have a coefficient of internal consistency reliability of .84 for supporting mother behaviors and .87 for non-supportive mother behaviors. Turkish adaptation, validity and reliability studies were conducted by adding a new dimension (Emotions Teaching Response) to the CNES (Tekin, 2016). In this article, only maternal reactions that do not support their children's emotions were included in this study.

Content of the Education Program for Supporting the Emotional Development of Children

The Education Program for Supporting the Emotional Development of Children consists of 13 sessions. These sessions are as follows: Acquaintance Phase and Introduction of the Program, Importance of Early Childhood and Development Characteristics of the Child, Importance of Family and Environment in Early

Childhood, Emotions and Its Importance in Our Life, Relationship of Emotion, Thought and Behavior, Children's Emotional Development I, Children's Emotional Development II, Supporting Their Development I, Supporting Children's Emotional Development II, The Place of Parental Attitudes in the Emotional Development of the Child, The Importance of Mother Father Child Communication and Listening in the Emotional Development of the Child, The Importance of the Language Used in the Child's Emotional Development of Mother, Father, and Child Communication, and Empathy and Its Importance in Emotional Development (Tekin, 2016). The Training Program for Supporting the Emotional Development of Children was applied to the mothers in the experimental group for a period of 13 weeks for 90 minutes once a week.

Data Analysis

The data obtained from the Personal Information Form and the CNES were transferred to the computer environment with the help of SPSS 18 package program and appropriate statistical analyses were performed.

Analysis of the Education Program to Support Children's Emotional Development:

A Mixed Design Two-Factor ANOVA was used to test if education program provided to the mothers had an effect on their CNES scores. A Mixed-Design Two-Way ANOVA was used as regression slopes were significantly different in all dimensions of the CNES. The Mixed Design Two-Factor ANOVA is used to test the row × column joint effect on the effectiveness of the experimental process and the basic effects of the row and column factors in two-factor mixed designs, where unrelated measurements and repeated measurements depending on time are mentioned (Büyüköztürk, 2011). Eta-squared was used in the effect size. Eta-squared size criteria were taken as: .01 small effect, .06 as medium effect, and .14 as high effect (Ellis, 2010).

To test whether there was a difference between pre-program and post-program (4 weeks later) CNES score of the mothers, the relevant Samples and the t test (for Repeated measurements) were used. For repeated measures, the t test is used to test whether the difference between two related sample means is significantly different from zero (from each other) (Büyüköztürk, 2011). In addition, in the analysis of the demographic characteristics of the families participating in program, frequency, percentage, and average values are presented.

<center>**Findings**</center>

In this section, findings about the effect of the education program on the mothers' CNES scores are presented.

Table 1. Descriptive statistics of the mothers regarding the dimension of minimizing reactions of the CNES

Minimizing Reactions	*Group*	$\bar{X}$	*SD*	*n*
Pre-test	Experiment	29.10	8.72	31
	Control	29.13	7.94	31
	Total	29.11	8.27	62
Post-test	Experiment	18.81	7.11	31
	Control	30.32	8.14	31
	Total	24.57	9.55	62

Table 1 shows the descriptive statistics of the CNES Minimizing Reaction Dimension of the mothers in the experimental and control groups. Pre-test mean score of the experimental group was 29.10 and the control group is 29.13; the post-test mean score of the experimental group was 18.81 and the control group was 30.32.

Table 2. ANOVA results of the mothers regarding CNES Minimizing Reactions Dimension

The Source of The Variance		*SD*	*df*	*MS*	*F*	*p*	*η²*
Between Subjects	8207.78		61				
Group		1033.58	1	1033.58	8.64	.01	.13

(Experiment / Control)							
Error		7174.19	60	119.57			
Within Subjects	2163.00		62				
Measurement (Pre-test&Post-test)		641.32	1	641.32	77.02	.00	.56
Group*Measurement		1022.07	1	1022.07	122.74	.00	.67
Error		499.61	60	8.33			
Total	10370.78		123				

In Table 2, when the ANOVA results of the mothers in the experimental and control groups related to the Minimizing Reaction Dimension of the CNES were analyzed, it was observed that there was a significant difference between pre- and post-program scores. In other words, it was found that the common effect of pre-test and post-test measurements and being in the experimental and control groups was significant (F (1, 60) = 122,74 p <.01). Looking at the eta square, a value of 0.67 showed that the effectiveness of the training given to mothers was high in the Minimizing Reactions Dimension. Accordingly, it can be thought that the training program had a positive effect on reducing Minimizing Reactions, one of the negative maternal reactions.

Table 3. Descriptive statistics of the mothers regarding CNES Punitive Reaction Dimension

Punitive Reactions	*Group*	$\bar{X}$	*SD*	*n*
	Experiment	25.36	8.23	31
Pre-test	Control	24.97	7.44	31
	Total	25.16	7.78	62
	Experiment	19.48	4.13	31
Post-test	Control	27.52	7.42	31
	Total	23.50	7.20	62

In Table 3, When the descriptive statistics of the mothers in the experimental and control groups regarding the CNES Punitive Reactions Dimension are examined in Table 3, the pre-test mean score of the experimental group was 25.36 and the control group was 24.97, whereas the post-test mean score of the experimental group was 19.48 and the control group was 27.52.

Table 4. ANOVA results on the punitive reaction dimension of the CNES of the mothers

The Source of The Variance		*SD*	*df*	*MS*	*F*	*p*	η^2
Between Subjects	5667.94		61				
Group (Experiment / Control)		452.98	1	452.98	5.21	.03	.08
Error		5214.97	60	86.92			
Within Subjects	1273.5		62				
Measurement (Pretest-Posttest)		85.56	1	85.56	8.04	.01	.12
Group*Measurement		549.36	1	549.36	51.62	.00	.46
Error		638.58	60	10.64			
Total	6941.44		123				

In Table 4, when the ANOVA results of the mothers in the experimental and control groups related to the CNES Punitive Reactions Dimension were analyzed, it was observed that there was a significant difference between pre-program and post-program values. In other words, it was found that the common effect of pre-test and post-test measurements and being in the experimental and control groups was significant (F(1,60)=51,62, p<.01). Looking at the eta square, a value of 0.46 showed that the effectiveness of the training given to mothers was high in the Punitive Reactions Dimension. Accordingly, it can be thought that the

training program had a positive effect on reducing the Punitive Reactions of mothers, one of the negative maternal reactions.

Table 5. Descriptive statistics of mothers in experimental and control groups regarding CNES Distress Reaction Dimension

Distress Reactions	Group	$\bar{X}$	SD	n
Pre-test	Experimental	15.55	3.99	31
	Control	15.10	3.98	31
	Total	15.32	3.96	62
Post-test	Experimental	11.90	3.13	31
	Control	15.65	3.98	31
	Total	13.77	4.02	62

In Table 5, when the descriptive statistics of the mothers regarding the CNES Distress Reaction Dimension were analyzed; it was seen that the pre-test mean score of the experimental group was 15.55 and the control group was 15.10, whereas the post-test mean score of the experimental group was 11.90 and the control group was 15.65.

Table 6. ANOVA results of the mothers regarding CNES Distress Reaction Dimension

The Source of The Variance	SD	df	MS	F	p	η^2
Between Subjects	1689.71	61				
Group (Experiment / Control)	83.90	1	83.90	3.14	.08	.05
Error	1605.81	60	26.76			
Within Subjects	327	62				
Measurement (Pretest-Posttest)	74.32	1	74.32	38.32	.00	.39
Group*Measurement	136.29	1	136.29	70.26	.00	.54
Error	116.39	60	1.94			
Total	2016.71	123				

In Table 6, when the ANOVA results of the mothers related to the CNES Distress Reaction Dimension, it was observed that there was a significant difference between pre-program and post-program scores. In other words, it was found that the common effect of pre-test and post-test measurements and being in the experimental and control groups was significant (F (1, 60) = 70,26 p <.01). When looking at the eta square, the value of 0.54 showed that the effectiveness of the training given to mothers was high in the Distress Reactions Dimension. Accordingly, it can be thought that the training program applied to mothers had a positive effect on reducing the distress reactions of mothers, one of the negative maternal reactions.

Table 7. The CNES (last test-permanence) t test results of the mothers

Sub-Dimensions of the CNES	Measurement	n	$\bar{X}$	SD	df	t	p
Minimizing Reactions	Post-test	31	18.81	7.11	30	-1.09	.280
	Follow up		19.00	6.63			
Punitive Reactions	Post-test	31	19.48	4.13	30	16.76	.000
	Follow up		15.94	4.08			
Distress reactions	Post-test	31	11.90	3.13	30	-1.22	.231
	Follow up		12.07	3.09			

In Table 7 when the results of the CNES (Post Test-Retention Test) t test of the mothers were examined, and when the CNES non-supportive mother responses between the post-test measurement and retention test were examined, there was an increase of -0,19 points in the results regarding the Minimizing Reactions Dimension. It was found that this difference was not significant (t (30) = -1,09 p> .05). It was determined that there was an increase of 0,17 points in the results regarding the, Distress Reactions Dimension. It was seen that this difference was also not significant (t (30) = -1,22 p> .05). It was observed that there was a 3.54 point decrease in the results of the Punitive Reaction Dimension. This difference was found to be significant (t (30) = 16,76 p <.01). According to this, it can be said that the effect of the training applied the Dimension of Minimizing Reactions and Anxiety Reactions, which were the mother's reactions that did not support the CNES continues, and the effectiveness of the program continues in the Dimension of Punitive Reactions and improved.

The continuation of the effectiveness of the CNES in non-supportive maternal responses from the last test measurement to the retention test measurement, and even the improvement in the Dimension of Punitive Reactions after the training were influenced by the activities, examples, and conversations in the training of mothers on negative maternal reactions to the negative emotions of the children. Therefore, it can be said that permanence is provided.

Conclusion, Discussion and Suggestions

In this study, the effect of the 13-session training program to support the emotional development of children given to mothers with 48-72 months old children on coping with their children's negative emotions was examined, and as a result of the analyses, the following conclusions were reached.

It was observed that there was a significant difference in the Condescending Reactions Dimension of CNES scores of the mothers in the experimental and control groups before and after the treatment. Accordingly, it is seen that the education program applied to the mothers reduces the Condescending Reactions, which is one of the negative maternal reactions of the mothers. In other words, it turns out that the 13-session training program to support the emotional development of children had a positive effect on reducing mothers' Condescending Reactions, which is one of the negative mother reactions. The findings of the study regarding the Condescending Response Dimension of the CNES are similar to the findings of Topal (2021), Havighurst et al. (2004) and Ülker-Erdem (2019). In Topal's (2021) study, it was determined that the Emotion Coaching Psychoeducation Program applied to mothers showed a significant decrease in the scores of the mothers in the experimental group from the negative reactions subscale of the CNES compared to the scores of the mothers in the control group, and this decrease was permanent. It was revealed that the emotion coaching psychoeducation program increased the positive emotion socialization behaviors, decreased the negative emotion socialization behaviors, including the condescending reaction dimension, and these changes were permanent. Similarly, in the research of Havighurst et al. (2004), as a result of the program applied to parents of 4-5-year-old children regarding their children's emotional competence, it was determined that there was a significant decrease in the condescending reactions of the parents, which is one of the negative family reactions of the CNES. It has been determined that parents are more encouraging towards their children's emotional expression, they use emotion-focused approaches more frequently in their interactions with their children, and they are less critical and more concerned about their children's emotional expression. After the program, it was determined that the children exhibited less negative attitudes and there was a significant decrease in this issue, especially in children whose parents showed behavioral disorders before participating in the program. In Ülker-Erdem's (2019) study, it was observed that the Taking Children into Consideration Program was effective in supporting parents' emotional socialization behaviors. The findings of Topal's (2021), Havighurst et al.'s (2004), and Ülker-Erdem's (2019) studies directly support the results related to the decrease in mothers' derogatory response scores from negative maternal reactions at the end of the training given to mothers. From another perspective, in Güven's (2013) study, it was found that parents' punitive and

condescending emotional socialization reactions were positively related to the child's oppositional, hyperactivity, and behavioral disorder. In Denham et al.'s (1997) study, it was found that children whose parents were emotionally positive showed more positive emotions than their peers, and that children whose parents were more negative emotionally were more socially inadequate in kindergarten. In the studies of Eisenberg et al. (1996), it was seen that mother-specific condescending reactions were associated with a low rate of social competence in children and a high rate of coping with avoidance of problems in children. The studies of Güven (2013), Denham et al. (1997) and Eisenberg et al. (1996) also show the negative effects of condescending mother reaction on the child's development. It also reveals the importance of educational programs for the emotional development of children applied to parents.

It was determined that there was a significant difference in the scores of the Punishing Reactions Dimension of the CNES of the mothers in the experimental and control groups before and after the program. Accordingly, it is seen that the education program applied to mothers had a positive effect on reducing the Punitive Reactions of mothers, which is one of the negative mother reactions. In other words, it is revealed that the 13-session training program to support the emotional development of children has a positive effect on reducing the Punitive Reactions of mothers, which is one of the negative mother reactions. In Pamukcu's (2022) study, it was found that the "Taking Children into Consideration" Program applied to families increased the positive emotion socialization behaviors of parents, while it decreased negative emotion socialization behaviors, including the Punitive Reactions dimension. Similarly, the Punitive Reactions Dimension findings of the study are similar to the Punitive Reactions Dimension findings of Havighurst et al.'s (2004) and Topal's (2021) studies. These findings directly support the findings of the research on the decrease in the punitive reaction scores of the mothers, which is one of the negative family reactions, at the end of the education given to the mothers. From another perspective, Fabes et al.'s (2001) study concluded that the children of parents who react harshly to their children's negative emotions also express their emotions relatively more violently. In Güven's (2013) research, it was determined that behavioral problems in children increased as a result of the punishing emotional socialization behaviors that mothers show to their children. In Seçer's (2017) study, it is seen that as mothers' negative emotional socialization reactions increase, emotional negativity in children increases. The studies of Fabes et al. (2001), Güven (2013), and Seçer (2017) have also shown the negative effects of the punitive mother reaction on the child's development. In the study of İnce and Ersay (2022), it was observed that mothers with lower education levels preferred negative emotion socialization behaviors such as more punishment. The findings of the study by İnce and Ersay (2022), on the other hand, showed that mothers with low education levels needed more education programs to support the emotional development of their children. In addition, the findings of the studies by Fabes et al. (2001), Güven (2013) and Seçer (2017) have also revealed the importance of educational programs for the emotional development of children applied to parents regarding the emotional development of the child.

It was determined that there was a significant difference in the scores of the Anxiety Responses Dimension of the CNES of the mothers in the experimental and control groups before and after the program. Accordingly, it was seen that the education program applied to the mothers reduced the Anxiety Reactions, which is one of the negative mother reactions of the mothers. In other words, it was revealed that the 13-session training program to support the emotional development of children had a positive effect on reducing the Anxiety Reactions, which is one of the negative maternal reactions of the mothers. The findings of Ömeroğlu et al.'s (2006) study support the results of the research findings regarding the decrease in the anxiety response scores of the mothers, one of the negative family reactions, at the end of the training given to the mothers. In the study of Ömeroğlu et al. (2006), it was determined that there was a positive difference in the anxiety scores of the mothers at the end of the family child education program that they applied to the mothers for 12 weeks. The findings of Ömeroğlu et al.'s (2006) study support the results of the research regarding the decrease in the anxiety response scores of the mothers, one of the negative family reactions, at the end of the

training given to the mothers. From another point of view, as a result of the studies of Eisenberg et al. (1992, 1994), anger and low social competence were observed in children of families who showed Condescending Reactions to their children's negative emotions; avoidance of problems or disapproved coping strategies (revenge) were observed in children of parents who show Punitive Reactions to their children's negative emotions; and, unapproved coping strategies were observed in the children of parents who showed Anxiety Reactions to their children's negative emotions. The findings of Eisenberg et al. (1992, 1994) study also show the negative effects of negative maternal reactions on the development of the child and show the importance of programs applied to mothers for their children's emotional development.

When the results of the CNES (Post-Test-Persistence Test) t-test of the mothers in the experimental and control groups were examined, regarding the non-supportive mother's response scores of the CNES, between the post-test measurement and the permanence test measurement, it was observed that the effect of the education applied to the mothers continued in the Disdainful Reactions, Punitive Reactions, and Anxiety Reactions Dimensions of the CNES.

In Topal's (2021) study, it was revealed that the emotion coaching psychoeducation program applied to mothers increased the positive emotion socialization behaviors and decreased the negative emotion socialization behaviors, and these changes were permanent. In the study of Havighurst et al. (2004), based on the results of the follow-up study conducted 3 months after the 6-session program they applied to parents with 4-5-year-old children on their children's emotional competencies, it was determined that the improvement at the end of the program in punitive, condescending, and anxiety reactions, which are negative maternal reactions, continued in the follow-up study. These findings directly support the findings of negative maternal reactions of the CNES from the post-test to the permanence test.

In Yeşilyaprak's (2007) research, it was determined that the people who participated in the Psycho-Education Program for Noticing and Expressing Emotions had a significant increase in their emotional awareness levels compared to those in the placebo and control groups, and this increase continued in the follow-up study conducted after 4 months. In Çeçen's (2002) study, it was determined that the Emotion Management Skills Training Program, which was applied to 13 prospective classroom teachers for 11 weeks through group experience, had a significant effect on the experimental group and this change continued after 6 and 13 weeks. In the study of Öğretir (2004), at the end of the Group Education Program Based on Positive Thinking, which was applied to the mothers in the experimental group for 12 weeks, it was seen that mothers showed more democratic attitudes towards their children, were more controlled, more social, more fearless, more independent, their coping with stress strategies improved, and their self-confidence increased. In the follow-up study performed 3 months after the end of the program, it was observed that these positive effects continued. The findings of Yeşilyaprak's (2007), Çeçen's (2002) and İlkir's (2004) studies support the research findings.

As a result of these findings, it was seen that the Training Program for Supporting the Emotional Development of their Children, which was administered to mothers, positively affected the reactions of the mothers in the experimental group to their children's negative emotions.

In line with the findings obtained from this study, the following suggestions are presented for researchers and educators.

Suggestions for Researchers and Educators;

- By attaching importance to the field related to the emotional development areas of children, studies on this subject should be increased and different parent education programs should be established.
- Education programs should be planned at different times, such as weekdays, weekends and evenings, to ensure that more parents participate in the programs prepared for parents.

- In the research, only mothers were studied. In future studies, mothers and fathers should be included in the education program together and the effect of education on parents should be examined.
- In this study, a thirteen-week program was applied to mothers in 90min sessions per week. In the studies to be carried out, longer-term education should be given to parents and the effects of long and short-term education programs should be compared.
- By studying international studies regarding emotional development, the implementation of appropriate training methods and techniques should be ensured for Turkey.
- Children should be included in the programs prepared for parents and education programs should be prepared in line with the needs of children. In the education programs organized, the effects of education programs covering parents and children should be examined together.

In order to benefit more from the education programs prepared for families, it is recommended to take these suggestions into consideration in future studies.

REFERENCES

Altan, Ö. (2006). *The effects of maternal socialization and temperament on children's emotion regulation.* (Yayınlanmamış Yüksek Lisans Tezi). Koç Üniversitesi, İstanbul.

Büyüköztürk, Ş. (2011). Sosyal Bilimleri İçin Veri Analizi El Kitabı. Ankara: Pegem.

Büyüköztürk, Ş., Çakmak Kılıç E., Akgün, Ö.E., Karadeniz, Ş. & Demirel, F. (2012). Bilimsel Araştırma Yöntemleri. Ankara: Pegem.

Caulfield, R. A. (2001). Infants and toddlers. The United States of America: Prentice Hall.

Çağdaş, A., Arslan, E., Erbay, F. & Orçan, M. (2010). Etkili Annelik Eğitim Programının Annelerin Benlik Saygısına ve Anne Çocuk İlişkisine Etkisinin İncelenmesi. *Değerler Eğitimi Dergisi*, 8(20), 7-23.

Çeçen, A. R. (2002). *Duyguları yönetme becerileri eğitimi programının öğretmen adaylarının duyguları yönetme becerileri üzerindeki etkisi.* (Yayınlanmamış doktora tezi), Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Adana.

Denham, S. A., Mitchell-Copeland, J., Strandberg, K., Auerbach, S. & Blair, K. (1997). Parental contributions to preschoolers' emotional competence: Direct and indirect effects. *Motivation and Emotion*, 21(1), 65-86.

Denham, S. A. (1998). Emotional Development in Young Children. New York: Guilford.

Denham, S., Mason, T., Caverly, S., Schmidt, M., Hackney, R., Caswell, C. & DeMulder, E. (2001). Preschoolers at play: Co-socialisers of emotional and social competence. *International Journal of Behavioral Development*, *25*(4), 290–301.

Denham, S. A. & Kochanoff, A. T. (2002). Parental contributions to preschoolers' understanding of emotion. *Marriage and Family Review, 34*, 311-343.

Eisenberg, N., Fabes, R. A. & Murphy, B. C. (1996). Parents' Reactions to Children's Negative Emotions: Relations to Children's Social Competence and Comforting Behavior. *Child Development, 67*, 2227-2247.

Eisenberg, N., Fabes, R. A. & Losoya, S. (1997). Emotional Responding: Regulation, Social Correlates and Socialization. Peter Salovey & David J. Sluyter (Ed.), Emotional Development and Emotional İntelligence (pp.129-163). New York: BasicBooks.

Eisenberg N., Cumberland A. & Spinrad T. L (1998) Parental socialization of emotion. *Psychological Inquiry*, 9(4), 241-273.

Ellis, P. D. (2010). The Essential Guide to Effect Sizes. New York: Cambridge.

Fabes, R. A., Leonard, S. A., Kupanoff, K. & Martin, C. L. (2001). Parental coping with children's negative emotions: Relations with children's emotional and social responding. Child Development, 72(3), 907–920.

Güven, E. (2013). *Çocuğun davranış sorunları ile algıladığı anne baba çatışması arasındaki ilişkiler: duygu sosyalleştirmenin aracı rolü.* (Yayınlanmamış yüksek lisans tezi), Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

Havighurst, S. S., Harley, A. & Prior, M. (2004). Building Preschool Children's Emotional Competence: A parenting Program. *Early Education & Development*, 15(4), 423-447.

İnce & Ersay (2022). Okul Öncesi Dönem Çocuğuna Sahip Anne ve Babaların Duygu Sosyalleştirme Davranışlarının İncelenmesi. *Gelişim ve Psikoloji Dergisi*, 3 (5), 1-17.

Kağıtçıbaşı, Ç. (1998). Kültürel Psikoloji: Kültür Bağlamında İnsan ve Aile (Çev. Çiğdem Kağıtçıbaşı , Ayşe Üskül, Esin Uzun). İstanbul: Yapı ve Kredi Kültür Sanat

Kaptan, S. (1998). Bilimsel Araştırma ve İstatistik Teknikleri. Ankara: Tekışık.

Köse, E. (2010). Bilimsel Araştırma Modelleri. Remzi Y. Kıncal (Ed.), Bilimsel Araştırma Yöntemleri (pp.97-120). Ankara: Nobel.

O'Hagan, M. & Smith, M. (2004). Early Years Child Care & Education: Key Issues. Edinburgh: Bailliere Tindall.

Onur, B. (2004). Çocuk ve Ergen Gelişimi. Ankara: İmge.

Öğretir (2004). *Pozitif düşünmeye dayalı grup eğitimi programının annelerin benlik algısı, eşlerine ve çocuklarına yönelik tutumları ile kendini denetleme becerisi ve otomatik düşünceleri üzerinde etkisi.* (Yayınlanmamış doktora tezi), Ankara Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Ömeroğlu, E., Kurtulmuş, Z. & Yayla, Ş. (2004, Haziran-Temmuz). Aile Çocuk Eğitim Programının Aile Yapısı, İşleyişi ve Kaygı Düzeyine Etkisinin İncelenmesi. I. Uluslararası Okul Öncesi Eğitim Kongresi'nde sunulmuş bildiri, Marmara Üniversitesi, İstanbul.

Özbay, Y. (2004). Gelişim ve Öğrenme Psikolojisi (Kuram-Araştırma-Uygulama). Ankara: Öğreti.

Pamukcu, D. (2022). *4-6 yaş çocuğu olan asker babalara ve eşlerine verilen çocukları dikkate almak programının etkililiğinin incelenmesi.* (Yayınlanmamış doktora tezi), KTO Karatay Üniversitesi, Lisansüstü Eğitim Enstitüsü, Ankara.

Ramsden, S. R. & Hubbard, J. A. (2002). Family expressiveness and parental emotion coaching: Their role in children's emotion regulation and aggression. *Journal of Abnormal Child Psychology,* 30(6), 657–667.

Ryder, V. (1995). Parents and their children. South Holand: The Goodheart-Willcox.

Seçer, Z. (2017). Sosyal Olarak Yetkin Okul Öncesi Çocukların Duygu Düzenlemeleri İle Annelerinin Duygu Sosyalleştirme Davranışları Arasındaki İlişkiler. *Kastamonu Eğitim Dergisi,*25 (4), 1435-1452.

Southam Gerow M. A. (2014). Çocuklarda ve Ergenlerde Duygusal Düzenleme. (Çev.Murat Artıran; Çev. Edit. Muzaffer Şahin) Ankara: Nobel

Tekin, N. (2016). *Annelere uygulanan çocuklarının duygusal gelişimini desteklemeye yönelik eğitim programının annelerin duygularını yönetmelerine ve çocuklarının olumsuz duyguları ile baş etmelerine etkisinin incelenmesi.* (Yayınlanmamış doktora tezi), Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.

Topal, H. (2021). *İlkokul çocuklarına ve annelerine uygulanan duygu düzenleme psikoeğitim programlarının çocukların duygu düzenleme becerilerine etkisi.* (Yayınlanmamış doktora tezi), Çukurova Üniversitesi Sosyal Bilimler Enstitüsü, Adana.

Ülker-Erdem, A. (2019). *Duygu sosyalleştirmeye yönelik ebeveyn müdahale programının etkililiği.* (Yayınlanmamış doktora tezi), Hacettepe Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.

Yapıcı, Ş. & Yapıcı, M. (2005). Gelişim ve Öğrenme Psikolojisi. Ankara: Anı.

Yeşilyaprak, B. (Ed.). (2007). Duyguları Fark Etme ve İfade Etme Psiko-Eğitim Programı. Ankara: Nobel.

Social Media Addiction And Self-Censorship: Investigation in Terms of Some Variables

Research Article

Aysu BAYRAM SAPTIR[1], Mehmet KAYA[2]

[1]Sakarya University, Faculty of Education, Department of Educational Science, Sakarya, Turkey ⓘD 0000-0003-3949-6878

[2]Sakarya University, Faculty of Education, Department of Educational Science, Sakarya, Turkey ⓘD 00000-0003-2659-3601

ARTICLE INFO	ABSTRACT
Article History: Received:16.10.2021 Available online:14.08.2022	This research examines participants' social media addictions and self-censorship levels through various variables (age, gender, and perceived academic achievement). The study was carried out with 601 university students from the education faculties of three different universities. Research data were collected through two scales. The first is the 'Social Media Addiction-Adult Form' scale developed by Şahin and Yağcı (2017), and the second is the 'Self-censorship Scale' scale adapted into Turkish by Coşkun, Durak, and Elgin (2008). The Demographic Information Form prepared by the researcher was used for personal information. Statistical analyses such as t-test, One-Way Analysis of Variance (ANOVA), and Pearson Correlation Coefficient were used to analyze the data. The results show that there is a significant relationship between social media addiction and self-censorship. In addition, when analyzed according to self-censorship levels, it was found that social media addiction is higher in people with high self-censorship than in people with low self-censorship. In addition, it was observed that social media addiction increased as perceived academic success decreased. In addition, it was found that there was no significant difference between self-censorship gender and perceived academic achievement. **Keywords:** Social media addiction, self-censorship, perceived academic achievement

Introduction

It can be said that the birth of the internet, the rapid developments in technology, and the digitalization in communication are the harbingers of a transformation in social media platforms. Technology, which is constantly changing and developing, brings new features to communication tools in line with users' changing

demands and needs. It can be concluded that this change in technology and the increase in the speed of people's access to social media lead to the active use of social media by large masses.

Social media is an online environment where people connect with people worldwide via the internet and share their experiences and thoughts with their friends or strangers (Eminoğlu, 2016). Through social media, people can share messages all over the world and also create content. In this way, large masses can come together regardless of time and place. Therefore, it can be said that the interaction increased. Through social networks, people can interact and communicate with another user through various communication channels, and thus 'virtual communities' emerge (Kuşay, 2013). When looking at the traditional media, the content is presented ready to the person, while in the new media, the person is both a producer and a consumer. Due to this productive position, it can be observed that people's interest in social networks is increasing day by day.

The increasing use of internet-enabled social media in almost every part of the world and in every subject reveals social media addiction, including psychological, behavioral, and social negative situations in people (Şeker, 2018). Ünlü (2017) evaluates all explanations on social media addiction from a communicative point of view, and social media addiction includes most areas in the lives of individuals (work, social, etc.). It is defined as a psychological and communicative problem that causes some negative situations such as communication problems, conflict, mood disorder, antisocial behavior, the feeling of loneliness, and behavior change. Pathological use of the internet and social media in all areas of life can lead to addiction over time. Individuals who gain the habit of social media for reasons such as socializing and accessing information can lose control of this behavior and become addicted.

Social media, which is on the agenda with its multidimensional feature, has been the subject of research in history, psychology, politics, education, art, social and similar disciplines, especially in the field of communication (Babacan, 2017). People can meet their relationship needs, find and establish a job, do research, and normally reach hard-to-reach heads of state, artists and-or scientists, actors-actresses through their posts on social networks. In addition to these and similar positive features, there are also negative features. e.g., It can provide a kind of invisibility to social media users. This situation makes social media a platform open to abuse (Yüksel, 2019). Posts made on social media may also appear different from users and censor themselves.

Social media has become an inseparable part of life today, and according to Goffman (2009), it is seen that the self-presentations of individuals in daily life are now fed and satisfied through social media. As a matter of fact, the research conducted by Yüksel-Şahin and Öztoprak (2019) to make visible the relationship between social media addiction and self-esteem on adolescent students supports this. Accordingly, adolescents with low self-esteem were found to have significantly higher social media addiction levels than adolescents with high self-esteem. Another study aimed to measure the relationship between self-censorship desires and people's self-esteem. According to the research results of Hayes, Glynn, and Shanahan (2005a), it was concluded that the lower the self-esteem levels of the individuals, the more they censor themselves. Therefore, these two studies bring to mind whether there is a relationship between social media addiction and the desire to self-censor.

While performing on social media, people are affected by their roles and can become alienated from their real selves and use different masks while finding a showcase for themselves through social media (Yüksel, 2019). This showcase created by social media for individuals allows users to censor their own thoughts and feelings.

Social media also creates a new environment for the psychological states of individuals such as loneliness, the desire to be accepted and the sense of belonging (Vincent, 2016). In the social media environment, individuals can create new areas of freedom by communicating with any user whom they have

never known before and whose existence they are not aware of. In this environment, the individual can change his/her name, gender, social role and status by censoring himself/herself.

Social media users who gain a new identity or have a different experience by changing their existing identity, or individuals who do not have the opportunity to hide their identities in face-to-face communication, can hide behind identities with opposite features in an environment where the invisible faces of the virtual world become visible with words. (Akkaş, 2013). Thus, the fear of rejection and the fear of embarrassment decrease (Yu, Hu, & Cheng, 2015). As such, social media responds to the needs of individuals on many issues like socialization, sharing and communication. In fact, examining the attitudes towards social media and the personality traits that affect the behaviors in the social media is important both in terms of using social media effectively in communication and socialization and in preventing possible harms in this regard.

This research has emerged to determine the direction of the relationship between social media addiction, which creates problems in individual and social life and has an important effect on people, and the desire to censor oneself. It aims to reveal the careful use of social media, which is intertwined with the lives of people both in our country and around the world. When the literature was examined, it was seen that the relationship between social media addiction and different variables was examined. However, no study was found about the relationship with the desire to self-censor. It is thought that this study will shed light on the literature in terms of awareness of the safe use of social media.

Methods

The study aims to make visible the relationship between social media addiction and the level of self-censorship. In addition to these, the level of social media addiction and self-censorship are discussed in the context of socio-demographic characteristics. The method of the study was determined as the relational screening method.

Study Group

The working group of the research consists of 1st, 2nd, 3rd, and 4th-grade students studying in the Department of Guidance and Psychological Counseling, Computer and Instructional Technologies, Classroom Teaching and Mathematics Teaching in three different universities (university 1, university 2, university 3) in the Marmara Region in the 2019-2020 academic year. Of 601 individuals participating in the research, 196 (33%) study at university 1, 225 (37%) at university 2, and 180 (30%) at university 3. The study group consists of 354 (58%) female and 247 (42%) male individuals. In the research, there are 140 (23%) students in the 1st grade, 211 (35%) individuals in the 2nd grade, 130 (22%) individuals in the 3rd grade, and 120 (20%) individuals in the 4th grade. 153 (25%) of the participants study in Psychological Counseling and Guidance, 145 (24%) in Computer and Instructional Technologies, 151 (25%) in Mathematics Teaching, and 152 (25%) in Classroom Teaching. The perceived academic achievement of the study group consisted of poor 85 (14%), moderate 288 (48%), and good 228 (38%) individuals.

Data Collection Tools

To collect the data in the research, 'questionnaire', one of the primary data collection methods, was used (Özdemir, 2008). In order to collect primary data, the "Social Media Addiction Scale" and "Self-Censorship Scale" were previously developed by various researchers, and questions to obtain demographic information of the participants are included.

Demographic Information Form

In the first part of the data collection tool and prepared by the researcher, four variable questions were asked to the participants about gender, age, and perceived academic success.

Social Media Addiction Scale - Adult Form

The social media addiction-adult form was developed by Şahin and Yağcı (2017) to measure the social media addiction of adults between the ages of 18-60. The scale is a 5-point Likert-type scale consisting of two sub-dimensions, 'Virtual Tolerance' and 'Virtual Communication'. Virtual tolerance sub-dimension consists of 1/11 items, and virtual communication consists of 12/20 items. Items 5 and 11 on the scale are reverse scored, and the highest score obtained from the scale is calculated as 100 and the lowest score as 20. The Cronbach's Alpha (reliability coefficient) of the scale was calculated as .94, .91 in the virtual communication sub-dimension and .92 in the virtual tolerance sub-dimension.

Self-censorship Scale

The Willingness to Self-Censorship Scale, developed in Hayes, Shanahan, and Glynn (2005a), was adapted into Turkish by Coşkun, Durak, and Elgin (2008), and its validity and reliability study was conducted. The scale is a one-dimensional, 5-point Likert-type, and 8-item scale. Items 4 and 8 on the scale are reverse coded. The scale's Cronbach's Alpha (reliability coefficient) was .83, and the internal consistency coefficient was .92 (Coşkun, Durak, & Elgin, 2012). Scores from the scale give a total score. As the scores obtained from the scale increase, the level of self-censorship also increases. A score was obtained by taking the average of the highest score and the lowest score after the scale application. The data above this score indicates a high level of self-censorship, while the data below indicates a low level of self-censorship. The arithmetic average and standard deviation of the participants' Self-Censoring Scale scores were calculated. Scores one standard deviation below the arithmetic average of the scores from the scale were considered "low" (X=54.28; SS= 15.46), and scores one standard deviation above the arithmetic average scores were considered "high" (X=65.31; SS= 15.15).

Analysis of Data

The analysis of the data obtained with the data collection tools in the research was carried out in the computer environment using the 'SPSS Statistics 22.0' package program. In the analysis of the data, the importance of the differences according to the variables with two independent variable levels (gender and self-censorship) was made with the T-test applied to independent groups. The Pearson Correlation Coefficient determined the correlations between the variables in the study. For variables with more than two independent variable levels, the control of the significance of the differences was determined with the Welch test in cases where the variances were not homogeneous and with the One-Way (ANOVA) test in the case of homogeneity of the variances. Scheffe test, one of the post-hoc tests, was used when it was found to be homogeneous. In addition, the Welch test, which is an alternative to the comparison tests, was used in cases where the variances were not homogeneous, and Tamhane's T2 test was used to compare the direction of the difference between the groups.

Findings

The results of the analysis of the research data are tabulated. Explanations on the tables are given below.

Findings on whether social media addiction scores and self-censorship levels differ in university students

When the Pearson Correlation coefficient between the social media addiction scores of the whole group (n=602) and the self-censorship scores is examined, it is seen that the correlation is significant (r=.32; p=.002). In addition, the social media addiction scores of the two groups, which were determined to have high and low self-censorship, were compared with the T-test. The homogeneity of the variances was determined by Levene statistics [$F_{(2, 257)}$=.078, p=.780]. The findings obtained in this direction are presented in Table 1.

Table 1.T-test result on whether social media addiction levels of participants with low and high self-censorship levels differentiate

Self Censorship Request		Levene test				T-test					
										95%confidence interval	
		n	X̄	F	p	t	SD	p		Low	High
SocialMedia Addiction	Low	112	54.29	.078	.780	-5.755	257	.000*		-14.81	-7.26
	High	147	65.32								

When Table 1 is examined, it is seen that social media addiction differs significantly from the desire to self-censor (x̄= 54.29; SD= 15.46) to the high desire to self-censor (x̄= 65.32; SD=15.15) (t=-5.755; p<. 05). Therefore, it was found that people with a high desire to self-censor have a higher social media addiction than those with a low desire to self-censor.

Findings on whether social media addiction scores in university students differ according to gender

T-test was conducted to determine whether social media addiction differs in terms of gender variables. The homogeneity of the variances was determined by Levene statistics [$F_{(2,599)}=3.837$, p=.051]. The findings obtained in this direction are presented in Table 2.

Table 2. T-test result on whether participants' social media addiction levels differ according to gender

	Gender	Levene test				T-test					
										95% confidence interval	
		n	X̄	F	p	t	SD	p		Low	High
Social Media Addiction	Female	354	60.19	3.837	.051	-1.816	599	.070		-4.83	.19
	Male	247	62.51								

Looking at Table 2, it was concluded that social media addiction did not show a significant difference according to gender (Female x̄= 60.18, SD= 15.86; Male x̄= 62.51, SD=14.73) (t=-1.816; p>.05).

Findings on whether social media addiction scores of university students differ according to perceived academic success

In the study, it was determined by Levene statistics that the distribution of variances related to social media addiction and perceived academic achievement variable was homogeneous [$F_{(2,598)}= 1.495$, p= .225]. One-Way Analysis of Variance was performed to determine whether social media addiction levels differed significantly according to this variable [F=9.972, p<.05]. Thus, it was revealed that social media addiction levels differed significantly according to perceived academic success, and it is presented in Table 3.

Table 3. ANOVA result on whether participants' social media addiction levels differ according to perceived academic achievement

Perceived Academic Success			Levene test			ANOVA test					
										95% confidence interval	
		n	X̄	Levene	P	F	p			Low	High
Social Media Addictio	bad	85	64.29	1.495	.225	9.972	.000*			24.00	82.00
	medium	288	62.99							20.00	98.00
	good	228	57.64							20.00	95.00

When Table 3 is examined, it was seen that the difference between the groups was significant as a result of a one-way analysis of variance (F=9.972, p<.05). To determine the source of the difference between the groups, the Scheffe multiple comparison test, one of the post-hoc statistics, was applied and is presented in Table 4. Perceived academic achievement classification was grouped as categorized in the Personal Information Form prepared by the researcher.

Table 4. Scheffe test results of participants' social media addiction scores on perceived academic achievement

Perceived Academic Success (i)	Perceived Academic Success (j)	xi-xj	Shx	P
Bad	Medium	1.30801	1.87861	.000
	Good	6.65377	1.93411	.002
Medium	Bad	1.30801	1.87861	.000
	Good	5.34576	1.34911	.000
Good	Bad	-6.65377	1.93411	.002
	Medium	-5.34576	1.34911	.000

When Table 4 is examined, it can be seen that, as a result of the Scheffe test, one of the multiple comparison tests applied, perceived academic success differs significantly in favor of good among participants who expressed as bad ($\bar{x}$ =64.29, SD=13.90) and moderate ($\bar{x}$ =62.99, SD=15.01) and good ($\bar{x}$ =57.64, SD=15.92).According to this finding, we can say that the participants who describe the perceived academic achievement as good are lower than the participants who describe their social media addiction as bad and moderate.

Findings on whether the self-censorship scores of university students differ according to gender

T-test was applied to determine whether the desire to self-censor differs in terms of gender variable. The homogeneity of the variances was determined by Levene statistics [F(2,599)=.010, p=.921]. The findings obtained in this direction are presented in Table 5.

Table 5. T-test result on whether participants' self-censorship levels differ according to gender

	Gender	Levene test				T-test			95% confidence interval	
		n	$\bar{X}$	F	P	t	SD	p	High	Low
Request for Self-Censorship	Female	354	16.83	.010	.921	-.194	599	.846	-1.07	0.88
	Male	247	16.93							

When Table 5 was examined, it was determined that the desire to censor oneself did not differ significantly according to gender (Female $\bar{x}$ = 16.83, SD=5.94; Male $\bar{x}$ =16.93, SD=6.07) variable (t=-.194 p>.05).

Findings on whether the self-censorship scores of university students differ according to perceived academic success

In the study, it was determined that the distribution of variances related to the variable of self-censorship and perceived academic achievement was not homogeneous [F(2,598)= 5.773, p= .003] Levene statistics. Welch test, which is an alternative to One-Way Analysis of Variance, was used to determine whether the levels of self-censorship differed significantly according to this variable [Welch test: F(2,247)= .858, p>.05]. Thus, it was revealed that the levels of self-censorship did not differ significantly according to perceived academic success, and it is presented in Table 6.

Table 6. Welch test result on whether participants' self-censorship levels differ according to perceived academic achievement

	Perceived Academic Success	Levene test				Welch test			
								95%confidence interval	
		n	X̄	Levene	p	Welch	p	Low	High
Self Censorship Request	Bad	85	17.19					2.00	28.00
	Medium	288	17.11	5.773	.003	.858	.425	0.00	29.00
	Good	228	16.45					0.00	31.00

When Table 6 is examined, as a result of the analyzes (bad$\bar{x}$=17.19, SD=5.10; medium $\bar{x}$=17.11, SD=5.83; good $\bar{x}$=16.45, SD=6.48), there is no statistically significant difference between the groups with different perceived academic achievement in terms of willingness to censor themselves (p>.05; F=.858).

Discussion and Conclusion

Within the scope of the research, it was aimed to examine the relationship between the level of social media addiction and the desire to self-censor in terms of various variables of the students studying in the education faculties of three universities in the Marmara region, in the departments of Psychological Counseling and Guidance, CEIT, Classroom Teaching, and Mathematics Education during the 2019-2020 academic years. For this purpose, in this part of the research, the statistical analysis applied to the data and the obtained findings will be discussed by reviewing the literature.

A statistically significant difference was found between the social media addiction and self-censorship levels of the participants. It was found that people with a high level of self-censorship have higher social media addiction than those with a low level of self-censorship. When the literature is examined, the research results conducted by Yüksel (2019) to make visible the relationship between self-concealment and social media addiction support this finding. In another study carried out by Doğan and Çolak (2016), it was seen that there is a positive relationship between social media use and self-concealment. These results show that as the use of social media increases, people censor themselves more. In addition, it has been observed that social media users hide their real identities and create a new identity. It has been determined that there are two reasons for this. The first is that users feel the need for privacy because they do not trust social media platforms, and the second is that social media platforms allow users to appear as they want. Therefore, it would not be wrong to say that this situation undermines trust in social media, which is the most important tool of our age.

According to the findings of the study, there is no significant difference between social media addiction and gender variable. When the literature was examined, studies supporting the research findings were found (Ateş, 2018; Büyükgebiz, 2018; Turel & Serenko, 2012; Şentürk, 2017; Wu, 2013). According to this, the lack of a relationship between gender and social media in the study may be due to the fact that social media, which was observed to be used more frequently by men due to their jobs in the early days, has become more frequently used by women, especially with the widespread use of smartphones. On the other hand, when the literature is examined, there are studies that support the research findings as well as studies that do not. According to these studies, it has been reported that there is a relationship between social media addiction and gender change (Çam & İşbulan, 2012; Kaya, 2019; Şeker, 2018; Özşahin, 2019).

According to the study, a significant difference was found between social media addiction and perceived academic success. According to this, the social media addiction level of the participants with poor perceived academic success is the highest, while the level of social media addiction is the lowest for the participants with good perceived academic success. Therefore, it was concluded that as the level of success increases, the dependency decreases. When the literature is examined, it is seen that there are domestic

(Akdemir, 2013; Çetinkaya 2013; Derin 2013; Esen, 2010) and foreign (Mythily, Qiu and Winslow, 2008; Kirschner and Karpinski, 2010; Rouis, Limayem, and Salehi-Sangari, 2011) studies that support the negative relationship between perceived academic achievement and social media addiction. This may be due to the fact that people spend less time on what they need to do academically due to the amount of time they spend with social media.

No significant difference was found between self-censorship, another concept, and the gender variable. Although no research in the literature reveals the presence or absence of a relationship between self-censorship and gender, there are studies in which self-censorship and self-concealment behavior, which is thought to be a close concept, and gender variable do not differ (Deniz, 2010; Deniz and Bakioğlu, 2017; Finkenauer et al., 2002; Frijns, Finkenauer, Vermults, & Engels, 2005). In addition, there are studies in the literature that girls hide themselves more than boys (Frinj & Finkenauer, 2008). Based on these results, the reason why self-censorship does not differ according to gender may be due to the fact that the study group consisted of students studying at the university. Individuals who have just been separated from their families may have moved away from the dilemma of revealing themselves in the university environment. In this case, they may need less self-censorship as individuals who have completed their personality development in their newly acquired environment.

There was no significant difference between self-censorship and perceived academic success. No research has been found in the literature with or without a relationship between self-censorship and the department. On the other hand, people may be freed from the idea that they will value the opinions of others around them according to their level of success, thanks to the openness of the university environment to development. Therefore, this may explain the lack of a difference between self-censorship and perceived academic success.

Suggestions

Under this title of the research, there are suggestions based on the research results.

1. According to the research results, students with low academic achievement are at risk for social media addiction compared to other students. In order to minimize the social media addiction of these students, their academic activities can be checked regularly.

REFERENCES

Akdemir, T. N. (2013). *İlköğretim öğrencilerinin facebook tutumları ile akademik erteleme davranışları ve akademik başarıları arasındaki ilişkilerin incelenmesi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 349965).

Ateş, P. (2018). *Üniversite öğrencilerinde duygusal zekanın sosyal medya bağımlılığına etkisi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 520048).

Babacan, M. E. (2017). *Sosyal medya ve gençlik*. İstanbul: Bir Yayıncılık.

Büyükgebiz, E. (2018). *Sosyal medya bağımlılığının öğrencilerin performanslarına etkileri üzerine bir araştırma* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 520048).

Coşkun, H., Durak, M. & Elgin, V. M. (2012). Kendini sansürleme isteği ölçeği: Geçerlilik ve güvenilirlik çalışması. *Yeni Sempozyum*, *50*(2), 83–89. Retrieved from https://toad.halileksi.net/olcek/kendini-sansurleme-istegi-olcegi

Coşkun, H., Durak, M. & Elgin, V. M. (2012). Kendini sansürleme isteği ölçeği: Geçerlilik ve güvenilirlik çalışması. *Yeni Sempozyum*, *50*(2), 83–89. Retrieved from https://toad.halileksi.net/olcek/kendini-sansurleme-istegi-olcegi

Çam, E. & İşbulan, O. (2012). A new addiction for teacher candidates: social networks. *The Turkish Online Journal of Educational Technology (TOJET), 11*(3), 14-19. Retrieved fromhttps://www.researchgate.net/publication/ 267556427_A_new_addiction_for_teacher_candidates_Social_networks

Çetinkaya, M. (2013). *İlköğretim öğrencilerinde internet bağımlılığının incelenmesi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 343353).

Deniz, M. (2010). *Ergenlerde sır saklamanın duygusal ve gelişimsel değişkenler açısından incelenmesi* (Doctoral Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 279912).

Deniz, M. & Bakioğlu, F. (2017). Ergenlerde sır saklamanın duygusal özerklik, ahlaki olgunluk, yalnızlık, utangaçlık ve sosyal destek açısından incelenmesi. *Bartın Üniversitesi Eğitim Fakültesi Dergisi, 6*(3), 1118-1133. DOI: 10.14686/buefad.338144

Derin, S. (2013). *Lise öğrencilerinde internet bağımlılığı ve öznel iyi oluş* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 339093).

Doğan, U. & Çolak, T. S. (2016). Self-Concealment, social network sites usage, social appearance anxiety, the loneliness of high school students: A model testing. *Journal of Education and Training Studies, 4*(6), 176-183. DOI: 10.11114/jets.v4i6.1420

Eminoğlu, K. (2016). *Sosyal medyanın özel hastanelerin rekabet gücünü arttırmadaki önemi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 438548).

Esen, E. (2010). *Ergenlerde internet bağımlılığını yordayan psiko-sosyal değişkenlerin incelenmesi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 265503).

Finkenauer, C., Engels, R. C. M. E. & Meeus, W. (2002). Keeping secrets from parents: Advantages and disadvantages of secrecy in adolescence. *Journal of Youth and Adolescence, 31*(2), 123-136. DOI: 10.1023/A:1014069926507

Frinj, T. & Finkenauer, C. (2008). Longitudinal associations between keeping a secret and psychosocial adjustment in adolescence. *International Journal of Behavioral Development, 33*(2), 145-154. DOI: 10.1177/0165025408098020

Frinjs, T., Finkenauer, C., Velmust, A. A. & Engels, R. C. M. E. (2005). Keeping secrets from parents: Longitudinal associations of secrecy in adolescence. *Journal of Youth and Adolescence, 34*(2), 137-148. DOI: 10.1007/s10964-005-3212-z

Goffman, E. (2009). *Günlük yaşamda benliğin sunumu*. (Cezar, B. Çev.). İstanbul: Metis Yayınları. (Publication date of the original work 1971).

Hayes, A. F., Glynn, C. J. & Shanahan, J. (2005a). Willingness to self-censor: A construct and measurement tool for public opinion research. *International Journal of Public Opinion Research, 17*(3), 298-323. Retrieved fromhttps://doi.org/10.1093/ijpor/edh073

Kaya, Ş. H. (2018). *Doğu Karadeniz Bölgesi'nde sosyal medya bağımlılığı bulunan bireylerin psikolojik semptomlarının incelenmesi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 547780).

Kirschner, P. A. & Karpinski, A. C. (2010). Facebook and academic performance. *Computers in Human Behavior, 26*(6), 1237-1245. DOI: 10.1016/j.chb.2010.03.024

Kuşay, Y. (2013). *Sosyal medya ortamında çekicilik ve bağımlılık: Facebook üzerine bir araştırma*. İstanbul: Beta Yayıncılık.

Mythily, S., Qiu, S. & Winslow, M. (2008). Prevalence and correlates of excessive ınternet use among youth in Singapore. *Annals of the Academy of Medicine, 37*(1), 9-14. Retrievedfromhttps://www.researchgate.net/publication/5586014_Prevalence_and_correlates_of_excessive_Internet_use_among_youth_in_Singapore

Özdemir, A. (2008). *Yönetim biliminde ileri araştırma yöntemleri ve uygulamalar*. İstanbul: Beta Yayınları.

Özşahin, C. (2019). *Öğretmenlerin sosyal medya bağımlılığı, öğretmenlik öz-yeterlilikleri ve motivasyonları arasındaki ilişkinin incelenmesi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 538075).

Rouis, S., Limayem, M. & Salehi-Sangari, E. (2011). Impact of Facebook usage on students" academic achievement: roles of self-regulation and trust. *Electronic Journal Of Research İn Educational Psychology, 9*(3), 961-994. Retrieved from http://investigacion-psicopedagogica.org/revista/articulos/25/ english/ Art_25_620.pdf

Şahin, C. & Yağcı, M. (2017). Sosyal medya bağımlılığı ölçeği-yetişkin formu: Geçerlilik ve güvenirlik çalışması. *Ahi Evran Üniversitesi Kırşehir Eğitim Fakültesi Dergisi (KEFAD), 18*(1), 523-538. Retrieved from https://toad.halileksi.net/sites/default/files/pdf/sosyal-medya-bagimliligi-olcegi-yetiskin-formu-toad.pdf

Şeker, V. T. (2018). *Sosyal medya bağımlılığı depresyon ve anksiyete ilişkisi* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 528067).

Şentürk, E. (2017). *Sosyal medya bağımlılığının depresyon, anksiyete bozukluğu, karışık anksiyete ve depresif bozukluk hastaları ile kontrol grubu arasında karşılaştırılması ve kullanıcıların kişilik özellikleriyle ilişkisinin araştırılması* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number:480883).

Turel, O. & Serenko, A. (2012). The benefits and dangers of enjoyment with social networking websites. *European Journal of Information Systems, 21*, 512–528. doi:10.1057/ejis.2012.1

Ünlü, F. (2018). Orta yaş üstü bireylerde sosyal medya bağımlılığı ve sosyal izolasyon. *PESA Uluslararası Sosyal Araştırmalar Dergisi, 4*(1), 161-172. Retrieved from: https://dergipark.org.tr/tr/pub/pesausad/ issue/ 36449/412898

Wu, Pi-Chu. (2013). Addictive behavior in relation to the happy farm facebook application. *Social Behavior and Personality, 41*(4), 539-554. Retrieved from: https://doi.org/10.2224/sbp.2013.41.4.539

Yüksel, E. (2019). *Sosyal medya bağımlılığı, yalnızlık ve kendini gizleme arasındaki ilişki: Konya örneğinde bir saha araştırması* (Master's Thesis). Retrieved from YÖK Thesis center database (Thesis Number: 576024).

Yüksel-Şahin F. & Öztoprak Ö. (2019). Ergenlerin sosyal medya bağımlılığı düzeylerinin benlik saygısına göre incelenmesi [Özel sayı]. *IBAD Sosyal Bilimler Dergisi*, 363-377. DOI: 10.21733/ibad.613902

Yu, J., Hu, P. J.-H. & Cheng, T.-H. (2015). Role of Affect in Self-Disclosure on Social Network Websites: A Test of Two Competing Models. *Journal of Management Information Systems, 32* (2), 239–277.

The Relationship Between Pre-service Teachers' Attitudes Towards Profession and Tolerance Levels

Research Article

Hakan POLAT[1]

[1]*Fırat University, Faculty of Education, Department of Educational Science, Elazığ, Turkey* 0000-0002-0271-3747

ARTICLE INFO	ABSTRACT
Article History: Received: 20.10.2021 Available online: 18.08.2022	Trained people are an important capital for the development of societies. The source of this capital is education of high quality. Indeed, the most important actor in educational process is teachers. Therefore, teachers need to be trained in a qualified manner, to practice their profession with love, to have positive attitudes and certain values. One of the values that teachers should have is tolerance. In this sense, the aim of the present study was to examine the relationship between pre-service teachers' attitudes towards the profession and their tolerance levels. Relational survey model was employed in the study. The sample of the study involved 356 students at Fırat University Faculty of Education. The findings showed that the participants had positive attitudes and the female participants had more positive attitudes than males. It was found that the attitudes of the participants differed by their departments. In addition, it was concluded that the participants had a high level of tolerance and female participants were more tolerant than males. The tolerance levels of participants did not differ by department. A positive relationship was revealed between the participants' attitudes and tolerance levels. Besides, a positive and significant relationship was found between the participants' attitudes and tolerance levels. It can be put forward that if pre-service teachers have positive professional attitudes, their tolerance levels will increase. © 2022 IOJES. All rights reserved **Keywords:** Attitude towards the profession, tolerance, pre-service teachers.

Introduction

Education is one of the most significant investments of a country. Policies are developed and budgets are allocated for the effective operation of education systems. Although there are many elements of the education system, the most important one in teachers in that they play a vital role I raising qualified individuals. Teachers should not only develop knowledge and skills in individuals, but also ensure that they

have a number of values. Teachers, who play an important role in the shaping and development of society, should have a set of attitudes, behaviors, competencies and values required by the profession.

Those who practice the teaching profession are expected love their profession and have positive attitudes. Attitude is a mental, emotional and behavioral reaction, that is, a preliminary tendency, that an individual adopts based on his/her knowledge, feelings, experience and motives against any object, social issue, or event around him (İnceoğlu, 2011). Eagly and Chaiken (1993) argues that attitudes reflect feelings, beliefs and behaviors towards a certain attitude object. Professional attitude means an individual's feelings, behavior and commitment to the profession. If a teacher has a determined and positive attitude, it is likely that his/her performance will be better and his/her effort will be productive (Chakraborty & Mondal, 2014). Anderson (1980) stated that it is required for the development of attitudes to obtain several information about objects, events or people. In order for an individual to develop an attitude towards something, the individual must show more interest and value to the details of information than others (Andronache, Bocoş, Bocoş, & Macri, 2014).

In order to perform teaching activities, teachers need to adapt to the society in which they live, to improve themselves, to be open to professional development, to have professional knowledge and skills, and to have characteristics and qualities that will provide a role model for their students (Yalçınkaya, 2016). Since teachers are the planner, initiator, implementer and evaluator of educational activities, they are required to possess good qualifications (Gündoğdu, Aytaçlı, Aydoğan, & Yıldırım, 2015). Teacher competence can be defined as the knowledge, skills and attitudes requires for teachers to do their jobs effectively and efficiently, that is, in the best way (MoNE, 2017). Başbay, Ünver ve Bümen (2009) state that teachers are expected to develop a positive attitude along with the knowledge and skills required by the teaching profession during their undergraduate education due to the fact that positive attitudes play a key role in practicing the teaching profession in an effective and successful way (Demirtaş, Cömert & Özer, 2011; Üstüner, 2006). Similarly, Gökdere and Çepni (2003) argued that teachers having a positive teaching profession attitudes will guide the students, encourage the students to think critically, direct the students to analyze during learning, and ensure active participation of the students, allowing them to reach information. Attitudes towards the profession, one of the main factors having an effect on teacher behaviors, start to be developed in pre-service period, which give clues about their future professional life (Üstüner, 2006). Therefore, pre-service teachers need to start their profession with positive attitudes.

There are many studies on the pre-service teachers' teaching profession attitudes (Alkhateeb, 2013; Altunkeser & Ünal, 2015; Bulut, 2009; Bulut & Doğar 2006; Bümen & Özaydın, 2013; Chakraborty & Mondal, 2014; Çapa & Çil, 2000; Dabat, 2010; Dağ, 2010; Demirtaş et al., 2011; Egwu, 2015; Ekici, 2006; Ergen & Töman, 2014; Gürhan, 2008; Karadağ, 2012; Kocaarslan, 2018; Pehlivan, 2008; Uyanık, 2017). These studies, in general, reported positive attitudes (Alkhateeb, 2013; Bulut & Doğan, 2006; Demirtaş, et al., 2011; Dabat 2010; Kocaarslan, 2018). In addition, several variables such as gender, department and reason for preference were also examined in these studies (Chakraborty & Mondal, 2014; Dabat, 2010; Gürhan, 2008; İslam & Ansari, 2019; Pehlivan, 2008; Shaheen, Kashif, Daud, & Tariq, 2017; Uyanık, 2017). There are also some studies examining teaching profession attitudes with regard to different variables such as motivation (Ayık & Ataş, 2014; Deringöl, 2020; Kontaş, 2016), anxiety levels (Doğan, & Çoban), self-efficacy beliefs (Arslan, 2019; Kaleli, 2020; Baş & Şentürk, 2019; Çapri & Kan, 2007; Demirtaş et al., 2011; Nakip & Özcan, 2016; Oğuz & Topkaya, 2008), life satisfaction levels (Kıralp & Bolkan, 2016; Sharbain & Tan, 2012; Şahin, 2010).

Individuals need to have some values in order to be happy in the society they live in (Gündüz, 2019). One of the important values that ensure social peace is tolerance (Çalışkan, Yıldırım & Kılınç, 2019). Tolerance has gained considerable importance in recent years due to the globalizing economy, communication, unification and dependency, large-scale migrations, changing social order and urbanization (Figen, 2016). In

addition, UNESCO (1995) describes tolerance as accepting and appreciating the different cultural richness and respecting the diversity in the world. Tolerance is generally defined as a social virtue and a political principle that ensures individuals and groups with different views and different lifestyles to live together peacefully in the same society (Pasamonk, 2004). The value of tolerance is also one of the vital values that facilitate democratic societies to live in peace and reconciliation (Khitruk & Ulianova, 2012). Pasamonk (2004) put forward that two conditions must be met for tolerance: not approving every opinion and behavior, and being able to resist approval. In addition, Pasamonk (2004) stated that opinions and behaviors which are not tolerated should be overcome.

Human diversity in global community must be controlled in a competent manner. With the awareness that each individual is unique, it is necessary to respect and accept the differences. An attitude that can respect these differences is regarded as tolerance (Mailool, Retnawati, Arifin, Kesuma, & Putranta, 2020). Corneo and Jeanne (2009) stated that tolerance refers to respect for diversity and is generally considered as a feature distinguishing modern societies from traditional ones. Considering the basic elements of tolerance, it can be said that tolerance is a moral value that regulates human and social life, develops an environment of mutual love, respect and peace, and allows positive thoughts and feelings to develop among individuals (Mutluer, 2015). The concept of tolerance has become one of the globally accepted values. In 1995, which was declared as tolerance year, the "Declaration of Principles on Tolerance" published by UNESCO was accepted as one of the most basic reference (UNESCO, 1995). The declaration stated that education is the most effective way to eliminate intolerance and that tolerance education is urgent and necessary. In addition, it was emphasized that teacher education, curriculum, textbooks and course contents should be developed in accordance with the value of tolerance (Article 4).

An effective teacher is open to his/her students, has a friendly relationship with them, and has sincere, strong-minded, sensitive, affectionate, tolerant and understanding personality traits (Stanton, 1985; Capel et al., 1995: cited in Dilekmen, 2008). There are many features that a teacher should have. Girgin and Baysal (2005) stated that the teaching profession requires content knowledge and pedagogical knowledge, as well as features such as altruism, tolerance, continuous self-renewal, and practicing the profession with love. Similarly, Helvacı (2016) said that teachers should be compassionate, self-sacrificing, tolerant and patient towards people. Many studies in the literature revealed that the professional qualifications that teachers should have are content knowledge, pedagogical knowledge and skills, and general culture (Demirel, 2014; Erden, 2014). Teachers having professional qualifications can communicate more effectively with their students if they have characteristics such as love, respect, tolerance and cooperation (Çetin, 2001). In order to be developed, tolerance should be taught through the teacher's role in the educational environment from early childhood (Mailool et al., 2020). In addition, Baklashova, Galishnikova and Khafizova (2015) argued that tolerance should be taught to young age groups as early as possible in order to become aware of diversity. Tolerance education becomes possible only if teachers possess the value of tolerance and be a role model for students. In this case, as the most important actors in education, teachers have a great responsibility.

A brief literature review reveals that there are few studies on tolerance. In the literature, the studies have focused on tolerance in the field of education (Borgonovi, 2012; Büyükkaragöz & Kesici, 1996; Ersoy, 2016; Kepenekçi, 2004) and on examining the tolerance levels of pre-service teachers (Gündüz, 2019; Türe & Ersoy, 2014; Uca, 2015). Several studies reported a number of characteristics that should be possessed by teachers in order to practice their profession adequately and effectively. In many of these studies, tolerance emerged as a value or personality traits that teachers should have (Bektaş, 2012; Cruickshank, Jenkins & Metcalf, 2003; Çubukçu, Özenbaş, Çetintaş, Satı, & Şeker, 2012; Gurbetoğlu & Tomakin, 2011; Hotaman, 2011; Hotaman, 2012; Özden Çelik, 2013; Özdilekler, 2016; Ubuz & Sarı, 2009). These studies stressed that teachers should have tolerance.

Previous studies showed that tolerance and attitude towards the profession were examined separately or with different variables. However, there are limited number of studies examining both of them (Uca, 2015). In order to be a successful teacher, pre-service teachers should have tolerance as well as positive professional attitudes. It is of crucial importance that tolerance is developed in teacher education process. Therefore, it is important to examine pre-service teachers' professional attitudes and tolerance, which is one of the values they should have, as well as the relationship between the two variable.

The Purpose of the Study

This study aimed to examine the relationship between pre-service teachers' professional attitudes and their tolerance levels. In this line, answers to the following research questions were sought in the study:

1.What are pre-service teachers' attitudes towards the teaching profession?

2.Is there a significant difference in pre-service teachers' professional attitudes regarding demographic variables (gender and department)?

3.What are the pre-service teachers' scores in tolerance scale and its sub-scales?

4.Is there a difference in pre-service teachers' tolerance levels regarding demographic variables (gender and department)?

5.Is there a difference in pre-service teachers' scores in sub-dimensions of tolerance scale in terms of demographic variables (gender and department)?

6.Is there a relationship between pre-service teachers' professional attitudes and their tolerance level?

Method

Research Model

In this study, relational survey model was used. The relational survey model is also known as the correlation research model (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2018; Fraenkel, Wallen & Hyun, 2012). Relational survey model aims at investigating if there is a relationship between two or more variables, and if so, at what level (Karasar, 2007). In the study, pre-service teachers' professional attitudes were set as the independent variable, and their tolerance levels were determined as the dependent variable. The relational survey model was considered suitable to examine the relationship between dependent and independent variables.

Study Group

The sample consisted of 3rd Grade students (pre-service teachers) at Fırat University Faculty of Education in the 2021-2022 academic year. Purposive sampling method was adopted in sample selection. In purposive sampling, researchers use their own judgment about possible participants and include those who are most suitable for the purpose of the study (Balcı, 2011). In teacher education programs, pedagogical knowledge, content knowledge and elective courses are taught mainly in the first three grades, and teaching practicum is included in the last grade. Therefore, it was thought that pre-service teachers' attitudes and values towards the profession would be developed in the first three grades and thus the study was carried out on third grade students. Accordingly, 377 pre-service teachers from nine departments were included in the study. Nevertheless, 21 participants were left out from the study due to incomplete and missing data. Consequently, the sample of the study consisted of 356 pre-service teachers. Table 1 shows demographics of the participants.

Table 1. Participants' Demographic Information

Department	Gender					
	Female	**%**	**Male**	**%**	**Total**	**f**
Science Education	18	5.06	6	1.69	24	6.75
English Language Teaching	27	7.58	16	4.49	43	12.07
Elementary School Mathematics Education	29	8.15	15	4.21	44	12.36
Preschool Education	32	8.99	13	3.65	45	12.64
Guidance and Psychological Counseling	31	8.71	11	3.09	42	11.80
Art Education	18	5.06	5	1.40	23	6.46
Classroom Education	33	9.27	9	2.53	42	11.80
Social Studies Education	31	8.71	18	5.05	49	13.76
Turkish Language Education	33	9.27	11	3.09	44	12.36
Total	252	70.79	104	29.21	356	100.00

Data Collection Tools

In data collection, "Attitude Scale towards Teaching Profession" and "Teacher Candidates Tolerance Scale". Information on the data collection tools is presented below:

Attitudes towards Teaching Profession Scale (ATTPS)

The 5-point Likert type scale was developed by Kahramanoğlu, Yokuş, Cücük, Vural, and Şiraz (2018). It contains one dimension and 12 items and there is no reverse coded item. In the development of the scale, Exploratory Factor Analysis (EFA) revealed a one factor structure with 12 items, which explained 57.60% of the total variance. In addition, the factor loading values varied between .501 and .685 in the scale. Then, Confirmatory Factor Analysis (CFA) was used to confirm the structure of the scale. The fit index values of the scale were found as $X^2/sd=2.45$, GFI=.95, AGFI=.91, CFI=.98, NFI=.96, IFI=.98, RMSEA=.065, SRMR=.050. Accordingly, the fit level of the scale was considered sufficient. The Cronbach's Alpha for the version of the scale was calculated as .85.

Teacher Candidates Tolerance Scale (TCTS)

The scale developed by Gül and Alimbekov (2018) was adapted into Turkish by Gül, Karataş and Borkoev (2019). The fit index values of the point Likert type scale involving 15 items and four dimension as a result of CFA were calculated as $X^2/sd=3.08$; AGFI=.91, GFI=.94, IFI=.90 CFI=.90, and RMSEA=.062. The fit index coefficients showed that the scale had a good fit model. Accordingly, it was verified that the scale had "Empathy", "Importance", "Compliance" and "Attitude" sub-dimensions. The Cronbach α internal reliability coefficient was calculated to examine the internal reliability of the scale. The analysis showed that the coefficient value was calculated as .77 for the total scale and .74, .69, .70, and .67, respectively for the sub-dimensions

Data Analysis

SPSS 22 was used in data analysis. Also CFA was employed through AMOS to test the construct validity of the data collection tools. Normality tests, t-test, ANOVA and Pearson Correlation analysis were run in SPSS. In order to examine the normality of data, the skewness and kurtosis values were examined. Tabachnick and Fidell (2001) puts forward that skewness and kurtosis values should be between -1.5 and +1.5 for a dataset to considered as normally distributed. Missing values and extreme values were examined before data analysis. Missing data occurs when participants ignore or refuse to answer (Cresswell, 2017). For a normal distribution, the extreme values should be between -3 and +3 (Çokluk, Şekercioğlu, & Büyüköztürk, 2012). Missing data and data that were not in extreme value range were excluded from the analysis. Table 2 shows normality test results.

Table 2. Normality Test Results

Variable	Skewness	Kurtosis
ATTPS	-.731	-.175
Empathy	-1.28	1.016
Importance	-.960	.412
Compliance	-1.23	1.266
Attitude	-1.22	.499
Tolerance	-.823	-.172

As seen in Table 2, the skewness and kurtosis values of the variables were between -1.5 and +1.5, which revealed a normal distribution (Tabachnick & Fidell, 2001).

The validity and reliability of tools used in the study were also tested. In order to confirm the determined structure of the scales, CFA was performed and the validity of the scales was tested. In addition, Cronbach's Alpha was calculated for the reliability. Independent samples t-test was used for pairwise comparisons, and ANOVA was employed for multiple comparisons. Scheffe test was applied when the variances of the groups were equal in ANOVA. Scheffe is a post hoc test applied both in the case of keeping the α margin of error under control when the number of groups to be compared is large, and in case of inequality of the number of observations in the groups (Scheffe, 1959: cited in Kayri, 2009). Welch or Brown-Forsythe tests are used if the variances are not equal (Pallant, 2010). According to Field (2013), if the variances of the groups do not show a homogeneous distribution based on Levene test, the Welch test gives the best results to test whether the difference between the variances of the groups differ, and the Games-Howell test to examine the significance of the difference between the groups.

The 5-point Likert type ATTPS and TCTS was interpreted using the following ranges: 1.00-1.80 "strongly disagree", 1.81-2.60 "disagree", 2.61-3.40 "neutral", 3.41-4.20 "agree", "4.21 -5.00 "strongly agree". The Pearson correlation coefficient was employed to examine the level of linear relationship between the two variables. It indicates "weak" relationship between 0-.2, "low" relationship between .2-.4, "moderate" relationship between .4-.6, and "strong" relationship between .6-.8 and "very strong" relationship between .8-1 (Şencan, 2005). In addition, the significant difference in paired and multiple comparisons was examined through effect size values. In pairwise comparisons, the effect size value (d) is interpreted as .2 "small", .5 "medium" and .8 "large". In multiple comparisons, the effect value (η2) is interpreted as .01 "small", .06 "medium" and .14 "large" effect sizes (Green & Salkind, 2005: cited in Can, 2017)

Validity and Reliability

The validity and reliability of the data collection tools were tested. CFA was performed to investigate the construct validity of the scales and Cronbach's Alpha were calculated to investigate reliability. Özdamar (1997) interpreted the Cronbach's Alpha value as "not reliable" in the range of 0-.40, "low " in the range of .41-.60, "moderate" in the range of .61-.80, and "high" in the range of .81-1.00. For confirmatory factor analysis (95% confidence interval), fit indices, which are widely accepted in the literature and shown in Table 3, were used (Gürbüz, 2019; Hair, Black, Barry & Rolph, 2010; Kline, 2011; Schermelleh-Engel, Moosbrugger, & Müller, 2003; Schumacker & Lomax, 2016; Tabachnick & Fidell, 2001).

Table 3. CFA Fit Indices

Examined Fit Indices	Perfect Fit Indices	Acceptable Fit Indices
X^2/SD	$0 \leq X^2/sd < 3$	$3 \leq X^2/sd \leq 5$
GFI	$\geq .95$	$\geq .90$
AGFI	$\geq .90$	$\geq .85$
CFI	$\geq .95$	$\geq .90$

IFI	≥ .95	≥ .90
RMSEA	≤ .05	≤ .80
SRMR	≤ .05	≤ .08

The fit indices for the construct validity of ATTPS were calculated as $X^2/sd=3.137$, AGFI=.880, GFI=.904, IFI=.905 CFI=.904, RMSEA=.078 and SRMR=.058. Accordingly, it was found that the fit indices were at an acceptable level. Moreover, the scale's Cronbach's α was found to be .84. CFA showed that fit indices of TCTS were calculated as $X^2/sd=2.479$, AGFI=.892, GFI=.927, IFI=.907, CFI=.905, RMSEA=.065 and SRMR=.055, which were at an acceptable level. In addition, the Cronbach's α was found as .82 for the total scale, .73 for Empathy, .69 for Importance, .78 for Compliance, and .69 for Attitude sub-dimensions. These results indicated that both scales were valid and reliable.

Ethics of Research

Each stage of the study was carried out in agreement with ethical rules. Required permissions were obtained from Fırat University Social and Human Sciences Research Ethics Committee (Ref: E-97132852-100-157738) and from the Dean of the Faculty of Education (Ref: E-88076204-044-159725) for the study. In data collection stage, all participants were informed about the study and signed a consent form stating that they voluntarily participated in the study.

Findings

The findings regarding professional attitudes and tolerance levels of the participants were reported and presented on the basis of research questions.

Findings on the participants' professional attitudes

The total scores of ATTPS showed that the participants "strongly agreed" ($\overline{X}$=4.48, sd=.437) with the statements in the scale. In general, it can be said that the participants had higher levels of teaching profession attitudes and that the education they received and the practices they performed during their undergraduate education had a positive effect on their professional attitudes.

The findings on the participants' professional attitudes regarding gender and department

The professional attitudes of the participants were examined with regard to gender and department. Independent samples t-test (Table 4) was run to examine gender, and the One-way ANOVA was employed to investigate department (Table 5).

Table 4. The participants' professional attitudes regarding gender

Variable	Group	n	$\overline{X}$	sd	t	df	p	d
ATTPS	Female	252	4.52	.41	2.49	354	.014*	.29
	Male	104	4.38	.48				

*p<.05

The findings revealed that the participants teaching profession attitudes significantly differed by gender [t(354)=2.49, p<.05]. It was found that female participants had more positive professional attitudes. The effect size of this difference was small (d=.29). The professional attitudes of the participants were investigated through ANOVA test in terms department. Table 5 shows ANOVA results.

Table 5. Professional attitudes of the participants in terms of department

Groups	n	$\overline{X}$	Sd	Sd1	Sd2	WelchF	p	Sig. Dif.	η2
Science Edu. (a)	24	4.60	.35	8	132.41	2.684	.009*	a-e	.066
English Language Teaching (b)	43	4.44	.44					d-e	

Elementary School Mathematics Edu. (c)	44	4.34	.52		e-h
Preschool Education (d)	45	4.58	.42		
Guidance and Psychol. Counseling (e)	42	4.26	.48		
Art Edu. (f)	23	4.55	.37		
Classroom Edu. (g)	42	4.54	.44		
Social Studies Edu. (h)	49	4.58	.35		
Turkish Language Edu. (i)	44	4.47	.37		

*p<.05

The test results showed that the participants' professional attitudes significantly differed by department [Welch-F (8, 132.405)=2.684, p=.009]. Due to the fact that the variances of the ANOVA test were not homogeneous, the analysis was performed using the F value of the Welch test. The Games-Howell test, as a post hoc, was run to examine the source of the difference. The results of Games-Howell test indicated that Science Education ($\overline{X}$=4.60), Preschool Educaiton ($\overline{X}$=4.58) and Social Studies Education ($\overline{X}$=4.58) departments differed significantly from Guidance and Psychological Counseling ($\overline{X}$=4.26). The significant difference had a moderate effect size (η2=.066). It was found, in terms of professional attitudes, that the participants in the Guidance and Psychological Counseling department had lower attitudes than those in other departments.

The findings on participants' tolerance levels

The findings showed that the participants' opinions were at the level of "strongly agree" ($\overline{X}$=4.63, sd=.34), indicating that the participants had high tolerance levels. In order to obtain the findings on the sub-dimensions of TCTS, ANOVA was used. The results are given in Table 6.

Table 6. Findings on the sub-dimensions of TCTS

Sub-dimension	n	$\overline{X}$	sd
Empathy	356	4.72	.36
Significance	356	4.56	.57
Compliance	356	4.52	.57
Attitude	356	4.69	.44

Findings on the sub-dimensions of TCTS revealed that the participants "strongly agreed" with the statements in all sub-dimensions. It was found that the participants had high levels in all sub-dimensions of TCTS. They had the highest score in empathy sub-dimension ($\overline{X}$=4.72, sd=.36).

4. Findings on the participants' tolerance levels with regard to gender and department

Participants' tolerance levels were examined regarding gender and department. Independent samples t-test was used for gender variable (Table 7), and One-Way ANOVA for department (Table 8).

Table 7. The participants' tolerance levels in terms of gender

Variable	Group	n	$\overline{X}$	sd	t	df	p	d
Tolerance	Female	252	4.66	.33	2.40	354	.024*	.28
	Male	104	4.56	.37				

*p<.05

There was a significant difference in the tolerance levels of the participants with regard to gender [t(354)=2.40, p<.05]. The tolerance levels of female participants ($\overline{X}$=4.66, sd=.33) were higher than those of male participants ($\overline{X}$=4.56, sd=.37). In addition, it was found that the effect size of the difference was small (d=.28). Tolerance levels of the participants in terms of department were examined using ANOVA. Table 8 presents ANOVA results.

Table 8. The participants' tolerance levels regarding department

Groups	n	$\overline{X}$	sd	df	F	p
Science Education (a)	24	4.68	.27	8	.901	.516
English Language Teaching (b)	43	4.58	.34	347		
Elementary School Mathematics Education (c)	44	4.58	.39	355		
Preschool Education (d)	45	4.67	.32			
Guidance and Psychological Counseling (e)	42	4.62	.39			
Art Education (f)	23	4.52	.37			
Classroom Education (g)	42	4.66	.33			
Social Studies Education (h)	49	4.64	.35			
Turkish Language Education (i)	44	4.69	.30			

ANOVA results did not reveal a significant difference in participants' tolerance levels in terms of department [$F_{(8-347)}$=.901, p=.516]. The tolerance levels of the participants were high and comparable regardless of their department.

Findings on the participants' TCTS sub-dimension scores regarding gender and department

The sub-dimensions of TCTS were examined with regard to gender through the t-test. Table 9 presents t-test results.

Table 9. Participants' scores in sub-dimensions of TCTS regarding gender

Variable	Group	n	$\overline{X}$	sd	t	df	p	d
Empathy	Female	252	4.76	.31	3.38	354	.001*	.394
	Male	104	4.61	.43				
Importance	Female	252	4.57	.44	.53	354	.60	
	Male	104	4.54	.46				
Compliance	Female	252	4.53	.58	.59	354	.56	
	Male	104	4.49	.57				
Attitude	Female	252	4.73	.41	2.59	354	.010*	.302
	Male	104	4.59	.49				

*p<.05

The results showed that female participants had higher scores ($\overline{X}$=4.76, sd=.31) than male participants ($\overline{X}$=4.61, sd=.43) in the Empathy sub-dimension. Furthermore, a significant difference was also determined [t(354)=3.38, p<.05), (d=.394)]. In addition, the female participants ($\overline{X}$=4.73, sd=.41) were found to have higher scores than male participants ($\overline{X}$=4.59, sd=.49) in Attitude sub-dimension. A significant difference was also determined between males and females [t(354)=2.59, p<.05), (d=.302)]. The effect size was small both in Empathy and Attitude sub-dimensions.

The sub-dimensions of TCTS were examined in terms of gender using ANOVA. Table 10 shows the and results of ANOVA

Table 10. Participants' scores in TCTS sub-dimension regarding department

Variable	Groups	n	$\overline{X}$	sd	df	F	p
Empathy	Science Education (a)	24	4.69	.33	8 347	.905	.513
	English Language Teaching (b)	43	4.65	.42	355		

	Elementary School Mathematics Education (c)	44	4.70	.40			
	Preschool Education (d)	45	4.78	.31			
	Guidance and Psychological Counseling (e)	42	4.66	.40			
	Art Education (f)	23	4.73	.33			
	Classroom Education (g)	42	4.80	.29			
	Social Studies Education (h)	49	4.70	.37			
	Turkish Language Education (i)	44	4.74	.32			
Importance	Science Education (a)	24	4.74	.30	8 347 355	1.254	.267
	English Language Teaching (b)	43	4.51	.52			
	Elementary School Mathematics Education (c)	44	4.52	.49			
	Preschool Education (d)	45	4.62	.38			
	Guidance and Psychological Counseling (e)	42	4.58	.43			
	Art Education (f)	23	4.43	.55			
	Classroom Education (g)	42	4.52	.44			
	Social Studies Education (h)	49	4.52	.47			
	Turkish Language Education (i)	44	4.64	.36			
Compliance	Science Education (a)	24	4.50	.49	8 347 355	.809	.595
	English Language Teaching (b)	43	4.47	.58			
	Elementary School Mathematics Education (c)	44	4.44	.63			
	Preschool Education (d)	45	4.51	.57			
	Guidance and Psychological Counseling (e)	42	4.54	.60			
	Art Education (f)	23	4.32	.51			

	Classroom Education (g)	42	4.53	.65			
	Social Studies Education (h)	49	4.64	.46			
	Turkish Language Education (i)	44	4.57	.60			
Attitude	Science Education (a)	24	4.78	.36	8 347	1.329	.228
	English Language Teaching (b)	43	4.65	.47	355		
	Elementary School Mathematics Education (c)	44	4.61	.45			
	Preschool Education (d)	45	4.73	.36			
	Guidance and Psychological Counseling (e)	42	4.67	.47			
	Art Education (f)	23	4.48	.52			
	Classroom Education (g)	42	4.73	.42			
	Social Studies Education (h)	49	4.69	.46			
	Turkish Language Education (i)	44	4.78	.40			

The sub-dimensions of TCTS levels were examined in terms of the department of the participants. A significant difference was not found in Empathy [F(8-347)=.905, p=.513] Importance [F(8-347), p=.267] Compliance [F(8-347)=.809, p=.595] and Attitude [F(8-347)=1.329, p=.228] sub-dimensions with regard to department. Consequently, it was found that although the departments of the participants differed, they had similar scores in sub-dimensions of TCTS.

Findings on the relationship between participants' professional attitudes and tolerance levels

Pearson correlation analysis was performed to investigate the correlation between the participants' professional attitudes and tolerance levels. The findings are shown in Table 11.

Table 11. Correlation Values Between Variables

Variable		Empathy	Importance	Compliance	Attitude	Tolerance
ATTPS	r	.435**	.365**	.359**	.374**	.490**
	p	.000	.000	.000	.000	.000
	n	356	356	356	356	356

p<.01

Table 11 indicated a significant and positive correlation between the participants' professional attitudes and Empathy (r=.435, p<.01), Importance (r=.365, p<.01), Compliance (r=.359, p<.01) and Attitude (r=.374, p<.01) sub-dimensions of TCTS. It was found that the professional attitudes of the participants had a moderate relationship with Empathy sub-dimension and a weak relationship with Importance, Compliance and

Attitude sub-dimensions. It can be argued that as the professional attitudes increase, the tolerance level will also increase.

Discussion And Conclusion

The most important capital in the development of societies is human and thus it is very important to train qualified individuals. In this sense, teachers need to have positive professional attitudes and a set of values. These attitudes and values are expected to be developed especially during pre-service teacher education. This study attempted to examine the relationship between pre-service teachers' professional attitudes and tolerance levels. Hence, the opinions of pre-service teachers were investigated using the relational survey method. The results obtained in the study are discussed below.

It was found in this study that the participants had high levels of professional attitudes. Based on these results, it can be said that they will enjoy the teaching profession. In addition, a significant difference was found between the attitudes of female and male participants. It was found that females had more positive attitudes than males. The high number of female participants in the study indicates that the teaching profession is preferred more by females. Furthermore, it was found that the participants' professional attitudes differed by department. In particular, participants in Guidance and Psychological Counseling Department had lower attitudes than those in other departments. Similar findings were reported in studies examining professional attitudes. For example, Alkhateeb (2013) reported that pre-service teachers had very positive professional attitudes. Similarly, Demirtaş et al. (2011) found that pre-service teachers' professional attitudes were positive. Furthermore, Dağ (2010) revealed that pre-service teachers' had positive and moderate professional attitudes. Also Bulut and Doğan (2006) revealed high professional attitudes. However, Egwu (2015) reported that students had negative professional attitudes, that teaching was a difficult job, and that teachers did not receive good salaries compared to other professions. Pehlivan (2008) concluded that female pre-service teachers had significantly higher levels of attitudes. Gürhan (2008) found a significant difference regarding department and gender, concluding that female pre-service teachers exhibited more positive attitudes. Altunkeser and Ünal (2015) showed that female pre-service teachers had more positive attitudes than males. In addition, Bulut (2009) revealed high levels of professional attitudes. In addition, he found that there was not a significant difference regarding gender whereas there was a significant difference regarding department. Besides, İslam and Ansari (2019) showed that professional attitudes differed by gender and department. In contrast, Shaheen et al. (2017) reported that the attitudes of pre-service teachers did not differ by gender and department. Kocaarslan (2018) concluded that pre-service teachers' attitude scores towards the profession were generally high. She also revealed a significant difference regarding department whereas there was no significant difference regarding gender. In addition, Dabat (2010) found that pre-service teachers' professional attitudes were at a moderate level and there was no significant difference regarding gender and age. Previous studies showed that pre-service teachers did not differ significantly by gender (Çapa & Çil, 2000; Ekici, 2006). In this sense, it may be argued that the attitudes of female pre-service teachers increased over time. Uyanık (2017) found that pre-service classroom teachers' professional attitudes differed significantly by grade and gender. In contrast, Chakraborty and Mondal (2014) showed professional attitudes of pre-service teachers did not differ significantly by gender, category, religion, region, subject flow. These studies indicate that different results can be obtained in different periods and on different samples. However, in general, pre-service teachers have a high levels of attitude towards the profession. In addition, it can be said that female pre-service teachers have more positive attitudes.

As a part of the study, tolerance levels of the participants were examined as well. The results showed that the participants had high levels of tolerance. Regarding gender, a significant difference was found between female and male participants. It was concluded that female pre-service teachers had higher tolerance levels. Regarding department, a significant difference was not determined in tolerance levels. The participants

had higher scores in all sub-dimensions of TCTS. In addition, it was found that female pre-service teachers had higher scores in Empathy and Attitude sub-dimension than male participants. However, a significant difference was not determined in sub-dimensions of TCTS regarding department. The studies the literature have reported similar results to those of the present study. For example, Uca (2015) found that the tolerance levels were high in all sub-dimensions and there were significant differences regarding department. In addition, Gündüz (2019) showed that prospective teachers' tolerance levels did not differ much by geographical region, grade and department. However, it was found that female pre-service teachers were likely to be more tolerant than males. In addition, pre-service teaches in the study tended to had higher levels tolerance. Also Çubukçu et al. (2012) reported that administrators in their study stressed that teachers should have self-sacrifice and tolerance. In addition, a large number of studies have considered tolerance among the values that teachers should have. For example, Bektaş (2012) argued that teachers should have tolerance, trust, honesty and diligence. Similarly, Özden Çelik (2013) found the values that classroom teachers develop in students based on the opinions of private lessons teachers as follows: responsibility, being disciplined, obeying the rules, hardworking, ambition, open-mindedness, tolerance, being influenced by national and religious values, generous, helpful, being frank and creative, being organized. Özdilekler (2016) stated that the most emphasized values among the values that classroom teachers had were human love, respect for people, communication-speech, tolerance and patience. Gurbetoğlu and Tomakin (2011) emphasized that teachers should be aware of child psychology and be patient and tolerant. Hotaman (2012) stated that teachers having tolerance and patience had the chance to change their students' behavior. Türe and Ersoy (2014) stated in their qualitative study that social studies teachers' perceptions of tolerance were influenced by their family, age, experiences and the books they read. Aforementioned studies reveal that tolerance is an essential value and personality trait in teaching profession.

Finally, the relationship between professional attitudes and tolerance was dealt with in the study. It was found that the participants' professional attitudes and tolerance levels correlated positively and significantly. Professional attitude of the participants had a positive and significant relationship with all sub-dimensions of TCTS. It can be put forward that professional attitudes increase, tolerance levels will increase as well. Investigating the attitudes and tolerance levels, Uca (2015) found a statistically significant and weak relationship between pre-service teaches' professional attitudes and their tolerance level.

The purpose of this study was to investigate the relationship between pre-service teachers' professional attitudes and tolerance levels. Accordingly, the existence of the relationship was revealed. In future studies, the changes in the attitudes and tolerance levels of pre-service teachers in their undergraduate education may be examined with longitudinal studies with including the variables of attitude and tolerance. Tolerance is one of the values that teachers should have. However, studies can be conducted to examine professional attitudes, along with other important values such as tolerance.

Limitations

Similar to all studies, this study also has some limitations. The research was limited to the relational survey model regarding method. The sample of the study was limited to the 3rd Grade at Fırat University Faculty of Education in 2021-2022 academic year. The scales in the study were limited to the survey technique that measures only the attitudes and tolerance of pre-service teachers.

REFERENCES

Alkhateeb, H. M. (2013). Attitudes Towards Teaching Profession of Education Students in Qatar. *Comprehensive Psychology*, *2*, 01-05.

Altunkeser, F., & Ünal, E. (2015). Sınıf öğretmeni adaylarının öğretmenlik mesleğine ilişkin tutumlarının çeşitli değişkenler açısından yordanması. *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *2*(1), 1-15.

Anderson, N.H. (1980). Integration theory and attitude change. *Psychological Review, 78*, 171-206.

Andronache, D., Bocoş, M., Bocoş, V., & Macri, C. (2014). Attitude towards teaching profession. *Procedia-Social and Behavioral Sciences, 142*, 628-632.

Arslan, A. (2019). The mediating role of prospective teachers' teaching self-efficacy between self-efficacy sources and attitude towards teaching profession. International Journal of Educational Methodology, 5(1), 87-96.

Ateş, T. (1995). *Hoşgörü ve uzlaşma*. Ankara: Ümit Yayınları.

Ayık, A., & Ataş, Ö. (2014). Öğretmen adaylarının öğretmenlik mesleğine yönelik tutumları ile öğretme motivasyonları arasındaki ilişki. *Eğitim Bilimleri Araştırmaları Dergisi, 4*(1), 25-43.

Baklashova, T. A., Galishnikova, E. M., & Khafizova, L. V. (2015). The effects of education on tolerance: Research of students' social and ethnic attitudes. *Mediterranean Journal of Social Sciences, 6*(1 S3), 335-335.

Balcı, A. (2011). *Sosyal Bilimlerde Araştırma: Yöntem, Teknik ve İlkeler* (9. Baskı). Ankara: Pegem Akademi.

Baş, G., & Şentürk, C. (2019). The effect of teaching practices on pre-service teachers' sense of efficacy belief and attitude towards teaching profession. *Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi, 9*(1), 01-32.

Başbay, M., Ünver, G., & Bümen, N. T. (2009). Orta öğretim alan öğretmenliği tezsiz yüksek lisans öğrencilerinin öğretmenlik mesleğine yönelik tutumları: Boylamsal bir çalışma. *Kuram ve Uygulamada Eğitim Yönetimi Dergisi, 59*, 345-366.

Bektaş, F. (2012). Sınıf öğretmenlerin sahip oldukları değerlere ilişkin bilişsel kurguları: Fenomonolojik bir çözümleme. *Kuram ve Uygulamada Eğitim Bilimleri*, *Değerler Eğitimi Sempozyumu Ek Özel Sayısı, 12*(2), 1227-1238.

Borgonovi, F. (2012). The relationship between education and levels of trust and tolerance in Europe 1. *The British Journal of Sociology, 63*(1), 146-167.

Bulut, H., & Doğar, Ç. (2006). Öğretmen Adaylarının Öğretmenlik Mesleğine Karşı Tutumlarının İncelenmesi. *Erzincan Eğitim Fakültesi Dergisi, 8*(1), 13-27.

Bulut, İ. (2009). Öğretmen adaylarının öğretmenlik mesleğine ilişkin tutumlarının değerlendirilmesi (Dicle ve Fırat Üniversitesi Örneği). *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi, 14*, 13-24.

Bümen, N. T., & Özaydın, T. E. (2013). Adaylıktan göreve öğretmen özyeterliği ve öğretmenlik mesleğine yönelik tutumlardaki değişimler. *Eğitim ve Bilim, 38*(169), 109-124.

Büyükkaragöz, S., & Kesici, Ş. (1996). Öğretmenlerin hoşgörü ve demokratik tutumları. *Kuram ve Uygulamada Eğitim Yönetimi, 3*, 353-365.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2018). *Bilimsel araştırma yöntemleri* (24. Baskı). Ankara: Pegem Yayınları

Can, A. (2017). *SPSS ile bilimsel araştırma süresince nicel veri analizi* (5. Baskı). Ankara: Pegem Akademi.

Chakraborty, A., & Mondal, B. C. (2014). Attitude of prospective teachers towards teaching profession. *American Journal of Social Sciences, 2*(6), 120-125.

Corneo, G., & Jeanne, O. (2009). A theory of tolerance. *Journal of Public Economics, 93*(5), 691-702.

Creswell, J. W. (2017). *Eğitim Araştırmaları Nicel ve Nitel Araştırmanın Planlanması, Yürütülmesi ve Değrlendirilmesi.* (H. Ekşi, Çev.) İstanbul: Edam.

Cruickshank, D. R., Jenkins, D. B., & Metcalf, K. K. (2003). *The act of teaching*. New York: McGrow Hill.

Çalışkan, H., Yıldırım, Y., & Kılınç, G. (2019). Farklı kültürel yapıdaki ailelerde yetişen öğrencilerin sorumluluk ve hoşgörü değerlerinin incelenmesi. *Eğitim ve Bilim, 44*(199), 353-372.

Çapa, Y. & Çil, N. (2000). Öğretmen Adaylarının Öğretmenlik Mesleğine Yönelik Tutumlarının Farklı Değişkenler Açısından İncelenmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 18*, 69-73.

Çetin. Ş. (2001). İdeal Öğretmen Üzerine Bir Araştırma. *Milli Eğitim Dergisi*, 149. http://dhgm.meb.gov.tr/yayimlar/dergiler/Milli_Egitim_Dergisi/149/cetin.htm, 03. 05. 2022'de erişim sağlandı.

Çokluk, O., Şekercioğlu, G., & Büyüköztürk, Ş. (2012). *Sosyal bilimler için çok değişkenli SPSS ve LISREL uygulamaları.* Ankara: Pegem Akademi.

Çubukçu, Z., Özenbaş, E., Çetintaş, N., Satı, D., & Şeker, Ü. (2012). Yönetici, öğretmen, öğrenci ve veli gözünde öğretmenin sahip olması gereken değerler. *Pegem Eğitim ve Öğretim Dergisi, 2*(1), 25-37.

Dabat, Z. (2010). The Relation Between the (Class Teacher) Students' Attitudes Towards Teaching Profession and the Level of Teaching Competency With Reference to Various Variables. *Journal of Education and Sociology, 4*, 41-46.

Dağ, E. (2010). Sınıf Öğretmeni Adaylarının Öğretmenlik Mesleğine Yönelik Tutumları İle Öğretmenlik Mesleğini Tercih Etmelerinde Etkili Olan Faktörler Arasındaki İlişki (İzmir İli Örneği). Yüksek Lisans Tezi. Ege Üniversitesi Sosyal Bilimler Enstitüsü, İzmir.

Demirel, Ö. (2014). *Öğretimde planlama ve değerlendirme: Öğretme sanatı.* Ankara: Pegem A Yayıncılık.

Demirtaş, H., Cömert M., & Özen, N. (2011). Öğretmen Adaylarının Özyeterlik İnançları ve Öğretmenlik Mesleğine İlişkin Tutumları. *Eğitim ve Bilim, 36*(159), 96-111.

Deringöl, Y. (2020). Teaching Motivation and Teaching Profession Attitude: The Case of Preservice Form Teachers. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi, 22*(2), 295-310.

Dilekmen, M. (2008). Etkili eğitim için etkili öğretmenlik. *Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 12*(2), 213-221.

Doğan, L. (1995). İslamda dinlerarası hoşgörü. Uluslararası Hoşgörü Kongresi, 10-12 Haziran 1995, Antalya, Türkiye.

Doğan, T., & Çoban, A. E. (2009). Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine yönelik tutumları ile kaygı düzeyleri arasındaki ilişkinin incelenmesi. *Eğitim ve Bilim, 34*(153), 157-168.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes.* Harcourt Brace Jovanovich College Publishers.

Egwu, S. O. (2015). Attitude of Students towards Teaching Profession in Nigeria: Implications for Education Development. *Journal of Education and Practice, 6*(29), 21-25.

Ekici, G. (2006). Meslek Lisesi Öğretmenlerinin Öğretmen Öz-Yeterlik İnançları Üzerine Bir Araştırma. *Eğitim Araştırmaları, 24*, 87-96.

Erden, M. (2014). Eğitim bilimine giriş. Ankara: Arkadaş Yayınevi.

Ergen, Y., & Töman, U. (2014). Sınıf Öğretmenliği 4. Sınıf Öğrencilerinin Öğretmenlik Mesleğine Yönelik Tutumlarının İncelenmesi (Bayburt Üniversitesi Eğitim Fakültesi Örneği), *Eğitim ve Öğretim Araştırmaları Dergisi, 3*(1), 375-383.

Ersoy, A. (2016). Dördüncü sınıf öğrencilerinin hoşgörü algısı ve deneyimleri: Bir fenomenolojik araştırma. *Mersin Üniversitesi Eğitim Fakültesi Dergisi, 12*(1), 454-473.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. London: Sage Press.

Fraenkel, J. R., Wallen, N. E., & Hyun H. H. (2012). *How to design and evaluate research in education* (8th edt.), New York: McGram-Hill Companies.

Girgin, G., & Baysal, A. (2005). Zihinsel engelli öğrencilere eğitim veren öğretmenlerin mesleki tükenmişlik düzeyi ve bazı değişkenler (İzmir örneği). *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 18*(18), 1-10.

Gurbetoğlu, A., & Tomakin, E. (2011). Sevilen ve sevilmeyen öğretmen davranışlarına ilişkin öğrenci görüşlerinin incelenmesi. *Ahi Evran Üniversitesi Eğitim Fakültesi Dergisi, 12*(1), 261-276.

Gül, Y. E., Karataş, K., & Borkoev, B. (2019). Öğretmen Adayları Hoşgörü Ölçeği'nin Türkçe'ye Uyarlama Çalışması. *OPUS International Journal of Society Researches*, *14*(20), 1115-1135.

Gündoğdu, K., Aytaçlı, B., Aydoğan, R., & Yıldırım, C. (2015). Öğretmen yeterlikleri alanında yazılan makalelerin içerik analizi. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi, 6*(2), 30-43.

Gündüz, M. (2019). Öğretmen Adaylarının Sahip Oldukları Hoşgörü Düzeylerinin Belirlenmesi. *SDU International Journal of Educational Studies, 6*(2), 43-52. Doi:10.33710/sduijes.606172

Gürhan, M. (2008). Öğretmenlik Mesleğine Yönelik Tutum Ölçeği Geliştirilmesi ve Biyoloji Öğretmeni Adaylarının Öğretmenlik Mesleğine Yönelik Tutumlarının Farklı Değişkenler Açısından Değerlendirilmesi. Yüksek Lisans Tezi, Necmettin Erbakan Üniversitesi, Eğitim Bilimleri Enstitüsü, Konya.

Hair, J. F., Black, W. C., Barry J. B., & Rolph, E. A. (2010). *Multivariate Data Analysis*. (Seventh Edition). New Jersey: Prentice Hall.

Hotaman, D. (2011). Eğitim fakülteleri kendi öğrencilerini seçebilir mi? *Kuramsal Eğitim Bilim Dergisi, 4*(1), 126-136.

Hotaman, D. (2012). Öğretmen adaylarının öğretmen kişilik özelliklerine yönelik algılarının incelenmesi. *Kuramsal Eğitim Bilim Dergisi*, *5*(12), 186-201.

Hotaman, D. (2012). An investigation of pre-service teachers' perceptions of teacher personality characteristics. *Journal of Theoretical Educational Science*, *5*(2), 186-201.

Islam, S., & Ansari, A. (2019). A comparative study of attitude towards teaching profession of male and female B. Ed. and M. Ed. students of Aligarh Muslim University. *International Journal of Research in Social Sciences, 8*(2), 652-661.

İnceoğlu, M. (2011). *Tutum Algı İletişim*. (6. Baskı). Ankara: Siyasal Kitapevi

Kahramanoğlu, R., Yokuş, E., Cücük, E., Vural, S., & Şiraz, F. (2018). Öğretmenlik Mesleğine Yönelik Tutum Ölçeği Geçerlik ve Güvenirlik Çalışması. *Electronic Turkish Studies, 13*(11), 1669-1686.

Kaleli, Y. S. (2020). Investigation of the Relationship between Pre-Service Music Teachers' Attitudes towards Teaching Profession and Their Self-Efficacy Beliefs. *International Journal of Research in Education and Science, 6*(4), 580-587.

Karadağ, R. (2012). Türkçe Öğretmeni Adaylarının Öğretmenlik Mesleğine İlişkin Tutumları ve Öğretmenlik Mesleğini Tercih Nedenleri. *Humanities Sciences, 7*(2), 44-66.

Karasar, N. (2007). *Bilimsel araştırma yöntemi* (17. Baskı). Ankara: Nobel.

Kayri, M. (2009). Araştırmalarda gruplar arası farkın belirlenmesine yönelik çoklu karşılaştırma (post-hoc) teknikleri. *Journal of Social Science, 19*(1). 51-64.

Kepenekçi, Y. K. (2004). Sınıf öğretmenlerine göre hoşgörü. *Kuram ve Uygulamada Eğitim Yönetimi, 38*(38), 250-265.

Khitruk, V. V., & Ulianova, O. A. (2012). Inclusive tolerance as a basis of professional competence of prospective teachers. *Problems of Education in The 21st Century, 43*, 21-32.

Kiralp, F. S. S., & Bolkan, A. (2016). Relationship between candidate teacher's attitude towards teaching profession and their life satisfaction levels. *The Anthropologist, 23*(1-2), 11-20.

Kocaarslan, G. E. (2018). Sınıf öğretmenliği öğrencilerinin görsel sanatlar dersinin öğretimine yönelik öz-yeterlik inançları ve öğretmenlik mesleğine yönelik tutumlarının incelenmesi (Yüksek Lisans Tezi), Çanakkale Onsekiz Mart Üniversitesi, Eğitim Bilimleri Enstitüsü, Çanakkale.

Kontas, H. (2016). The Effect of an Education-Themed Movie on the Academic Motivation of Teacher Candidates and Their Attitude Towards Teaching Profession. *Journal of Education and training studies, 4*(6), 93-103.

Mailool, J., Retnawati, H., Arifin, S., Kesuma, A. T., & Putranta, H. (2020). Lecturers' Experiences in Teaching Soft Skills in Teacher Profession Education Program (TPEP) in Indonesia. *Problems of Education in the 21st Century, 78*(2), 215-234.

MEB (2017). Öğretmenlik Mesleği Genel Yeterlilikleri. https://oygm.meb.gov.tr/meb_iys_dosyalar/2017_12/11115355_YYRETMENLYK_MESLEYY_GENEL_YETERLYKLERY.pdf , 27.04.2022'de erişim sağlandı.

Mutluer, C. (2015). Sosyal Bilgiler Öğretmen Adaylarının "Hoşgörü" Kavramına İlişkin Metaforik Algıları. *Tarih Okulu Dergisi*, *8*(22), 575-595.

Nakip, C., & Özcan, G. (2016). Öğretmen Adaylarının Öğretmenlik Mesleğine Yönelik Öz-Yeterlik İnançları İle Öğretmenlik Mesleğine Yönelik Tutumları Arasındaki İlişki. Mersin University Journal of the Faculty of Education, 12(3).

Oğuz, A. & Topkaya, N. (2008). Ortaöğretim Alan Öğretmenliği Öğrencilerinin Öğretmen Özyeterlik İnançları ile Öğretmenliğe İlişkin Tutumları. Akademik Bakış, 14(1), 23–36.

Özdamar, K. (1999). *Paket Programlar İle İstatistiksel Veri Analizi 1*. Eskişehir: Kaan Kitabevi.

Özden Çelik, E. (2013). Değer aktarımında sınıf öğretmenlerinin rolü. (Yayınlanmamış yüksek lisans tezi). Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü, Kocaeli

Özdilekler M. A. (2016). Sınıf Öğretmenlerinin Degerler Aktarımındaki Rollerinin Degerlendirilmesi (Yükseklisans Tezi). Yakın Doğu Üniversitesi, Eğitim Bilimleri Enstitüsü, Lefkoşa, Kıbrıs.

Pallant, J. (2010). *Spss survival manual: A step-by-step guide to data analysis using Spss.* New York: McGraw Hill.

Pasamonk, B. (2004). The paradoxes of tolerance. *The social studies, 95*(5), 206-210.

Pehlivan, K. B. (2008). Sınıf öğretmeni adaylarının sosyo-kültürel özellikleri ve öğretmenlik mesleğine yönelik tutumları üzerine bir çalışma. *Mersin Üniversitesi Eğitim Fakültesi Dergisi, 4*(2), 151-168.

Shaheen, F., Kashif, M. F., Daud, H., & Tariq, M. (2017). Exploring the attitude of prospective teachers towards teaching profession. *The Sindh University Journal of Education, 45*(2), 29-43.

Sharbain, I. H. A., & Tan, K. E. (2012). Pre-service teachers' level of competence and their attitudes towards the teaching profession. *Asian Journal of Social Sciences & Humanities, 1*(3), 14-22.

Şahin, F. S. (2010). Teacher candidates' attitudes towards teaching profession and life satisfaction levels. *Procedia-Social and Behavioral Sciences, 2*(2), 5196-5201.

Şahin, M. C. (2009). Yeni Binyilin Öğrencileri'nin Özellikleri. *Anadolu Üniversitesi Sosyal Bilimler Dergisi, 9*(2), 155-172.

Şencan, H. (2005). *Sosyal ve davranışsal ölçümlerde güvenirlik ve geçerlilik.* Ankara: Seçkin Yayıncılık.

Tabachnick BG, Fidell LS. (2001). *Using Multivariate Statistics,* (4th Ed.), Boton: Allyn&Bacon.

Türe, H., & Ersoy, A. F. (2014). Sosyal bilgiler öğretmenlerinin hoşgörü algısı. *Journal of Social Studies Education Research, 5*(2), 31-56.

Ubuz, B. ve Sarı, S. (2009). Sınıf öğretmeni adaylarının iyi öğretmen olma ile ilgili görüşleri. *Ondokuz Mayıs Üniversitesi Eğitim Fakültesi Dergisi, 28*, 53- 61.

Uca, M. A. (2015). Eğitim fakültesi öğrencilerinin öğretmenlik mesleğine yönelik tutumları ile hoşgörü değerine sahip olma düzeyleri arasındaki ilişki (Yüksek Lisans Tezi). Yüzüncü Yıl Üniversitesi, Eğitim Bilimleri Enstitüsü, Van.

UNESCO, (1995). Declaration of Principles on Tolerance https://unesdoc.unesco.org/ark:/48223/pf0000151830

Uyanık, G. (2017). Sınıf öğretmeni adaylarının öğretmenlik mesleğine yönelik tutumlarının çeşitli değişkenler açısından incelenmesi: Boylamsal bir araştırma. *Karaelmas Eğitim Bilimleri Dergisi, 5*(2), 196-206.

Üstüner, M. (2006). Öğretmenlik mesleğine yönelik tutum ölçeğinin geçerlik ve güvenirlik çalışması. *Kuram ve Uygulamada Eğitim Yönetimi, 45*, 109–127.

Yalçınkaya, T. (2016). Sözdebilim Temalı Bilimin Doğası Öğretiminin Fen Bilgisi Öğretmen Adaylarının Sözdebilim Algılarına ve Eleştirel Düşünme Becerilerine Etkisi. Yüksek Lisans Tezi. Mersin Üniversitesi Eğitim Bilimleri Enstitüsü, Mersin.

The Effect of the Literature Circle Technique on Preservice Teachers' Attitudes towards Book Reading Habit

Research Article

Nilüfer SERIN¹, Emine Damla TURAN²

¹*Trabzon University, Faculty of Education, Department of Turkish and Social Sciences Education, Trabzon, Turkey* 0000-0003-3747-0981

²*Dokuz Eylül University, Department of Turkish Language, Izmir, Turkey* 0000-0002-1774-4423

ARTICLE INFO	ABSTRACT
Article History: Received: 21.10.2021 Available online: 27.06.2022	A literature circle is a collaborative learning technique that can be used in developing reading skills and acquiring a reading habit. It is a reading activity in which students read the books that they choose with their group mates and discuss the chapters that they read in accordance with the roles that they choose. This study aimed to determine the effect of the literature circle technique on preservice Turkish teachers' attitudes towards reading habits and explore their views on the literature circle technique. To this end, a 9-week practice in which the literature circle technique was used was conducted with preservice Turkish teachers. A descriptive mixed method research design was used in the study. A quasi-experimental pretest-posttest control group design was used in the quantitative part of the research. The sample consisted of 75 preservice teachers studying in the Turkish language teaching department of a state university. The data were collected using the "Attitude Scale Regarding Reading Habits" developed by Gömleksiz (2004) and a semi-structured interview form. The attitude scale was administered as a pretest and a post-test, and the interview form was administered after the implementation. The findings showed that the literature circle technique has a positive effect on developing preservice teachers' attitudes towards reading habits. **Keywords:** Literature circle; reading habit; attitude; preservice teachers

Introduction

The adoption of a constructivist approach to curriculum development and the changing needs in today's world have highlighted the importance of supporting students' skills that are neglected in traditional teaching approaches, such as teamwork, collaboration, communication, leadership, intrinsic motivation, and self-confidence. This, in turn, has led to the need to use different methods and techniques in classes. Because Turkish language classes focus on versatile outcomes, they require the systematic use of various methods and

¹ Corresponding author's address: Trabzon University
Telephone: +904624551681
e-mail: niluferserin@trabzon.edu.tr

techniques. Otherwise, it is less likely to achieve the desired outcomes in Turkish language classes that aim to develop the four basic language skills.

Collaborative learning is one of the effective constructivist teaching methods that can be used in many classes including Turkish language classes. High student motivation and student interaction, in particular, provide a great advantage in terms of learning. Collaborative learning can be defined as a process of learning emphasising that students work in small groups to solve a problem and perform a task by facilitating both their own learning and their groupmates' learning (Demirel, 2007; Ekinci, 2007; Gürol, 2004; Johnson et al., 2016; Ün Açıkgöz, 1992). A significant number of studies have reported the effectiveness of collaborative learning in Turkish language classes and its contribution to the development of students' basic language skills (Ekinci, 2018; Gümüş & Buluç; 2007; Güngör Kılıç, 2004; Karakoyun, 2010; Kardaş, 2014; Kırbaş, 2010; Maden, 2011; Soysal, 2019; Uysal, 2009).

Literature circles are among the techniques that can be used to improve reading skills in Turkish language classes. A literature circle is a collaborative reading activity in which students group together based on their choices of books, meet regularly to discuss their reading, and communicate their experiences with classmates after finishing reading the selected books (Daniels, 2002). It is a student-centred practice where students are both independently active and take responsibility within the group. Structured discussions in literature circles increase students' awareness of their reading and give students the opportunity to do an in-depth review of the texts that they have read (Campbell Hill, 2010).

The idea of a literature circle emerged from the incorporation of book club practices by teachers into the classroom environment. Karen Smith was the first to use this technique in her classroom in 1982; Kathy Short and Gloria Kaufman were the first to use the literature circle term in 1984 (Daniels, 2002). In the following years, literature circles were successfully adopted for almost all grades from primary school third grade up to secondary and higher education.

How to do literature circles

During the first week of the literature circle, a meeting is held to inform students about how to implement the technique and what they should do. At this meeting, the teacher first selects the books to be read and asks students to choose which one they want to read. Students who choose the same book form a group. Groups can range from 2 to 6 people (4 to 5 people are ideal). It is essential that students choose books themselves so that they will willingly participate in the literature circle and embrace the task. A portfolio consisting of task instructions and evaluation forms is distributed to each group. Each student first fills out their own individual book checklist. Then, groups decide when to finish reading the book and divide the book up into parts accordingly. They also record this information in the group book checklist. After the roles/tasks are defined for the next meeting, the date of the meeting is scheduled. The roles that students take change at each meeting. Students read their books individually but have the opportunity to share them with their friends at meetings. Everyone participates in the discussion at the meeting in accordance with their role and completes the role sheets. Once all groups finish reading their books and completed their scheduled meetings, they collectively decide what kind of a project to undertake and prepare their projects by assigning tasks. At the end of the process, all groups present their projects. In this way, other students in the classroom also learn about many books. The technique can be repeated many times throughout the year through the selection of new books (Avcı et al., 2010; Daniels, 2002; Moeller & Moeller, 2007; Neamen & Strong, 2001).

In a literature circle, students are expected to read the book carefully, take notes while reading, actively participate in the process, and develop products. These expectations are realised through roles (Avcı et al., 2010). Because roles in the literature circle rotate at each meeting, students should be informed about all roles and provided with role sheets for each role. The basic roles that must be fulfilled at every meeting include a

questioner, literary luminary, connector, and illustrator. Depending on the number of students in the group and at the discretion of the teacher and students, optional roles can be assigned, such as a summariser, researcher/investigator, word wizard/vocabulary enricher, predictor, scene setter/travel tracer, character analyst, and movie critic. Students can assume two roles if necessary (Boardman Moen, 2004; Daniel, 2002). Discussions are conducted depending on the roles that students take. Everyone examines the book in line with their role and discusses it with their friends at meetings. The roles in the literary circle are explained below (Avcı, Yüksel & Akıncı, 2010; Daniels, 2002; Doğan, Yıldırım, Çermik & Ateş, 2018):

Basic roles

Questioner: A questioner prepares a list of questions that the group will want to discuss about the chapter that has been read. He/she asks questions like; "What were you wondering about while you were reading? Did you have questions about what was happening? What did a word mean? What did a character do? What was going to happen next? Why did the author use a certain style? Or what did the whole thing mean? He/she is also responsible for ensuring that all group members participate in the discussion

Literary luminary: A literary luminary selects various paragraphs or sentences from the book for discussion with the group. He/she helps other friends by illuminating an interesting, funny, surprising, important, and remarkable point in the book. He/she takes notes of passages that are worth re-reading and explains why he/she has chosen them. In meetings, he/she reads the chapter aloud or has people read it and discusses it with groupmates.

Connector: A connector finds connections between the book that has been read and the outside world. He/she connects what they have read with past experiences, events at school or in society, similarities in other times and places, events in the world, other people or problems, news, other books and stories, other writing on the same subject, or other writing by the same author.

Illustrator: An illustrator draws a picture about the part that has been read. It can be a sketch, cartoon, diagram, flowchart, or stick-figure scene. The picture to be drawn can be something that is discussed in the text, it can be any emotion or thought that reading makes them feel, or it can be an element of the book (subject, event, character, place). He/she then shows the drawing to have a conversation about it. After expressing their opinion, the group tells what the painting means and what it represents.

Optional roles

Summariser: A summariser prepares a brief summary of the chapter that has been read. The summary should contain characters, important events, and other important information. The summary makes it easier for the group to remember the reading before the discussion.

Researcher/investigator: A researcher gathers basic information about the book. This might include the geography, weather, culture, or history of the setting of the book. It might be information about the author and his/her life and other works. It might be information about the period of time portrayed in the book; pictures, objects, or materials that illustrate the elements of the book; the history and derivation of words or names used in the book; or a piece of music that reflects the book or the time. This is *not* a formal research report. The idea is to find some information or material that helps the group understand the book better.

Word wizard/vocabulary enricher: A word wizard chooses interesting or new words in the book and finds their meanings. He/she lists these words, writes the pages that they appear in the book, and finds their meaning from the dictionary. He/she makes sure that all words are discussed within the group.

Predictor: A predictor makes predictions about what might happen next in light of what he/she has read so far. He/she makes predictions about what a character will do, what the next event will be, or where the next event takes place. He/she shares these predictions with groupmates.

Scene setter/Travel tracer: A scene setter describes in detail the place(s) where the events take place. He/she gives descriptions or draws an action map or diagram to tell the place where the action starts, the place where the main event takes place, and the place where the events end.

Character Analyst: A character analyst introduces the characters in the book. He/she identifies the traits of the characters, what they like, and their relationships with other characters. To do this, he/she can use visuals about the characters such as a family tree and a concept map.

Movie Critic: If the book has been adapted into a movie, he/she compares the flow of the book with that of the movie. He/she comes to the discussion after watching the movie and tells groupmates about the similarities and differences between the book and the movie. He/she comments on the contribution or damage of these differences to the film if any.

Apart from the role sheets separately designed for each role, many other forms are also used throughout the literature circle practice. They include an individual book checklist, group book checklist, group instruction sheet, literature circle self-evaluation form, student self-evaluation form, meeting self- and peer-evaluation form, teacher observation form, role assessment form, and final project assessment rubric (Daniels, 2002; Neamen & Strong, 2001). These forms are important for the regular functioning of literature circles and for the teacher to supervise.

After students complete their books and discussions, they begin to prepare projects. Projects are particularly important for students to create a product together and introduce their books to others in the class who have not read the book. Daniels (2002) listed possible projects as follows: dramatization, posters, an interview with the author, street interviews, an advertising campaign, news broadcast, a sequel, panel debates, a new cover design, a picture book, a family tree of characters, impersonation of characters in costume, letters to characters, a new character for the book, and a new ending for the book.

The teacher serves as a guide throughout the literature circle practice who provides information at the first meeting, prepares and delivers forms and sheets, and helps students to choose books, create groups, and plan a schedule. The teacher can participate in discussions and ask questions at subsequent meetings so that he/she can check whether the groups are active, whether they are performing their roles, and what they have learned from the part that they have read. Teacher observation is extremely important for evaluating group meetings (Daniels, 2002, 2003).

Related research

A search of the literature has shown that the literature circle technique contributes to students in multiple ways. The technique is extremely instrumental in developing the habit of reading and popularising reading (Burda, 2000; Culli, 2002; Olsen, 2007; Pitton, 2005). There is also evidence that literature circles promote achievement in reading comprehension (Blum et al., 2002; Briggs, 2010; Diego-Medrano et al., 2016; McElvain, 2010; Meredith, 2015; Mizerka, 1999; Purifico, 2015; Varita, 2017; Whittingham, 2013). Literature circles are also known to increase motivation for reading (Hardin, 2002) and promote self-confidence in communicating ideas, readings, and understandings (Brabham & Villaume, 2000; Culli, 2002; Olsen, 2007).

There are few studies on this topic in Turkey. The first study carried out by Avcı et al. (2010) introduced the literature circle technique. The subsequent studies investigated the effect of literature circles on reading comprehension (Altınkaya, 2019; Avcı et al., 2013; Balantekin, 2016; Balantekin & Pilav, 2017; Sarı et al., 2018) and critical reading skills (Demir, 2019; Özbay & Kaldırım, 2015; Tan et al., 2019). Doğan et al. (2018) carried out a project on the literature circle technique.

The reading circle technique has been shown to be an effective technique that can be used in Turkish classes and provides important benefits such as improving reading skills, gaining reading habits, making

people love reading, and acquiring critical reading skills. Turkish teachers should know the principles of the literary circle technique well and should be involved in the process to effectively use literary circles in Turkish classes. Thus, it would be beneficial for preservice Turkish teachers to have the chance to practice the technique by participating in the research process themselves before starting their profession. The literature includes a limited volume of research that has been conducted with preservice teachers and focused on issues such as critical reading and self-efficacy perceptions (Özbay & Kaldırım, 2015), reading comprehension levels (Yıldırım, Ateş, Çermik & Doğan, 2019), and views on roles or methods (Doğan, Çermik, Ateş & Yıldırım, 2018; Çermik, Doğan, Ateş & Yıldırım, 2019). It is extremely important that teachers, who are expected to help students gain reading habits and will be role models for students, have their own reading habits and share this with their students in the classroom. Teachers' reading habits and attitudes are effective in helping their students gain reading habits and develop attitudes towards reading. "It would be a mistake to think that a teacher can transfer a habit and attitude that s/he does not have to his/her students" (Applegate & Applegate, 2004: 555). Native language teachers, in particular, have a greater responsibility in inculcating reading habits in students. Thus, it is of vital importance for preservice Turkish teachers to acquire reading habits and develop an attitude towards reading. Although it is known that the reading circle technique is effective in gaining reading habits, there is little research that measured the effect of the reading circle technique on preservice Turkish teachers' attitudes towards reading habits. However, it is necessary to determine and develop the attitudes of preservice Turkish teachers, who will be native language teachers and play an active role in inculcating reading habits in students. This research was conducted based on the assumption that teaching the reading circle technique may give preservice Turkish teachers a chance to experience it and have a positive effect on their attitudes towards reading habits. Thus, the strengths and weaknesses of the technique will be explored and whether the technique influences attitudes towards reading habits will be determined. Additionally, it is believed that the findings of this research will contribute to the improvement of teacher education programs.

Against this background, this research aimed to examine the effect of the literature circle technique on the attitudes of preservice teachers of Turkish towards reading habits and explore their views on literature circles. To this end, answers were sought to the following research questions:

1. Is there a significant difference between the pretest and posttest attitudes towards reading habits scores of the experimental group in which the literature circle technique was implemented?
2. Is there a significant difference between the pretest and posttest attitudes towards reading habits scores of the control group?
3. What are the views of preservice teachers about the literature circle technique?

Methods

Research design

This research adopted a mixed methods research approach where quantitative and qualitative research methods support each other. An explanatory sequential mixed methods design was used. An explanatory sequential design consists of two stages where quantitative data are first gathered and then supported and explained with qualitative data (Yıldırım & Şimşek, 2008). A quasi-experimental pretest-posttest control group design was used in the quantitative part of the research to measure preservice teachers' attitudes towards reading habits. Because one group of preservice teachers was assigned as the experimental group and the other group as the control group, it is called quasi-experimental. In quasi-experimental research, researchers usually do not artificially create groups, but instead prefer groups that already exist to avoid disrupting education (Creswell, 2012; Gliner et al., 2015; Mertens, 2010).

At the end of the experimental procedure, a qualitative case study design was used to explore preservice teachers' views about the literature circle technique, and semi-structured interviews were conducted with preservice teachers. A case study is an in-depth investigation of one or multiple events, environments, programs, social groups, or other interconnected systems (Yin, 1994: 185).

Sample

The sample consisted of 75 third-year preservice teachers studying Turkish language teaching at a state university in 2019. The sample was selected using convenience sampling, which is a type of purposive sampling. Convenience sampling adds speed and practicality to research because the researcher selects an immediately accessible sample (Yıldırım & Şimşek, 2008).

One section of third-year preservice teachers was assigned as the experimental group and the other section as the control group. The experimental group consisted of 38 preservice teachers and the control group consisted of 37 preservice teachers. Among the experimental group, 30 were women, and 8 were men. Among the control group, 26 were women and 11 were male. The participants were between the ages of 20-27. Participation was voluntary and the preservice teachers were informed about the research. The participants stated that they had no previous knowledge about the reading circle technique. Five participants did not attend the entire implementation process; thus, they were excluded from the research and the research was conducted with a total of 75 preservice teachers.

Data collection instruments

Two data collection instruments were used in line with the purpose of the research. The first was the "Attitudes towards Reading Habits Scale" developed by Gömleksiz (2004). The scale consists of 30 items, 9 of which are negatively phrased, and 21 of which are positively phrased. The items are rated on a 5-point Likert-type scale ranging from 5 = strongly agree to 1 = strongly disagree. The negatively phrased items are reverse scored. The highest possible score is 150 and the lowest possible score is 30. The scale has 6 subscales: love, habit, necessity, wish, influence, and benefit.

Before starting the research, a validity and reliability study was conducted with 50 preservice teachers studying in different departments at the same university. In a study testing the validity and reliability of the scale with a group of university students, the Cronbach's alpha coefficient was found to be .89. The reliability coefficients for each subscale range from .70 to .85.

The other data collection instrument was a semi-structured interview form developed by the researchers. The questions in the interview form were examined by two subject-matter experts to ensure the content validity of the form and the form was revised accordingly. The form consisted of 4 questions asking preservice teachers' views about the literature circle technique in relation to their experiences with the technique.

Data collection procedure

Before starting the experimental procedure, the "Attitudes towards Reading Habits Scale" was administered as a pretest to both groups at the beginning of the semester. The preservice teachers were given 15 minutes to fill in the scale.

The experimental procedure was scheduled to last 9 weeks. In the first week of the procedure, the researchers informed the preservice teachers in the experimental group about how to implement the literature circle technique. Then, the preservice teachers were asked for their opinions and the books to be read were determined. The selected books are given below.

Table 1. Booklist

1. Literature Circle	2. Literature Circle
Animal Farm-George Orwell	The Metamorphosis-Franz Kafka
The Alchemist-Paulo Coelho	Dead Poets Society-N. H. Kleinbaum
Of Mice and Men-John Steinbeck	Snow-Orhan Pamuk
The Atlas of Misty Continents-İhsan Oktay Anar	The Devil inside Us-Sabahattin Ali
Farewell, Gul'sary!-Cengiz Aytmatov	The Royal Game-Stefan Zweig
Yusuf from Kuyucak-Sabahattin Ali	A Mind at Peace-Ahmet Hamdi Tanpınar
The Loiterer-Yusuf Atılgan	Fahrenheit 451-Ray Bradbury
Forbidden Love-Halid Ziya Uşaklıgil	Little Aga-Tarık Buğra

Based on the book selections, 8 groups of 4 to 5 people were formed. The preservice teachers were provided with the Turkish editions of the selected books. After the groups were clarified, each group chose a group name. The groups assigned roles and divided the books into 3 sections. Thus, each group determined how many pages they should read weekly and decided on their task. The preservice teachers assumed all the basic roles and those who wanted to choose from optional roles took on at least one or at most two roles.

The meetings were scheduled to take place every week. Attention was paid to rotating roles at each meeting. Before the meeting, group instructions were distributed, and the preservice teachers were reminded of their duties. The preservice teachers individually read the books before the meetings. They discussed the books in keeping with their roles for 3 weeks. During these 3 weeks, the preservice teachers separately filled role sheets, individual checklists, and student self-assessment forms specifically designed for their roles. As a group, they also filled out the group control form and the role evaluation form. The meetings lasted approximately an hour. The researchers attended the meetings in the role of guides and monitored the process. The researchers filled out the teacher observation form to evaluate the process every week. The week after the meetings were completed (Week 5), the preservice teachers presented their projects about a subject of their choice to their other friends in the group. The second literature circle was run likewise for 3 weeks. Afterwards, the groups presented their projects for the second book that they read to the other groups in the 9th week of the implementation. The projects prepared by the preservice teachers included designing a book cover, writing a letter to the author or a character in the book, preparing a storyboard, animating the book, preparing a poster, designing the comic of the book, expressing feelings by replacing the characters in the book, writing a diary of a character in the book, writing a song about the book, rewriting the end of the book.

The control group was also given a list of the books that the experimental group were reading, and they were asked to read two of these books. No other intervention was made.

At the end of the procedure, the "Attitudes towards Reading Habits Scale" was re-administered as a posttest to both groups. Then, the views of the preservice teachers in the experimental group were gathered using the semi-structured interview form. The interviews with the preservice teachers were planned to last approximately 15 minutes and were carried out face to face by the researchers.

Data analysis

Statistical analysis was performed using SPSS software version 26. A dependent samples t-test was performed to compare the experimental and control groups in terms of their pretest and posttest scores on the Attitudes towards Reading Habits Scale. Before the data analysis, the Kolmogorov-Smirnov test was performed to check the normality of the data and skewness and kurtosis values and histograms were examined. The results of the Kolmogorov-Smirnov test showed that the pretest and posttest data of the experimental and control groups were normally distributed; thus, parametric tests were used.

The data from the semi-structured interviews were analysed using content analysis. Content analysis is used to examine the content of any text or document and explain it numerically or statistically. In content analysis, researchers create categories using coding units and display them in the form of numerical data (Ekiz, 2013). To carry out content analysis, the researchers coded preservice teachers' views and sorted out similar codes into themes. To ensure the reliability of the research, the two researchers coded the data and identified the themes separately. Then, they reached an agreement by comparing the codes and themes that they separately created.

Findings

A dependent sample t-test was performed to find out whether there was a significant difference between the pretest and posttest scores of the experimental and control groups on the Attitudes towards Reading Habits Scale.

Table 2. T-Test results for the experimental group preservice teachers' attitudes towards reading habits before and after the literature circle practice

Subscales	Measurement	N	X̄	Total	SD	t	p
Total Scale	Pretest	38	4.19	125.94	.483	-5.515	.000
	Posttest	38	4.72	141.81	.240		
Love	Pretest	38	4.09	28.65	.722	-3.773	.001
	Posttest	38	4.62	32.36	.352		
Habit	Pretest	38	4.23	16.94	.493	-4.777	.000
	Posttest	38	4.74	18.97	.287		
Necessity	Pretest	38	4.29	17.18	.572	-2.662	.011
	Posttest	38	4.61	18.47	.430		
Wish	Pretest	38	3.97	11.92	.756	-4.245	.000
	Posttest	38	4.62	13.86	.373		
Influence	Pretest	38	4.20	16.81	.595	-5.154	.000
	Posttest	38	4.76	19.05	.312		
Benefit	Pretest	38	4.30	34.42	.541	-5.933	.000
	Posttest	38	4.88	39.07	.245		

As seen in Table 2, the mean pretest score of the experimental group on the Attitudes towards Reading Habits Scale was 4.19 and the mean posttest score was 4.72. This difference (t = 5.515; p = .003; p < .05) was statistically significant. The total mean pretest score was 125.94 and the total mean posttest score was 141.81. In other words, after the literature circle practice, the mean attitudes score of the experimental group increased by 15.87 points. These results indicate that the literature circle technique has a significant effect on improving the attitudes of the participants in the experimental group towards reading habits.

Looking at the mean scores on the love, habit, necessity, wish, influence, and benefit subscales of the Attitudes towards Reading Habits Scale, there was also a significant increase in the mean scores on all the subscales (p < .05). This result is important in terms of showing that the literature circle technique provides multiple benefits.

Table 3. T-Test results for the control group preservice teachers' attitudes towards reading habits before and after the literature circle practice

Subscales	Measurement	N	X̄	Total	SD	t	p
Total Scale	Pretest	37	4.14	124.45	.442	-2.295	.028
	Posttest	37	4.38	131.59	.582		
Love	Pretest	37	4.10	28.72	.519	-1.173	.248
	Posttest	37	4.24	29.72	.763		

Habit	Pretest	37	4.17	16.70	.542	-1.859	.071
	Posttest	37	4.41	17.67	.714		
Necessity	Pretest	37	4.14	16.59	.521	-.430	.670
	Posttest	37	4.20	16.83	.693		
Wish	Pretest	37	4.02	12.08	.529	-2.467	.019
	Posttest	37	4.33	13	.662		
Influence	Pretest	37	4.13	16.54	.515	-2.138	.039
	Posttest	37	4.39	17.59	.630		
Benefit	Pretest	37	4.22	33.81	.519	-3.044	.004
	Posttest	37	4.59	36.75	.592		

As seen in Table 3, the mean pretest score of the control group on the Attitudes towards Reading Habits Scale was 4.14 and the mean posttest score was 4.38. This difference (t = -2.295; p = .028; p < .05) was statistically significant. The total mean pretest score was 124.45 and the total mean posttest score was 131.59. Comparing the mean pretest and posttest scores of the control group, it is apparent that the mean score increased by 15.87 points. According to these results, the attitudes towards reading habits also increased in the control group in which the participants did individual reading. The increase in the score of the control group might be because they also read the same books, albeit individually. Looking at the results in Table 2 and Table 3, it is apparent that the mean pretest scores of the two groups were quite close; however, according to the mean posttest scores of the participants in the experimental group, their attitudes towards reading habits significantly increased.

Looking at the mean pretest and posttest scores of the control group on the subscales, there was a statistically significant difference between their pretest and posttest scores on the wish, influence, and benefit subscales (p < .05), while no significant difference was observed in the love, habit, and necessity subscales. These results are important in showing that individual reading enabled the participants in the control group to achieve a certain level of increase in their attitudes, while individual reading was not as useful as the literature circle.

Table 4. T-Test results for the posttest scores of the experimental and control groups

Subscales	Groups	N	X̄	Total	SD	t	p
Total Scale	Experimental	37	4.71	141.81	.239	3.253	.002
	Control	37	4.38	131.59	.582		
Love	Experimental	38	4.62	32.36	.351	2.438	.020
	Control	37	4.24	29.72	.763		
Habit	Experimental	38	4.74	18.97	.288	2.594	.014
	Control	37	4.41	17.67	.714		
Necessity	Experimental	38	4.61	18.47	.431	3.311	.002
	Control	37	4.20	16.83	.693		
Wish	Experimental	38	4.62	13.86	.372	2.273	.029
	Control	37	4.33	13	.662		
Influence	Experimental	38	4.76	19.05	.314	3.469	.001
	Control	37	4.39	17.59	.630		
Benefit	Experimental	38	4.88	39.07	.248	2.805	.008
	Control	37	4.59	36.75	.592		

Table 4 shows the t-test results for the posttest scores of the experiment and control groups. As shown in Table 4, the mean posttest score of the experimental group was 4.71 and that of the control group was 4.38. This difference (t = 3.253; p = .002; p < .05) was statistically significant. Looking at the mean scores on the subscales, there was also a statistically significant difference (p < .05) between the experimental and the control groups in their scores on all the subscales. This result indicates that the literature circle practice was useful in

improving preservice teachers' attitudes towards reading habits when the experimental group were compared to the control group.

Preservice teachers' views about the literature circle

In the light of the data obtained from the interview forms, the views of the preservice teachers of Turkish about the literature circle technique were subsumed under three main headings: views about the technique, the benefits of the technique, and the features of the technique that they would like to revise. The themes and codes are presented in tables.

Table 5. Preservice teachers' views about the literature circle technique

Themes	Sub-themes	Frequency	Percentage	Preservice Teachers
Views	Fun	17	44.73	T1, T2, T5, T9, T12, T13, T15, T16, T17, T19, T20, T22, T23, T25, T29, T32, T38
	Intriguing	12	31.57	T6, T8, T11, T13, T20, T21, T23, T25, T31, T32, T33, T37
	Effective	6	15.78	T6, T12, T17, T18, T20, T29
	Encouraging	6	15.78	T4, T10, T12, T20, T24, T33
	Creative	6	15.78	T8, T20, T22, T27, T30, T34
	Informative	4	10.52	T5, T15, T22, T27

The participants most frequently described the literature circle technique as "fun" and "intriguing". Those who found the literature circle technique fun made such remarks: "I think the literature circle is a fun activity." (T15), "Using this technique, I can both introduce books to students and make the reading activity enjoyable, which students find boring." (T16), and "In this way, students will develop reading habits and I think they will have fun while discussing with their groupmates." (T19). The participants who described the literature circle technique as intriguing expressed their views as follows: "The role that students take may arouse their curiosity and make them more read enthusiastically." (T13), and "The sense of curiosity develops with new ideas. It is an intriguing activity." (T37).

Additionally, the participants emphasised that literature circles encourage reading and promote effective reading and learning especially while teaching subjects. Example views expressed by the participants who described the technique as effective are as follows: "I would use it in the classroom as it enables more effective and permanent learning." (T12), "It promotes effective and enjoyable reading." (T17), and "I think it is an effective practice in general." (T20).

The participants expressed that the literature circle technique is creative and develops creativity and creative thinking as follows: "Creativity is at the forefront in some roles and projects." (T22), and "I believe it is useful for students to develop thinking, creativity, and various cognitive skills." (T30). They also noted that the technique is informative. Example remarks are as follows: "It is an activity that encourages students to research and to look for information." (T5), and "Children select the book they want to read and acquire a deep knowledge of the book thanks to the responsibilities of the roles." (T22).

The participants were asked the question "Do you find the literature circle technique beneficial? If so, what are its benefits?". All the participants found the technique beneficial. As shown in Table 6 below, the participants' views about the benefits of the technique were grouped under two themes: individual benefits and social benefits.

Table 6. Benefits of the literature circle technique

Themes	Sub-themes	Frequency	Percentage	Preservice Teachers
	Helps develop the habit of reading	38	100	T1, T2, ..., T37, T38

	Contributes to reading comprehension skills	38	100	T1, T2, ..., T37, T38
	Builds a sense of responsibility	16	42.10	T6, T8, T11, T12, T13, T14, T21, T22, T23, T27, T28, T29, T31, T32, T35, T38
	Develops a love for books	15	39.47	T2, T8, T11, T12, T13, T16, T19, T22, T26, T27, T29, T30, T35, T37, T38
	Helps adopt a multifaceted and critical perspective	7	18.42	T1, T3, T5, T7, T18, T26, T38
	Facilitates retaining the book in the mind	5	13.15	T5, T11, T12, T20, T27
Individual benefits	Helps develop multiple perspectives	5	13.15	T1, T6, T12, T18, T35
	Teaches respect for new ideas	4	10.52	T5, T17, T28, T29
	Helps develop a reading routine	3	7.89	T27, T28, T32
	Helps get to know new books	3	7.89	T4, T16, T19
	Develops a love for research	2	5.26	T33, T37
	Enriches vocabulary	2	5.26	T5, T11
	Promotes self-confidence	1	2.63	T28
	Enriches imagination	1	2.63	T25
	Contributes to becoming a conscious reader	1	2.63	T3
	Facilitates cooperation	9	23.68	T1, T5, T8, T12, T17, T20, T23, T29, T30
	Enhances group interaction	5	13.15	T4, T12, T13, T20, T32
	Exchange of ideas	5	13.15	T2, T3, T19, T26, T32
Social Benefits	Helps develop discussion skills	4	10.52	T5, T19, T28, T36
	Promotes self-expression within the group	1	2.63	T7
	Facilitates making new friendships	1	2.63	T12

Looking at the table above, it is apparent that the participants made more mentions of individual benefits of a literature circle. The participants most frequently mentioned the contribution of the literature circle technique to the habit of reading and reading comprehension skills. All the participants held the view that the literature circle technique helps students build the habit of reading. Example views are as follows: "It can help get into the habit of reading. Even if students are unwilling to read, they emulate their friends as they are reading or they want to fulfil their responsibilities as pages are divided up." (T4), "I think it helps make a habit of reading because students will see the aspects of the book that they have not noticed earlier and like it more during discussions." (T7), "Even a student who does not like to read may develop an interest in reading and gain a habit of reading thanks to this technique." (T8), "As it is an activity that is done together in a friendly environment, children gain a positive perspective towards the book and gain a habit of reading." (T18), "As it is a pleasant activity, it helps students make a habit of reading over time and put books at the centre of their lives." (T24), and "The greatest benefit is to develop the habit of reading because we promote their sense of interest and curiosity by introducing interesting books." (T33).

All the participants held the view that the literature circle technique contributes to reading comprehension skills. Example remarks are as follows: "Reading books to fulfil the tasks require us to focus more on the narrative and the plot, thereby promoting our comprehension, causal reasoning, and critical thinking skills." (T3), "It positively affects students' reading comprehension skills because we examine a book in-depth looking at multiple aspects." (T9), "Some roles such as the summariser, interrogator, and charter analyst prioritise reading comprehension. As all roles are generally based on explaining the book and noticing new information, reading comprehension skills are most likely to improve." (T22), and "Discussion of students with each other helps to draw diverse interpretations from the book, moving beyond simple reading. Students' sense-making skills also improve, and so do reading comprehension skills." (T26).

The participants also stated that the literature circle technique promotes a love for books: "I think it is an effective method to help get into the habit of reading and develop a love for books." (T27), and "I think students will love to read books because they have fun doing it." (T30).

The participants also pointed out the social benefits of the literature circle technique. They most frequently stated that the literature circle technique facilitates collaboration. Example remarks are as follows: "It promotes teamwork and collaboration." (T8) and "It fosters group interaction and cooperation." (T20). They also pointed out that literature circles allow the exchange of ideas, enhance group interaction, and develop discussion skills. Example remarks are as follows: "It enabled us to interact with our friends in the group." (T4) and "While talking about the book, different ideas arise, and people learn to respect these ideas and improve discussion skills." (T5).

The participants were also asked whether there is any feature that they find missing in the reading circle technique or that they would like to change if they use it in their classes. Their responses were subsumed under the following five themes: roles, projects, number of people, implementation, and teacher.

Table 7. Features of the literature circle technique that preservice teachers would like to revise

Themes	*Sub-themes*	*Frequency*	*Percentage*	*Preservice Teachers*
Roles	There should be more roles	5	13.15	T1, T6, T8, T24, T35
	Students should not just focus on their own roles	4	10.52	T3, T7, T19, T22
	Some roles should be revised	3	7.89	T1, T10, T32
	There should be no fixed or mandatory roles	3	7.89	T8, T19, T31
	Role sheets should be revised	2	5.26	T3, T26
	There should be fewer roles	1	2.63	T32
Projects	Individual projects should be done	2	5.26	T5, T28
	Projects should be videotaped	1	2.63	T4
	Projects are unnecessary and should be dismissed	1	2.63	T10
Number of people	The number of group members should be increased	2	5.26	T12, T35
	The number of group members should be reduced	2	5.26	T11, T15
Implementation	There should be one discussion and one circle.	2	5.26	T21, T23
Teacher	There should be more than one teacher	1	2.63	T18

Looking at Table 7, it seems that the literature technique does not have many aspects that the participants see as lacking and would like to change. Their suggestions were mostly about roles. Example views are as follows: "I would include more roles." (T24), and "There are too many roles, and some roles may be tough for middle school students. Inappropriate roles should be excluded and there should be fewer roles." (T32). It seems that the preservice teachers disagreed on this issue. Some participants even criticised that some members focused on only their role as follows: "Everyone was just focusing on their own task. So, everyone mostly knew about their subject." (T3), and "A possible criticism might be that everyone focused on only their own role while reading the books. But I think this is due to the reader." (T7). Some of those who pointed out this issue emphasised that this might be due to individual attitudes. Another issue that the participants pointed out was that there should be no mandatory roles. An example remark is as follows: "I would not include a mandatory role because students' level is important, for example, for the role of connector." (T19).

The participants also offered suggestions about projects carried out at the end of the literature circle. For example, a participant argued that members should carry out projects individually as follows: "I would make each member do their projects separately." (T5). As for the number of group members, some participants commented that the number of group members should be increased, while some advocated that it should be reduced. Example views are as follows: "I would increase the number of group members so that many roles could be assigned." (T12), and "I would arrange groups of three members at most so that children could discuss the book easily. It is better to have fewer people." (T11).

Finally, the participants were asked if they would consider using the literature circle technique in their classes when they became professional teachers. Table 8 below shows the data about those who plan to use the technique in their classes.

Table 8. Those who plan to use the literature circle technique in their classes

	Frequency	*Percentage*	*Preservice Teachers*
Yes	38	100	T1, T2, ..., T37, T38
No	0	0	-

All the participants stated that they would like to use the literature circle technique in their classes when they become professional teachers. Example remarks are as follows: "I would use this technique in my classroom so that students could examine a book in depth." (T29), and "I would definitely use it because I want my students to gain different perspectives and enjoy reading books just as I do." (T38) Additionally, some participants remarked that they would use the literature circle technique taking into account grade levels and class sizes. Example remarks are as follows: "The technique can be used in 8th grades, not in lower grades." (T36) "If the physical condition of the classroom and the number and cognitive levels of students are suitable, I will use the technique." (T18), and "I think a literature circle is applicable in classes with a small number of students." (T2).

Conclusion and recommendations

Teachers of Turkish and classroom teachers are the foremost teachers who contribute to improving students' reading skills and help them get into the habit of reading. Thus, inservice teachers and preservice teachers themselves are expected to have good reading skills and reading habits. They also have to be well-informed about this issue and open to new methods to help students in this regard. As a technique that can be used to develop reading skills and reading habits, a literature circle is a collaborative reading activity that allows students to study books in-depth, research, make connections with daily life, and criticise. Thanks to this technique, students could discuss books of their choice with their friends and learn while having fun. This research set out to examine the effect of the literature circle technique on the attitudes of preservice teachers

of Turkish towards reading habits and explore their views on the technique in relation to their experiences of practising literature circles.

In the first stage of this two-stage research, the effect of the literature circle technique on the attitudes of preservice teachers of Turkish towards reading habits was examined. The results of the research showed that the literature circle technique, which is one of the collaborative reading techniques used to promote reading skills, improved preservice teachers' attitudes towards reading habits. The mean pretest and posttest scores of the experimental group were 4.19 and 4.72. This increase in the mean score was statistically significant ($p <$ .05). When the mean posttest scores of the experimental group and the control group ($X = 4.38$) were compared, a statistically significant difference was found. There were also significant differences between the experimental and control groups in their mean posttest scores on the subscales of the Attitudes towards Reading Habits Scale. Although only two reading circles were established in this study, the significant increase in the scores proves the effectiveness of the technique. In accordance with the present results, many studies have shown that literature circles are extremely effective in helping students acquire the habit of reading and love reading (Avcı & Yüksel, 2011; Culli, 2002; Olsen, 2007; Pitton, 2005; Rutherford et al., 2009; Shelton-Strong, 2012). However, only Demir (2019) concluded that the technique had no effect on students' attitudes towards reading habits. This may be due to the implementation of the technique. Studies measuring preservice teachers' attitudes towards reading habits are very rare in the literature.

The reading circle technique gives the opportunity to read books regularly and discuss them by meeting in certain time periods. These activities can contribute to gaining reading habits and developing an attitude towards reading by taking different roles and doing this regularly. The fact that preservice teachers interact with their group mates to share their ideas, discuss their opinions, and do collaborative activities helps them to construct the meaning of books more easily. This also helps them be more willing to read and make reading a habit. The results of the research also support this. Although other studies in the literature support the idea that the reading circle technique contributes positively to the development of attitudes towards reading habits, it is thought that this research will fill an important gap in the field because there has not been a study that has clearly revealed whether it contributes to preservice teachers' reading habits. It is extremely important for preservice teachers to have a reading habit because they will be role models in the future and will help students choose books to read. It can be considered that this technique, which has positive effects, should be added to teacher education curricula and used in lessons related to reading education.

In the second stage of the research, the views of the preservice teachers of Turkish about the literature circle technique were explored. The qualitative results of the research supported the quantitative results. Especially looking at the subscales of the Attitudes towards Readings Habits Scale, it is apparent that the preservice teacher had an increase in their love of books, reading habits, and desire for reading. Consistent with the quantitative data, the qualitative data also suggested an increase in preservice teachers' love of books, reading habits, and desire for reading. Additionally, the items about the benefits of reading in the Attitudes towards Readings Habits Scale are consistent with the results derived from the interview data.

The qualitative results of the research showed that the literature circle technique had a positive effect on preservice teachers' attitudes towards reading habits. All the interviewed preservice teachers stated that the literature circle technique is effective in acquiring the habit of reading. They also noted that factors such as a friendly atmosphere, fun discussions, intriguing activities, encountering interesting books, finding the opportunity to examine all aspects of a book, gaining a sense of responsibility, reading consistently, and spending special time on a book had a great influence on their reading habit. For these reasons, they held the view that they would use the literature circle technique in their classes in the future as it helps students gain the habit of reading.

The preservice teachers' views about the literature circle technique were subsumed under three main headings: views about the technique, the benefits of the technique, and the features of the technique that they would like to revise. The preservice teachers were asked whether they would consider using it in their classes when they became professional teachers, and they all said they would consider using it in the future.

The preservice teachers most frequently described the technique as fun and intriguing, which were followed by effective, encouraging, creative, and informative. Likewise, in a study by Avcı and Yüksel (2011), students found the technique fun and teachers said that students had fun during the literature circle. Making learning fun may be considered one of the reasons that the literature circle technique is loved.

All the preservice teachers stated that they found the literature circle technique beneficial. The preservice teachers' views about the benefits of the technique were grouped under two themes: individual benefits and social benefits. They pointed out that the literature circle technique that they practised provided many individual benefits. They all stated that the literature circle technique is useful in getting into the habit of reading and contributes to reading comprehension skills. This result is also consistent with the results derived from quantitative data. The effectiveness of literature circles in improving reading comprehension has been supported by the findings of many studies (Altınkaya, 2019; Avcı et al., 2013; Avcı & Yüksel, 2011; Balantekin & Pilav, 2017; Briggs, 2010; Diego-Medrano et al., 2016; Kennedy, 2010; Purifico, 2015; Sarı et al., 2017; Thomas, 2013). Literature circles have also been reported to develop a sense of responsibility, multiple perspectives, a reading routine, and a love for books, to promote versatile and critical views of events, to help come to know new books, to facilitate retaining books in the mind, to foster a love for research, to teach respect for new ideas, and to enrich vocabulary and imagination. It can be said that a significant number of individual benefits, such as the habit of reading, reading comprehension skills, reading routine, love for books, getting to know new books, and retaining books in the mind is associated with the perspective on reading. Given the remarks made by the preservice teachers, it would not be wrong to say that they put reading at the centre of their lives and made a habit of reading. The results on individual benefits are in accord with previous research results (Avcı et al., 2013; Avcı & Yüksel, 2011; Çermik et al., 2019; Doğan et al., 2018; Hardin, 2012; McElvain, 2010; Meredith, 2015).

Another theme derived from the preservice teachers' views about literature circles is social benefits. During the interviews, the preservice teachers stated that the literature circle technique promoted new friendships, cooperation, the exchange of ideas, group interaction, self-expression, and discussion skills. These results match those observed in Çermik et al. (2019). It is noteworthy that the preservice teachers made less mention of social benefits than individual benefits although a literature circle is a collaborative activity.

The preservice teachers also offered some suggestions about the literature circle technique. They pointed out some revisions that they would like to make in the literature circle technique with respect to roles, projects, number of group members, implementation, and teachers. It is believed that the revisions that they proposed were mostly individual and uttered due to individual shortcomings within the group.

Taken together, the results of the research show that the literature circle technique positively affects perspectives on reading. The preservice teachers held the view that the technique makes a significant contribution to both themselves and society and they stated that they would like to share it with their students in the future. It is also believed that learning the technique by practising it helped them improve their attitudes towards reading and develop reading habits and they will successfully apply it in their classes and contribute to the development of a similar attitude in their students. Considering that attitudes are formed late, and it is difficult to change attitudes, Turkish teachers have a great responsibility in inculcating the habit of reading in children at an early age. In addition to the existing practices in schools, there is a need for practices that can make students more active and provide them with the opportunity to share and discuss what they read with their friends to help students gain the habit of reading. Every individual who gains the habit of reading will

begin to see books as a need and will continue to read books throughout their lives. With this study, both preservice teachers were given a chance to develop attitudes towards reading habits and they were given the chance to experience a technique that they can apply with their future students.

Based on these results, an important practical implication is to use methods and techniques such as literature circles in Turkish classes and other classes to relieve the monotony of classes and help students gain the habit of reading and improve their reading comprehension skills. Further research can be conducted at all grade levels and in larger groups to investigate the effect of the literature circle technique on preservice teachers. A second broad recommendation might be to offer practical training to preservice teachers in universities and give in-service training and seminars to professional teachers for the dissemination of literature circles and similar methods and techniques.

REFERENCES

Altınkaya, A. (2019). *The effects of literature circle technique on middle school learners' reading comprehension skills and self sufficiency on reading*. (Unpublished master's thesis). Dumlupınar University, Kütahya.

Applegate, A. J. & Applegate, M. D. (2004). The Peter effect: Reading habits of preservice teachers. *The Reading Teacher, 57*(6), 554–563.

Avcı, S. & Yüksel, A. (2011). Cognitive and affective contributions of the literature circles method on the acquisition of reading habits and comprehension skills in primary level students. *Educational Sciences: Theory & Practice, 11*(3), 1285-1300.

Avcı, S., Baysal, N., Gül, M. & Yüksel, A. (2013). The effect of the reading circle method on understanding skills. *Journal of Theoretical Educational Science, 6*, 535-550.

Avcı, S., Yüksel, A. & Akıncı, T. (2010). Literature circles: An effective method to develop reading habit. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Journal of Educational Sciences, 32*, 5-24.

Balantekin, M. & Pilav, S. (2017). The effect of the reading circle method on understanding skills. *Journal of Social Sciences Kirikkale University, 7*, 149-170.

Balantekin, M. (2016). *The effect of reading cycle method on the reading comprehension skill.* (Unpublished master's thesis). Kırıkkale University, Kırıkkale.

Blum, H. T., Lipsett, L. R. & Yocom, D. J. (2002). Literature circles: A tool for self determination in one middle school inclusive classroom. *Remedial and Special Education, 23*(2), 99-108.

Boardman Moen, C. (2004). *Literature circle role sheets*. Dayton: Lorenz Company.

Brabham, E. G. & Villaume, S. (2000). Questions and answers: continuing conversations about literature circles. *The Reading Teacher, 54*(3), 278-280.

Briggs, S. (2010). *Using literature circles to increase reading comprehension in third grade elementary students*. (Unpublished master's thesis). Dominician University of California, California.

Burda, K. (2000). Living and learning: A four-year journey into literature circles. *Primary Voices K-6, 9*(1), 17-22.

Campbell Hill, B. (2010). *Literature circles and the heart of response (grades 1-8).* CEESA Conference Tallinn, Estonia.

Çermik, H., Doğan, B., Ateş, S. & Yıldırım, K. (2019). Preservice teachers' views on literature circles. *The Journal of Academic Social Science, 7*(87), 1-15.

Creswell, J. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Boston: Pearson.

Culli, L. M. (2002). *Investigation of literature circles in the middle school language art classroom.* (Unpublished master's thesis). Chapman University, California.

Daniels, H. (2002). *Literature circles: Voice and choice in book clubs and reading groups.* (2nd Edition). Portland: Stenhouse Publishers.

Daniels, H. (2003). How can you grade literature circles? *Voices From the Middle, 11*(1), 52-53.

Demir, E. (2019). *The effect of reading circle method on students reading attitudes and critical reading skills.* (Unpublished master's thesis). University of Kırıkkale, Kırıkkale.

Demirel, Ö. (2007). *Öğretim ilke ve yöntemleri, öğretme sanatı [Teaching principles and methods, the art of teaching].* Ankara: Pegem A Publishers.

Diego-Medrano, E., Coneway, B. & Williams, J. D. (2016). Inquiry circles as a vehicle for comprehending informational texts: Preservice teachers' reactions and perceptions. *Texas Journal of Literacy Education, 4*(2), 57-68.

Doğan, B., Ateş, S., Çermik, H. & Yıldırım, K. (2018). Reading performance indicators are poor! Let's make them better together. *TAY Journal, 2*, 46-62.

Doğan, B., Çermik, H., Ateş, S. & Yıldırım, K. (2018). Preservice teachers' views on the roles they took in literature circles. *Journal of Mother Tongue Education, 7*(1), 141-157.

Doğan, B., Yıldırım, K., Çermik, H. & Ateş, S. (2018). Literature circles: Why and how? An example of implementation. *Journal of Mother Tongue Education, 6*(3), 747-765.

Ekinci, N. (2007). İşbirliğine dayalı öğrenme [Cooperative learning] (Ed. Ö. Demirel), *Eğitimde yeni yönelimler [New directions in education]* (p. 93-109). Ankara: Pegem A Publishers.

Ekinci, Z. (2018). *The effect of cooperative writing activities on improving writing skills of students who learning Turkish as a foreign language*. (Unpublished master's thesis). Bolu Abant İzzet Baysal University, Bolu.

Ekiz, D. (2013). *Bilimsel araştırma yöntemleri [Scientific research methods].* Ankara: Anı Publishers.

Gliner, J. A., Morgan, G. A. & Leech, N. L. (2015). *Uygulamada araştırma yöntemleri desen ve analizi bütünleştiren yaklaşım [An approach that integrates research methods, design and analysis in practice]*. (Translation Ed. S. Turan). Ankara: Nobel Publishers.

Gömleksiz, M. N. (2004). Validity and reliability of an attitude scale towards reading habit. *Fırat University Journal of Social Science, 14*(2), 185-195.

Gümüş, O. & Buluç, B. (2007). İşbirliğine dayalı öğrenme yaklaşımının Türkçe dersinde akademik başarıya etkisi ve öğrencilerin derse ilgisi [The effect of cooperative learning approach on academic success in Turkish course and students' interest in the lesson]. *Educational Administration: Theory and Practice, 49*, 7-30.

Güngör Kılıç, A. (2004). *Cooperative learning, reading comprehension, strategy use and attitude.* (Unpublished doctoral dissertation). Dokuz Eylül University, İzmir.

Gürol, M. (2004). Öğretim sürecinde iletişim, model ve uygulamalar [Communication, model and applications in the teaching process]. (Ed. M. Gürol). *Öğretimde planlama uygulama ve değerlendirme [Planning, implementation and evaluation in teaching]* (p. 67-120). Elazığ: Üniversite Kitabevi.

Hardin, J. (2012). *Motivating disengaged readers: fifth grade readers and university students partner in literature circles.* (Unpublished doctoral dissertation). Texas Tech University, Texas.

Johnson, D. W., Johnson, R. T. & Holubec, E. J. (2016). *İşbirlikli öğrenme el kitabı [Collaborative learning handbook].* (Translation Ed. A. Kocabaş). Ankara: Pegem Akademi Publishers.

Karakoyun, M. E. (2010). *The effect of one of the collaborative learning techniques, Jigsaw I, to academic success in the teaching of punctuation to elementary education 5th grade students.* (Unpublished master's thesis). Atatürk University, Erzurum.

Kardaş, M. (2014). The effects of collaborative and conventional group work on academic achievement in teaching grammar. *Turkish Studies, 9*(8), 603-622.

Kennedy, G. (2010). *The effects of skill-focused mini lessons on students' independent use of reading skills during literature circles.* (Unpublished doctoral dissertation). Florida Atlantic University, Florida.

Kırbaş, A. (2010). *Effect of the collective learning method on the improvement of listening skills of primary school eighth.* (Unpublished master's thesis). Atatürk University, Erzurum.

Maden, S. (2011). Effect of Jigsaw I technique on achievement in written expression skill. *Educational Sciences: Theory & Practice, 11*(2), 901-917.

McElvain, C. M. (2010). Transactional literature circles and the reading comprehension of English learners in the mainstream classroom. *Journal of Research in Reading, 33*(2), 178-205.

Meredith, J. (2015). *The effects of literature circles on second graders' reading comprehension and motivation.* (Unpublished master's thesis). Goucher College, Maryland.

Mertens, D. (2010). *Research and evaluation in education and psychology: integrating diversity with quantitative, qualitative, and mixed methods.* Thousand Oaks, California: SAGE Publications.

Mizerka, P. M. (1999). *The impact of teacher directed literature circles versus student-directed literature circles on reading comprehension at the sixth-grade level.* (Unpublished doctoral dissertation). University of Illinois, Illinois.

Moeller, V. J. & Moeller, M. V. (2007). *Literature circles that engage middle and high school students.* Larcmont, NY: Eye on Education.

Neamen, M. & Strong, M. (2001). *More literature circles: Cooperative learning for grades 3-8.* Englewood, Colorado: Libraries Unlimited.

Olsen, A. S. W. (2007). *Literature circles and ninth grade students: A student-centered approach to reading.* (Unpublished master's thesis). Southwest Minnesota State University, Minnesota.

Özbay, M. & Kaldırım, A. (2015). The effect of reading circle technique on the critical reading self-efficacy perception of pre-service teachers. *International Journal of Languages' Education and Teaching, 3*(2), 222-234.

Pitton, D. E. (2005). Lit circles, collaboration and student interest. *Academic Exchange Quartely, 9*(4), 84-90.

Purifico, J. (2015). *Literature Circles: In class and online discussions.* http://rdw.rowan.edu/etd/486

Rutherford A., Carter L., Hillmer T., Kramer M. & Parker A. (2009). Promoting intrinsic reading: Implementing literature circles with intermediate-grade students and preservice teachers. *The International Journal of the Book, 6*(4), 43-49.

Sarı, T., Kurtuluş, E. & Yücel-Toy, B. (2017). Okuma çemberi yönteminin ortaokul 7. sınıf öğrencilerinin okuma-anlama becerilerine etkisinin incelenmesi [Secondary school 7th grade of the reading circle method the effect of students on reading-comprehension skills investigation]. *YILDIZ Journal of Educational Research, 2*(2), 1-14.

Shelton-Strong, S. (2012). Literature circles in elt. *ELT Journal, 66*(2), 214-223.

Soysal, T. (2019). *The effect of cooperative learning activities on developing the 21st century learning and innovation skills in Turkish lessons.* (Unpublished doctoral dissertation). Bolu Abant İzzet Baysal University, Bolu.

Tan Hatun, E. & Kurtlu, Y. (2019). The effect of the method of literature circles on students' critical reading skills. *EKEV Academy Journal, 23*(78), 191-204.

Thomas, D. (2013). *The effects of literature circles on the reading achievement of college reading students.* (Unpublished doctoral dissertation). Middle Tennessee State University, Tennessee.

Ün Açıkgöz, K. (1992). *İşbirlikli öğrenme: kuram, araştırma, uygulama [Cooperative learning: theory, research, practice].* Malatya: Uğurel Press.

Uysal, M. E. (2009). *The effects of cooperative learning method on the access, achievement, critical thinking and creativity skills of the elementary school fourth-grade student.* (Unpublished doctoral dissertation). Dokuz Eylül University, İzmir.

Varita, D. (2017). Improving reading comprehension through literature circles. *English Education Journal, 8*(2), 234-244.

Whittingham, J. (2013). Literature circles: A perfect match for online instruction. *Tech Trends, 57*(4), 53-58.

Yıldırım, A. & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences].* (6th edition). Ankara: Seçkin Publishing.

Yıldırım, K., Ateş, S., Çermik, H. & Doğan, B. (2019). The effects of literature circles on development of preservice teachers' reading comprehension levels. *GEFAD / GUJGEF, 39*(2), 1029-1048.

Yin, R. (1994). *Case study research: design and methods.* (2nd edition). London: Sage Publications.

Investigating Primary School Students' Proof Schemes in Solving Arithmetic Operations Problems

Research Article

Yasemin KUBANC[1]

[1]*Fırat University, Faculty of Education, Department of Elementary Education, Elazığ, Turkey,* 0000-0002-7465-2509

ARTICLE INFO	ABSTRACT
	The aim of this study was to investigate primary school students' proof schemes for four operation problems in mathematics. Based on qualitative research design, the data were collected through document analysis and interview method in the study. In the first stage of the study, 4 open-ended four operational problems were asked to al of 1st, 2nd and 3rd Grade students in a primary school located in the city center of Elazig. Students who answered the problems correctly were invited for interviews. In the interviews, the students were asked to explain aloud how they solved the problems. The interview data were analyzed using descriptive analysis based proof schemes categorization of Harel and Sowder (1998), and the proof schemes and proof-making approaches of the participants were investigated. The findings revealed that the participants mostly used external conviction proof schemes regardless of grade and operation type. It was also found that although 1st Grade students used the authoritarian proof scheme more, 2nd and 3rd Grade students mostly employed ritual proof scheme to explain their solutions.

Introduction

Mathematics is a hierarchical discipline, and thus, errors and misconceptions of students should be detected on time in mathematics education. Even if they answer the questions correctly, students should be allowed to explain their solutions and to express the proof they base them on. Sowder and Harel (1998) argues that identifying students' thoughts allows understanding what directs their thoughts and how they reason. An individual's way of thinking includes the individual's beliefs, problem-solving approaches and proof schemes (Harel & Sowder, 1998). According to Almeida (2003), mathematical proof is used to confirm a result

and to persuade others. However, proof schemes refer to cognitive processes and skills that develop as a result of examining the behaviors in the proving process (Dede & Karakuş, 2014). According to Harel and Sowder (1998), proof schemes consist of both how students are persuaded and how they persuade others.

In mathematics education, proof occurs mostly in the form of explanation and verification, and a mathematical statement can be proved by several methods (Karakaya, 2021). Students trying to provide proof also express what they understand from the problem, how they will solve the problem, their misconceptions and strategies they use (Harel & Sowder, 2007). In traditional classrooms, teachers do not allow students to produce their own proof, they only consider students as passive recipients of information and do not allow them to think independently (Aydoğdu İskerderoğlu, 2016).

Since their mathematical thoughts and solutions are different, the proof schemes the students apply also differ (İskenderoğlu, 2016). Harel and Sowder (1998) classified proof schemes under three main categories: external conviction, empirical, and analytical (Figure 1).
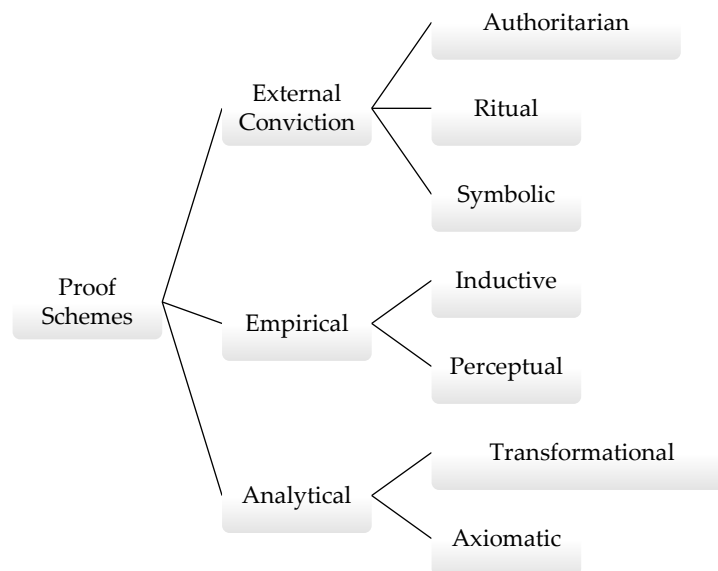
Figure 1. Classification of Proof Schemes (Harel & Sowder, 1998: p.245)

External conviction proof schemes are divided into three: authoritarian, ritual and symbolic. Students with authoritarian proof schemes mostly base the accuracy of their claims on external factors such as teachers, family, and books whose knowledge they trust (Harel & Sowder, 2007). Harel and Sowder (1998) argues that, in this proof scheme, students cannot provide sufficient proof about the solution methods and they accept without question what the people they trust claim. In ritual proof scheme, students rely on previously learned solution methods and reject different solution methods (Harel & Sowder, 2007). In the mathematical proof process, the student bases the decision on the form of the problem and uses the information he/she has learned before (Martin & Harel, 1989). In ritual proof scheme, students tend to use symbols and formulas without knowing their meanings (Harel & Sowder, 2007).

The empirical proof schemes are divided into two categories: inductive and perceptual (Harel & Sowder, 1998). Students applying inductive proof scheme refer similar situations as examples in proofs whereas in perceptual proof schemes, students try to persuade others through drawings (Harel & Sowder, 2007). Finally, analytical proof schemes are divided into two categories: transformational and axiomatic. Students using transformational proof scheme are able to prove through making logical inferences (Harel & Sowder, 2007). Students at this stage know the meanings of the concepts and provide proofs based on their own cognitive processes (Harel & Sowder, 2007). They reach a general conclusion by reasoning from a specific

situation (Sowder & Harel, 1998). In the axiomatic proof scheme, the student uses formal processes suitable for the mathematical meaning of the proof, as well as reasoning (Harel & Sowder, 2007).

A brief literature review shows that some of the studies on proof schemes have been conducted to reveal the proof schemes of pre-service teachers and students whereas some have focused on the factors affecting the proof schemes. For example, Pektaş and Bilgici (2019) investigated pre-service mathematics teachers' proof schemes on trigonometry and found that their participants mostly used analytical proof schemes. They also reported that the proof schemes did not differ with regard to gender and grade level. In addition, Eldekçi (2018) examined the pre-service mathematics teachers' proof schemes for rational numbers and found that they used all of the proof schemes. Uygan et al. (2014) examined the proving processes of pre-service mathematics teachers and found that they used strategies based on memorization. Similarly, a great number of studies conducted on pre-service teachers have revealed that pre-service teachers fail in providing proofs (Aydoğdu, İskenderoğlu & Baki, 2011; Baker & Campel, 2004; Doruk & Kaplan, 2013; Gökkurt & Soylu, 2012; Güler & Dikici, 2012; Selden & Selden, 2003).

Aydogdu et al. (2003) examined the proof schemes of 6th, 7th and 8th grade students and stated that the students used all of the proof schemes categories, namely, external conviction, empirical and analytical. Güven et al. (2005) concluded in their study proof skills of elementary school students for geometry were insufficient. Furthermore, Flores (2006) reported that many students resorted extensively to authoritarian proof schemes, considered their teachers as the highest authority and emphasized procedural steps more while explaining their proofs. Similarly, Ören (2007) analyzed high school students' proof schemes for geometry and found that they used external conviction and empirical proof schemes more. Besides, İskenderoğlu (2010) examined elementary school students' proof schemes and stated that students largely resorted to authoritative and empirical proof schemes while they made little use of analytical proof schemes. Even though Oflaz et al. (2016) reported that students mostly used external conviction proof schemes, Pala and Narlı (2018) stated that pre-service teachers mostly applied empirical proof schemes and least to analytical proof schemes. Examining pre-service teachers' proof schemes for rational numbers, Eldekçi (2018) reported that the participants used analytical proof schemes more. Zeybek Şimşek and Üstün (2019) examined the 7th grade students' proof schemes for the quadrilaterals and found that the students had difficulty in providing proofs and used external conviction proof schemes more. Furthermore, Ercan (2020) examined the 7th grade students' proof schemes and reported that 41% of the participants used the authoritarian proof scheme, 24% perceptual proof scheme, 24% transformational proof scheme and 11% ritual proof scheme. Karakaya (2021) examined the 8th grade students' proof schemes for equality and found that the students mostly used the authoritarian proof scheme.

The studies on the factors affecting the proof schemes have investigated the role of gender, teacher behaviors, and learning styles (Karakaya, 2021). For example, Soucy et al. (2004) stated that students could easily reach high-level proof schemes with the support of teachers. In addition, Ören (2007) examined the role of gender in proof schemes and found that female participants used empirical proof schemes more than male participants. Furthermore, Pektaş and Bilgici (2019) indicated that proof schemes did not differ with regard to learning styles. Also Miyakawa (2002) found that students with weak mathematical knowledge also had weak proof ability. The studies in the literature also have revealed that students tend to use more than one proof scheme during the proof making process (Aydoğdu, Olkun & Toluk, 2003; Çontay & Paksu, 2017; Liu & Manouchehri, 2013; Raman, 2003; Rodriquez, 2006; Sarı, Altun & Aşkar, 2007). Karakus et al. (2017) reported that students at mathematics education department were more successful in providing proofs than those at other departments. In this sense, Çontay and Paksu (2017) argued that the biggest problems of pre-service teachers in providing proofs were rote-based and superficial ideas and lack of mathematical knowledge.

The brief literature review above shows that the studies in the literature have mostly focused on pre-service teachers and elementary or high school students. However, to the best of the researcher's knowledge, there is not a study on primary school students' proof schemes for arithmetic operations. Therefore, this study aimed to investigate primary school students' proof schemes in solving arithmetic operations problems. In the study, previous results and analysis on proof schemes were presented, information about the mathematical proving processes was provided, and these processes were discussed in terms of problem's operation type and students' grade. The analysis and comparison of primary school students' proof schemes for four operations in mathematics based on the model developed by Harel and Sowder (1998) was explained with case studies. Finally, the results were compared with those of previous studies and suggestions were put forward.

Research Questions

In this study, the answers to the following questions were sought:

- Which proof schemes do primary school 1st, 2nd, and 3rd grade students use for arithmetic operation problems in mathematics?
- Do primary school students' proof schemes differ at different grades?
- Do the proof schemes used by primary school students differ according to addition/subtraction/multiplication/division problems?

Methodology

Research Model

The aim of this study was to investigate primary school students' proof schemes used in four operation problems. In the examination of proof schemes, the theoretical framework developed by Harel and Sowder (1998) was taken into account. Harel and Sowder (1998) categorized proof schemes used by students under three main categories: external conviction, empirical, and analytical. External conviction proof schemes are divided into three: authoritarian, ritual and symbolic. Empirical proof schemes are divided into inductive and perceptual, and analytical proof schemes are divided into transformational and axiomatic proof schemes. The data were collected through using document analysis and interview method, one of the qualitative research methods. First, all students were asked 4 open-ended mathematical problems and those who answered provided correct answers were invited for interviews. Then, interviews were conducted with the students and the proof schemes they used in the four operation problems were examined. Students were not presented with proof samples during the study.

Study Group

The study was carried out in a public school in the city center of Elazig in 2021-2022 academic year. In sample the selection of the school, convenience sampling method, one of the purposive sampling methods, was used due to time and transportation constraints. On the other hand, criterion sampling method, a purposive sampling method, was used to select the students in the study. The criterion for the first stage was to study in the 1st, 2nd and 3rd grades of the school in which the study was conducted, while the criterion for participating in the interviews, which was the second stage, was to answer the problems correctly. In the first stage, 150 1st grade students, 132 2nd grade students and 93 3rd grade students participated in the study. All students at each grade were asked four open-ended operations problems and the students were asked to solve these problems. Students who provided the correct answer and solution way were invited to the interviews. As a result, 171 students participated in the interviews.

Table 1. The number of students participated in the interviews

	Operation Type			
Grade	*Addition*	*Subtraction*	*Multiplication*	*Division*
1. Grade	18	15	-	-
2. Grade	24	9	19	20
3. Grade	17	14	15	20

The real personal information of the participants was not included in the study. In the study, students were represented by the acronym S. The participants in the interviews solved at least 1 and at most 4 problems correctly. In the interviews, the proof schemes were examined based on the problems that the participants solved correctly.

Data Collection Tools

The data were collected through the interviews with the students and the student answer sheets. The researcher developed addition, subtraction, multiplication and division problems at every grade level consistent with the literature review and the achievements in the 2019 Primary School Mathematics Curriculum. The problems developed by the researcher were administered to all 1st, 2nd and 3rd grade students. The solutions provided by the students were evaluated based on correctness and those who answered correctly were invited for interviews. In the interviews, semi-structured interview questions were asked to participants by the researcher. Smith (2006) argues that there are very few studies on who or what influences students' perceptions in the proving process, and studies analyzing the factors that play a role in the proving process are very important. Hence, the researcher asked the students, the researcher asked the students to prove their solutions by asking the questions "Can you tell us how you solved this problem aloud?" and "Would it be better if we did addition/subtraction/multiplication/division?" In this way, proving processes of the participants was tried to be revealed. Garuti et al. (1998) stated that students express their ideas and intuitions before starting the proof. The researcher was with the participants during the interviews, observed them and allowed them to express what they were doing and thinking aloud. The interviews were video-recorded. At the end of the interview, the papers on which the students wrote the proof were examined in terms of mathematical language use, the accuracy of the proof, and the student's statements.

Data Analysis

In the study, descriptive analysis was used to analyze the participants' proof schemes based on proof scheme categories of Harel and Sowder (1998). The responses of the participants were analyzed using the proof scheme categorization in Figure 1. The proof schemes that the participants used to and their responses were explained with examples. The researcher was able to examine the participants' proof schemes in detail using evaluation criteria presented in Table 2. Students were coded as S1, S2 …, the researcher as R. Findings were visualized in tables, and excerpts of student statements were presented.

Table 2. The proof schemes categorization of Harel and Sowder (1998) (cited in Aydoğdu İskenderoğlu, 2016: p.69)

	Proof Schemes	**The characteristics of proof schemes**	**Presence of proof schemes**
External Conviction	Authoritarian	Does not have an idea whether the answer is correct or not. Cannot develop proof for why the answer is correct.	Memorizing and applying rules and formulas. Basing the proofs on the teacher, textbooks, mother, father, etc.
	Ritual	Provides superficial proofs.	Making use of familiar proof processes.
	Symbolic	Presents mathematical symbols as proof.	Trying to prove the problem by setting up an equation immediately.
Empirical	Inductive	Cannot provide logical proofs. Explains the correctness of a proof through examples.	Convincing others through examples.

Analytical	Perceptual	Explains the correctness of a proof through drawings.	Drawing conclusions from drawings
	Transformational	Logically explains the proof hierarchically.	Convincing others by identifying the key issue and reasoning.
	Axiomatic	Explains the proof using a combination of several different techniques.	Explaining the proof using a theorem

In order to ensure the validity and reliability of the descriptive analysis, two different researchers coded the data. The presence of the proof schemes in the analysis process were coded as "yes" or "no" by the coders. According to Yüksel (2019), the reliability of the descriptive analysis technique depends especially on the coding process. Assigning the answers to the appropriate categories is the most important step, which contributes greatly to validity and reliability of the analysis. In other words, the fact that the interpretations of the categories do not change according to the researcher or at two different times provides reliability, which is a prerequisite of objectivity. In the study, the formula developed by Miles and Huberman (1994, p.64) was used to test the reliability between coders. As a result, the reliability between coders was found to be 88%. A reliability value of over 70% indicates that the research is reliable (Miles & Huberman, 1994; Yıldırım & Şimşek, 2013).

Findings

In this section, 1st, 2nd and 3rd grade primary school students' proofs in solving addition, subtraction, multiplication and division problems were examined based on proof schemes categorization of Harel and Sowder (1998). The findings are presented in Table 3.

Table 3. The proof schemes used by the participants

	Proof Schemes	Addition			Subtraction			Multiplication		Division		Total
		1.st	2.nd	3.rd	1.st	2.nd	3.rd	2.nd	3.rd	2.nd	3.rd	
Extern	Authoritarian	10	8	5	6	3	4	10	5	9	6	66
	Ritual	5	12	10	5	5	6	6	8	8	12	77
	Symbolic	-	-	-	-	-	2	-	-	-	-	2
Em	Inductive	-	-	-	-	-	-	-	-	-	-	0
	Perceptual	-	-	-	-	-	-	-	-	-	-	0
An	Transformational	-	-	-	-	-	-	-	-	-	-	0
	Axiomatic	3	4	2	2	1	4	3	2	3	2	26
	Total	18	24	17	13	9	16	19	15	20	20	171

Table 3 showed that the participants who provided correct answers to the addition, subtraction, multiplication and division problems mostly used external conviction proof schemes (n=145). It was also found that the participants mostly used ritual proof schemes (n=77) and authoritarian proof schemes (n=63) under external conviction proof schemes category. The symbolic proof schemes were used by only 2 participants. The findings also revealed that participants used the authoritarian proof scheme more in the first year when they were introduced addition, subtraction, multiplication and division operations, and in the following years, they applied more to the ritual proof scheme.

The participants also used analytical proof schemes (n=26) to prove how they solved the problems. 26 participants used axiomatic proof scheme to explain their correct solution, whereas transformational proof scheme was not used by any of the participants. In addition, it was found that the participants did not used empirical proof schemes in explaining the solution of the problems.

The participants mostly used external conviction proof schemes in addition problems (n=50). The participants also used ritual proof schemes (n=27), authoritarian proof schemes (n=25) and axiomatic proof schemes (n=9) in addition problems, respectively. Finally, it was found that though 1st Grade students used the authoritarian proof scheme the most, 2nd and 3rd Grade students used ritual proof scheme more.

In subtraction problems, the participants mostly used external conviction proof schemes (n=31). They also used ritual proof schemes (n=16), authoritarian proof schemes(n=13) and symbolic proof schemes(n=2), respectively. It was found that 7 participants used axiomatic proof scheme to provide solution to subtraction problems. The findings revealed that 1st Grade students used the authoritarian proof scheme the most whereas 2nd and 3rd Grade students used ritual proof scheme more.

The findings showed that the participants mostly used external conviction proof schemes (n=29) in multiplication problems, followed by authoritarian proof schemes (n=15) and ritual proof schemes (n=15). Also 5 participants used axiomatic proof scheme. It was found that 2nd Grade students used authoritarian proof scheme the most while 3rd Grade students used ritual proof scheme more.

In division problems, the participants mostly used external conviction proof schemes (n=35). They used ritual proof schemes (n=20) and authoritarian proof scheme (n=15), respectively. In addition, 5 participants used axiomatic proof scheme in providing solution to division problems. The findings indicated that 2nd Grade students mostly used authoritarian proof scheme whereas 3rd Grade students used ritual proof scheme more.

The participants used external conviction proof schemes the most in addition and the least in multiplication. Similarly, they used analytical proof schemes mostly for addition and least for multiplication and division. Examples of proof schemes frequently used by students are presented below.

External Conviction Proof Schemes

The findings showed that the participants used mostly external conviction proof schemes. The participants thought aloud during the interviews and the researcher did not direct them. The participants with this schema did not start from what was given and requested in the problem and did not reason or make logical inferences while defending the correctness of their answers. In contrast, they started from rules and formulas and based their proof mostly on external proof such as teachers, parents, elder brothers and sisters. For those who used this scheme, the fact that the solution method was told by people they regard more knowledgeable than themselves was more important than defending their result or solution. Similarly, it was found that they imitated the solutions provided by their teachers and textbooks. Students sometimes did not hesitate to apply formulas and rules even if they did not know the logic. Instead of obtaining different ways through reasoning, they only made use of the rules they already knew. Such behaviors indicated that students were affected by the form of the proof rather than its content, in other words, they employed ritual proof schemes. For example, student could argue that "addition was done in a problem where the word total was used and the result was correct, and thus addition should be used when the word total exists". As a result, students tended to rely on concepts they were familiar and comfortable with when solving problems. Excerpts of the students who used external conviction proof schemes are given below.

Addition - 2nd Grade student

R: Can you read the question aloud and explain how to solve it?

S1: Yusuf has 24 candies. If his mother buys Yusuf 17 more candies, how many candies will Yusuf have?

R: How can we solve this question?

S1: I will do addition. Because it is bought here, our teacher says when you buy, add it up.

(***Authoritarian Proof Scheme***)

R: Let's solve

S1: Yusuf will have 24+17=41 candies.

Subtraction-2ⁿᵈ Grade student

R: Can you read the question aloud and explain how to solve it?

S5: Yağmur made 32 cookies for her friends who came to the party. If there were 14 cookies left at the end of the party, how many cookies were eaten?

R: How can we solve this question?

S5: Subtract 14 from 32. 32-14=18 of them were eaten.

R: Why did you do the subtraction?

S5: ………..(Silence) **(Authoritarian Proof Scheme)**

Multiplication -3ʳᵈ Grade Student

R: Can you read the question aloud and explain how to solve it?

S11: Ahmet went to the grocery store 4 times and spent 2 liras each time. How much money did Ahmet spend in total?

R: How can we solve this question?

S11: Multiplying 4 by 2 makes 8.

R: Why did you do the multiplication?

S11: There was times, when there is times, I always do multiplication. **(Ritual Proof Scheme)**

Division - 3ʳᵈ Grade Student

R: Can you read the question aloud and explain how to solve it?

S14: Seda has 120 walnuts and Selçuk has 4 walnuts. How many times more walnuts does Seda have than Selçuk?

R: How can we solve this question?

S14: I'm going to divide 120 by 4. 4 has 3 times in 12. We write 0 in the section. The result is 30. So Seda has 30 times the amount of walnuts.

R: Why did you do the multiplication?

S14: I divide when there are walnuts in the question. I was doing that in the 2nd grade, it stuck in my mind. **(Ritual Proof Scheme)**

Analytical Proof Schemes

The findings indicated that the participants used analytical proof schemes (n=26) as another proof method. These participants understood the problem and made logical inferences in line with what was given and requested in the problem. Similarly, they developed and used different counting strategies by making use of mathematical relations. The participants employing axiomatic proof scheme explained the solutions in more than one way, and also referred to the relations between addition-subtraction, multiplication-division, addition-multiplication, subtraction-division. On the other hand, it was found that the participants did not used transformational proof scheme. Excerpts of the students who used analytical proof schemes are given below

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Addition - 1.ˢᵗ Grade Student

R: Can you read the question aloud and explain how to solve it?

S17: When I read 13 pages of a book, there are 5 pages left, how many pages is the book I read in total?

R: How can we solve this question?

S17: Now here is the part of the book that I have read, and the part that I have not read. But here it is all asked. First I read 13 pages, then I read 5 pages, the book is finished. If I combine both parts (joining their hands) I can find out how many pages there are in total. 13+5= I count 5 over 13. This storybook is 14, 15, 16, 17, 18 pages. It's a fairy tale book, so it's too short **(Axiomatic Proof Scheme)**

R: Shall we subtract?

S17: No way, If I had been given the whole book and asked how much was left, then I could have made a subtraction. But I can't here. **(Axiomatic Proof Scheme)**

Subtraction -3ʳᵈ Grade Student

R: Can you read the question aloud and explain how to solve it?

S2: Ali weighed 110 kg, Ali is also 17 kg heavier than Ayşenur. How many kg is Ayşenur?

R: How can we solve this question?

S2: Here Ali weighed 110 kilograms. So, Ali is actually fat. Since Ali is very fat (he uses his hands), there is 17 kilograms between him and Ayşenur. But Ali is the heavy one. Therefore, Ayşe is less. If I subtract 17 from 110, I can find out how many kilograms Ayşe

weighs. 110-17. First I subtract 10 from 110, 100. Then 7 out of 100, the result is 93. But Ayşe is fat as well *(Axiomatic Proof Scheme)*

> R: Wouldn't it be okay if we did an addition?

> S2: I can do it like this. 110-17=⚙ or so ⚙ +17=110 *(Symbolic Proof Scheme)*

Multiplication – 2ⁿᵈ. Grade Student

> R: Can you read the question aloud and explain how to solve it?

> S9: There are 4 chickens and 2 roosters in a henhouse. What is the total number of legs of chickens and roosters?

> R: How can we solve this question?

> S9: Now chickens have 2 legs and roosters have 2 legs. I have to multiply 4 by 2 and find the chicken's feet first. 4, 8. Chickens have 8 legs. Then 2x2 = 4 rooster's feet. We add the two together 8+4=12. *(Axiomatic Proof Scheme)*

> R: Wouldn't it be okay if we did an addition?

> S9: It would, but it would take too long. There would be no room for paper. I could draw chicken here. But we would run out of paper. *(Axiomatic Proof Scheme)*

Division – 2ⁿᵈ. Grade Student

> R: Can you read the question aloud and explain how to solve it?

> S7: Ayşe has 20 candies and she eats 5 of them every day. After how many days will Ayşe's candy run out?

> R: How can we solve this question?

> S7: I can do division. I can draw as well. 4 has 3 times in 12

If I divide by 20 over 5. 5, 10, 15, 20. So 4 has 3 times in 20. Or I can draw 20 candies, I can circle 5 of them. I can find in that way. *(Axiomatic Proof Scheme)*

> R: Wouldn't it be okay if we did subtraction?

> S7: We could, but in the question it is said that she eats every day. So I had to do a lot of subtraction. *(Axiomatic Proof Scheme)*

Discussion, Conclusion and Recommendations

This study investigated primary school students' proof schemes applied for four operation problems through document analysis and semi-structured interviews. It was found that the participants generally used external conviction proof schemes more, regardless of the type of operation of the problem they solved in the proof process and their grade. This result is in line with the results of some studies in the literature (İskenderoğlu, 2010; Ercan, 2020; Flores, 2006; Karakaya, 2021; Oflaz et al., 2016; Ören, 2007; Zeybek, Şimşek & Üstün, 2019). However, there also some studies contradicting the results of this study. For example, Olkun and Toluk (2003) found that students used all proof schemes. Similarly, Pala and Narlı (2018) reported that the students mostly used empirical proof schemes more. In addition, Eldekçi (2018) and Pektaş and Bilgici (2019) found that students mostly used analytical proof schemes. Another result of this study was that regardless of the operation type of the problem, 1st Grade students used authoritarian proof scheme more, 2nd and 3rd Grade students mostly used ritual proof schemes more. This result is supported by Crawford (1994) and Solomon (2006) who reported that 1st Grade students memorize mathematics. On the other hand, this result contradicts with the results of Pektaş and Bilgici (2010) who found that proof schemes used by students did not differ with regard to gender and grade.

Another proof scheme the participants employed was analytical proof schemes. It was found that 26 students used axiomatic proof scheme to explain the correct solution of their problems though none of them used transformational proof scheme. It was also revealed in the study that 1st, 2nd and 3rd Grade primary school students did not used empirical proof scheme. In addition, it was found that the participants used external conviction proof schemes the most in addition and the least in multiplication. Similarly, they used analytical proof schemes mostly in addition, and least in multiplication and division. In some cases, the participants used two different proof schemes to prove a problem (Subtraction-S2). As Harel and Sowder (1998) stated, students "can prove their solutions by using different schemes at the same time in some situations". In this regard, it was stated, in a number of studies in the literature, that students used different schemes in a problem (Aydoğdu, Olkun & Toluk, 2003; Liu & Manouchehri, 2013; Raman, 2003; Rodriquez, 2006; Sarı, Altun &

Aşkar, 2007). The results of this study showed that the main reasons why primary school students could not reach high-level proof schemes were misconceptions, inability to develop proof (silencing) due to lack of mathematical knowledge, regarding proof as only a validation process, using other's proof and presenting intuitions as proof. Instead of focusing on both content of the problem and expressions in the problem, the participants focused more on the words in the problem. The arithmetic operations are the foundation of many topics in mathematics. It was revealed that the participants could not present high-level proof even if they answered the problems correctly and that they had misperception about solving four operation problems. Teachers should ensure that students find alternative solutions by reasoning, and should not force students to use keywords and familiar solutions. Education based on memorization and results may prevent students from presenting their proof and seeking alternative solution methods. In this context, teachers may benefit from Polya's (1957) four-stage problem-solving process and Euda Dean's (1996) specially designed six-stage model to guide their students in proof making process. Students may be asked to present proof of how they solved each problem, as well as operational solution. Proof and proof methods should be taught to primary pre-service primary school teachers as a part of mathematics course. Several studies in the literature reported that teacher'' ideas about proof were insufficient (Güner, 2012; Knuth, 2002; Moralı et al., 2006; Norby, 2013; Yoo, 2008). Similarly, revealing pre-service teachers' proof schemes may play a significant role in identifying their deficiencies in this issue.

In this study, primary school students' proof schemes were investigated only through four operation problems. Future studies may address students' proof schemes for fractions, geometry, measurement, and data learning. Similarly, open-ended problems and semi-structured interview questions were used in this study to reveal students' proof schemes. In future studies, different methods and techniques can be used, and the number of problems and participants can be increased or decreased. In addition, proof schemes of classroom teachers and students can be investigated and compared. Furthermore, studies on the effect of the education on proof schemes can be conducted by comparing the proof schemes of 1st and 4th Grade pre-service teachers. Finally, methods and materials can be developed to overcome students' difficulties in proof making and to support their proof making development.

Ethics Committee Approval:

The authors have to provide and submit an "Ethics Committee Approval" document while submitting their manuscript to IOJES journal. This document should be obtained from the related Ethical Committees of the universities. It is a requirement by ULAKBIM TR DİZİN for the journals waiting for possible inclusion in the TR DİZİN. All qualitative or quantitative studies which included data collection from participants by questionnaire, interview, focus group study, observation, and experiment must have the Ethics Committee Approval document. Ethics Committee Approval is not required for review articles. Ethics Committee Approval information (the title of the ethics committee, date, and number) must be stated clearly in the method section as well as on the last page of the manuscript.

REFERENCES

Almeida, D. A. (2000). Survey of mathematics undergraduates' interaction with proof: Some implications for mathematics education, *International Journal of Mathematical Education in Science and Technology*, *31*(6), 869-890

Aydoğdu İskenderoğlu, T. (2016). Kanıt ve kanıt şemaları. E. Bingölbali, S. Arslan ve İ.Ö. Zembat (Editörler), *Matematik Eğitiminde Teoriler (ss.65-83)*. Pegem Yayıncılık

Aydoğdu İskenderoğlu, T. & Baki, A. (2011). Quantitative analysis of pre-service elementary mathematics teachers' opinions about doing mathematical proof. Kuram ve Uygulamada Eğitim Bilimleri. *11*(4), 2285-2290.

Aydoğdu, T., Olkun, S. & Toluk, Z. (2003). İlköğretim 6, 7. ve 8. sınıf öğrencilerinin matematik problemlerine ürettikleri çözümleri kanıtlama süreçleri. *Eurasian Journal of Educational Research. 4* (12), 64-74

Baker, D. & Campbell, C. (2004). Fostering the development of mathematical thinking: Observations from a proofs course. *Problems, Resources and Issues in Mathematics Undergraduate Studies. 14*(4), 345-353.

Baki, A. & Gökçek, T. (2012). Karma yöntem araştırmalarına genel bir bakış. *Elektronik Sosyal Bilimler Dergisi*. *11*(42), 1-21

Çontay, E. G. & Duatepe Paksu, A. (2019). Ortaokul matematik öğretmeni adaylarının ispat şemaları ve bu şemaları ortaya koyan ifadelerinin incelenmesi. *Turkish Journal of Computer and Mathematics Education*. *10*(1), 59-100

Crawford, K., Gordon, S., Nicholas, J. & Prosser, M. (1994). Conceptions of mathematics and how it is learned: the perspectives of students entering university. *Learning and Instruction*, *4*, 331-345

Dean, E. E. (1996). Teaching the Proof Process: A model for discovery learning. *College Teaching*. 44, 52-55.

Dede, Y. & Karakuş, F. (2014). A pedagogical perspective concerning the concept of mathematical proof: a theoretical study. *Adıyaman University Journal of Educational* Sciences, *4*(2), 47-71. doi: http://dx.doi.org/10.17984/adyuebd.52880.

Doruk, M. & Kaplan, A. (2017). İlköğretim matematik öğretmeni adaylarının analiz alanında yaptıkları ispatların özellikleri. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi*. *0*(44), 467-498. https://doi.org/10.21764/maeuefd.305605

Eldekçi, S. (2018). Matematik eğitimi öğretmen adaylarının kanıt şemalarının ortaya çıkarılması. *Adnan Menderes Üniversitesi Eğitim Fakültesi Dergisi*. *9*(2), 119-136

Ercan, N. Ö. (2020). *Ortaokul 7. sınıf öğrencilerinin A-Didaktik bir ortamda geometri konularında kullandıkları kanıt şemaları*. Yayınlanmamış yüksek lisans tezi. Kastamonu Üniversitesi Fen Bilimleri Enstitüsü.

Flores, A. (2006). How do students know what they learn in middle school mathematics is true? *School Science and Mathematics*, *106* (3), 124-132.

Garuti, R., Boero, P. & Lemut, E. (1998). Cognitive unity of theorems and difficulty of proof. *Proceedings of the PME*-22, *2*, 345-352.

Gökkurt, B. & Soylu, Y. (2012). Üniversite öğrencilerinin matematiksel ispat yapmaya yönelik görüşleri. *Eğitim ve Öğretim Araştırmaları Dergisi*. *1*(4), 56-64

Güler, G. & Dikici, R. (2012). Ortaöğretim matematik öğretmeni adaylarının matematiksel ispat hakkındaki görüşleri. *Kastamonu Eğitim Fakültesi Dergisi*, *20*(2), 571-590

Güner, P. (2012). *Matematik öğretmen adaylarının ispat yapma süreçlerinde DNR tabanlı öğretime göre anlama ve düşünme yollarının incelenmesi*. Yayınlanmamış yüksek lisans tezi, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü.

Güven, B., Çelik, D. & Karataş, İ. (2005). Ortaöğretimdeki çocukların matematiksel ispat yapabilme durumlarının incelenmesi, *Çağdaş Eğitim*. *316*, 35-45.

Harel, G. & Sowder, L. (1998). Students' proof schemes: Results from exploratory studies, *Research in Collegiate Mathematics Education*. *3*, 234-283.

Harel, G., & Sowder, L. (2007). Toward comprehensive perspectives on the learning and teaching of proof. In F. Lester (Ed.), *Second Handbook of Research on Mathematics Teaching and Learning* (pp. 805–842). Information Age Inc. and National Council of Teachers of Mathematics.

İskenderoğlu, T. (2010). *İlköğretim matematik öğretmeni adaylarının kanıtlamayla ilgili görüşleri ve kullandıkları kanıt şemaları*. Yayınlanmamış doktora tezi. Karadeniz Teknik Üniversitesi.

İskenderoğlu, T. A. (2016). Kanıt ve kanıt şemaları. E. Bingölbali (Editör). *Matematik Eğitiminde Teoriler (s.65-83)*. Pegem Akademi.

Karakaya, B. (2021). *Sekizinci sınıf öğrencilerinin denklemlerde eşitlik kavramına ilişkin sahip oldukları kanıt şemaları matematiksel bilgi türleri açısından incelenmesi.* Yayınlanmamış yüksek lisans tezi. Necmettin Erbakan Üniversitesi Fen Bilimleri Enstitüsü.

Karakuş, F., Erşen, Z & Ocak, G. (2017). Matematik ve matematik öğretmenliği bölümü öğrencilerinin ispat yapma düzeylerinin incelenmesi. *Uşak Üniversitesi Sosyal Bilimler Dergisi, 10* (ERTE Özel Sayısı), 245-266.

Knuth, E. J. (2002a). Secondary school mathematics teachers' conceptions of proof. *Journal for Research in Mathematics Education*. *33*, 379-405.

Knuth, E. J. (2002b). Teachers' conceptions of proof in the context of secondary school mathematics. *Journal of Mathematics Teacher Education*. *5*, 61-88.

Liu, Y. & Manouchehri, A. (2013). Middle school children's mathematical reasoning and proving schemes, *Investigations in Mathematics Learning*. *6*(1), 18-40.

Martin, W. G. & Harel, G. (1989). Proof frames of preservice elementary teachers. *Journal for Research in Mathematics Education*, *20*(1), 41 – 51.

Miles B. & Huberman, A. M. (1984). *Qualitative data analysis: A source book of new methods.* SAGE Publications.

Miyakawa, T. (2002). Relatıon between proof and conceptıon: the case of proof for the sum of two even numbers. *Proceedings of the 26th International Conference of Psychology of Mathematics Education*, *3*, 353-360

Moralı, S., Uğurel, I., Türnüklü, E. & Yeşildere, S. (2006). Matematik öğretmen adaylarının ispat yapmaya yönelik görüşleri, *Kastamonu Eğitim Dergisi*. *14*(1), 147-160

Norby, K. (2013). *Investigating viable arguments: pre-service mathematics teachers' construction and evaluation of arguments*. Unpublished doctoral thesis. Montana State University.

Oflaz, G, Bulut, N & Akcakin, V. (2016). Pre-service classroom teachers proof schemes in geometry: A case study of three pre-service teachers. *Eurasian Journal of Educational Research*, 63, 133-152. http://dx.doi.org/10.14689/ejer.2016.63.8

Ören, D. (2007). *Onuncu sınıf öğrencilerinin geometrideki ispat şemalarının bilişsel stilleri ve cinsiyetlerine göre incelenmesine yönelik bir çalışma*. Yayınlanmamış yüksek lisans tezi. Orta Doğu Teknik Üniversitesi Fen Bilimleri Enstitüsü.

Pala, O. & Narlı, S. (2018). Matematik öğretmen adaylarının sayılabilirlik kavramına yönelik ispat şemalarının incelenmesi. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*. *12*(2), 136-166. https://doi.org/10.17522/balikesirnef.506425

Pektaş, O. & Bilgici, G. (2019). Matematik öğretmen adaylarının trigonometri konusunda kullandıkları kanıt şemalarının öğrenme stillerine göre incelenmesi. *Kastamonu Eğitim Dergisi*. *27*(3), 1347-1358.

Polya, G. (1957). *How to solve it, 2nd ed.?* Princeton University Press.

Raman, M. (2003). Key ideas: What are they and how can they help us understand how people view proof?, *Educational Studies in Mathematics*. *52*, 319–325

Rodriquez, A. V. R. (2006). *Ways of reasoning and types of proofs that mathematics teachers show in technology-enhanced ınstruction.* Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.

Sarı, M., Altun, A. & Aşkar, P. (2007). Undergraduate students' mathematical proof processes in a calculus course: case study. *Journal of Faculty of Educational Sciences, 40*(2), 295-319.

Selden, A. & Selden, J. (2003). Validations of proofs considered as texts: can undergraduates tell whether an argument proves a theorem? *Journal for Research in Mathematics Education*, *34*(1), 4-36

Smith, J. C. (2006). *Students' strategies for constructing mathematical proofs in a problem-based undergraduate course*. Proceedings of the 28th Annual Meeting of the North American Chapter of the International Group for the Psyhcology of Mathematics Education.

Solomon, Y. (2006). Deficit or difference? The role of students' epistemologies of mathematics in their interactions with proof. *Educational Studies in Mathematics*, *61*(3), 373–393.

Sowder, L. & Harel, G. (1998). Types of students' justifications. *The Mathematics Teacher. 9* (8), 670-675.

Uygan, C., Tanışlı, D. & Köse, N. Y. (2014). İlköğretim matematik öğretmeni adaylarının kanıt bağlamındaki inançlarının, kanıtlama süreçlerinin ve örnek kanıtları değerlendirme süreçlerinin incelenmesi. *Turkish Journal of Computer and Mathematics Education. 5*(2), 137-157

Yıldırım, A. & Şimşek, H. (2013). *Sosyal bilimlerde nitel araştırma yöntemleri*. Seçkin Yayıncılık.

Yoo, S. (2008). *Effects of traditional and problem-based ınstruction on conceptions of proof and pedagogy in undergraduates and prospective mathematics teachers.* Unpublished doctoral thesis, The University of Texas.

Zeybek Şimşek, Z. & Üstün, A. (2019). 7. sınıf öğrencilerinin dörtgenler konusundaki ispat seviyelerinin incelenmesi. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi. 13* (1), 196-216.

Cooperative Learning Is A Relevant Instructional Approach For Developing Content With Web 2.0s In Pre-Service Teachers Training? : A Phenomenological Research

Research Article

Vildan DONMUS KAYA[1]

[1]*Fırat University, Faculty of Education, Department of Educational Science, Elazığ, Turkey* 🆔 0000-0003-4362-393X

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ARTICLE INFO	ABSTRACT
	Collaboration and technology literacy skills are among the basic skills that must be acquired by pre-service teachers in pre-service teacher training programs to prepare them for the digital learner and digital teacher roles they will encounter in the 21st century. Studies show that pre-service teachers usually graduate from pre-service teacher training programs without gaining the ability to use technology and develop teaching materials using technology, and they work in learning-teaching environments that do not encourage cooperation in this process. This article, which refocuses on technology literacy skills by collaborating as a result of training in itself and developing content with Web 2.0 tools, explores what pre-service teachers think about both the collaborative approach used in content development with Web 2.0 tools and Web 2.0 tools. This study, conducted in Turkey, aimed to examine pre-service teachers' views both on the use of a collaborative learning approach in developing content with Web 2.0 tools and Web 2.0 tools. This type of insight can offer valuable knowledge about how Web 2.0 tools and collaboration in developing content with Web 2.0 tools are understood and might impact practice in teacher training programs. A qualitative study was conducted on the phenomenological design. The participants consisted of pre-service teachers from a department of a university teacher training program, and the data were collected through individual, semi-structured interviews. The data were analyzed using thematic analysis methods. The results of the research revealed that the cooperative learning approach is a relevant approach for developing content Web 2.0s as it improves learning. In addition, Web 2.0s are tools that can be used in professional life as these tools have benefits for students, teachers, learning environment and course content. The limitations of the study and implications for future research were discussed.

*Corresponding author: Fırat Üniversitesi
Telephone: +905524120501
e-mail: vildandnms@gmail.com

Introduction

The increasing interest in the competencies pre-service teachers will need as digital learners and digital teachers in the 21st century has led to a call for PSTs to gain 21st-century skills (Erten, 2020). In answering this call, PSTs education is very important (Barnes, & Shirley, 2007). PSTs education should ensure that PSTs are equipped with these necessary skills to cope with the different challenges they will encounter in their professional careers (Cheng, Cheng, & Tang 2010). One of these skills is technology literacy. The 21st century requires PSTs to become familiar with the latest technology as a way to enhance their teaching and learning expertise and their students' learning (Boulton, & Hramiak, 2014). However, PSTs graduate from PSTs training programs without gaining the ability to use technology and develop teaching materials using technology (Lai, & Hong, 2015; Hsu, 2016; Tondeur et al. 2017). In this context, in the 21st century, PSTs education should especially focus on improving the technology literacy skills of PSTs and learning the effective use of current technologies in teaching-learning processes (Gündüz, & Odabaşı, 2004; Gürsoy & Orhan-Göksün, 2019) and the process should be planned accordingly (Onbaşılı, 2020).

One of the current technologies that contribute to the development of technology literacy skills is Web 2.0 tools (Rahimi, Berg & Veen, 2015). Web 2.0 tools (Web 2.0s) have recently come to the fore with the opportunities they offer among technologies that provide advantages for both teachers and students compared to traditional methods and technologies, and respond to the search for effective methods and materials to support and enrich teaching (Dabbagh, & Kitsantas, 2012; Jones et al. 2010; Magnuson, 2013). While the number of studies on Web 2.0s in the field of educational research has increased in recent years (Donmuş-Kaya, 2022; Yazıcı, Ocak, & Bozkurt, 2021), it is seen that these studies focus on PSTs-technology issues (Donmuş-Kaya, 2022). The reason for this is undoubtedly the opportunities that Web 2.0s offer to both the teacher and the learner in the teaching-learning processes. In more flexible teaching-learning environments where Web 2.0s are used (Dabbagh, & Kitsantas, 2012; Jones et al. 2010; Langset, Jacobsen, & Haugsbakken, 2018; Rahimi, Berg, & Veen, 2015; Mcloughlin, & Lee, 2010; Vesah, 2012) more active (Magnuson, 2013; Preston et al., 2015), interested in the lesson (Jones et al., 2010; Rahimi, Berg, & Veen, 2015) and highly motivated (Langset, Jacobsen, & Haugsbakken, 2018; Preston et al. 2015) appears to be. These tools provide teachers with the opportunity to use different activities and products in the classroom, providing autonomy, making lessons more effective and meaningful, and diversifying assessment products (Byrne, 2009; Langset, Jacobsen, & Haugsbakken, 2018). As emphasized, these tools have a high potential to be used educationally in teaching-learning processes, and it is the teacher who will organize educational content and activities using these tools (Başal, 2016). Studies conducted with PSTs, who are the teachers of the future, show that PSTs use Web 2.0s, which allow them to develop materials using technology, more frequently only for communication via instant messaging and social networking sites (Baran, & Ata, 2013). In addition PSTs do not use the opportunities offered to them sufficiently (Albion, 2008; Kumar, & Vigil, 2011; Vona-Kurt, 2017) that their knowledge (Özer, & Albayrak-Özer, 2017), and confidence in integrating these tools into learning environments are not sufficient (Sadaf, Newby, & Ertmer 2012), they are trying to develop content with these tools. Revealed that their self-efficacy is quite low (Gürsoy, & Orhan-Göksün, 2019; Kul, Aksu, & Birişçi, 2019; Onbaşılı, 2020) or moderate (Eser, 2020; Timur, Yılmaz, & Küçük, 2021). For this reason, it is important that PSTs, who are the teachers of the future, gain the skills of creating content by using these tools in PSTs training programs and that more motivating teaching-learning approaches are adopted in gaining these skills.

Cooperative learning approach (CLA), which tends to be the most appropriate pedagogy for PSTs education (Johnson & Johnson, 2017), emerges as a motivating approach that allows PSTs to actively engage with the content, gain knowledge, apply what they have learned, and improve their social and communicative skills (Johnson, & Johnson, 2014; Slavin, 1995, cited in Slavin, 2011). While this motivating approach increases the academic achievement of PSTs (Cecchini et al. 2021; Chen, & Lin, 2020; Karataş, & Özcan, 2015; Yıldız, 2021),

their attitudes towards the approach and the course (Bilgin, & Geban, 2004; Taşdemir, & Sarıkaya, 2006), creative thinking (Birişçi, & Karal, 2011; Karataş, & Özcan, 2015), reflective thinking (Urhan, & Erdem, 2018) and critical thinking (Karataş, & Özcan, 2015) skills. On the other hand, considering that the 21st century skill that is clearly focused in the revised curricula of the countries is the cooperation basic skill (Binkley et al. 2012; Lamb, Maire, & Doecke 2017), it is thought that CLA will be effective in developing both technology literacy skills and cooperation basic skills.

Context of the study

In Turkey, PSTs training is under the responsibility of Education Faculties, which is one of the four-year undergraduate programs since the establishment of the Council of Higher Education (YÖK) in 1981 (Çakıroğlu, & Çakıroğlu, 2003). Recently, in addition to these undergraduate programs, pedagogical formation certificate programs for teacher education are offered to graduates and senior undergraduate students from various fields of study.

This article reports the research that reveals the opinions of some of the pre-service teachers who experienced the CLA while developing content for their profession by using the Web 2.0s mentioned in the background of the research in the Instructional Technologies course in one of the Education faculties in eastern Turkey in the 2021-2022 Fall semester.

The process was carried out in cooperative base groups for eight weeks, including weekly one-hour synchronized online sessions and in-group/inter-group synchronous/asynchronous studies with 52 PSTs who attended the course and agreed to take part in cooperative base groups from 61 PSTs who took the Instructional Technologies course. A learning management system was used in synchronous online sessions attended by the instructor and all collaborative groups. During the course, general information about Web 2.0s that can be used in each task was given by the instructor, and each group decided on the Web 2.0S they would use by doing research on that task in the tool selection section of each task's sub-task. Four collaborative tasks, including concept/mind map creation, puzzle creation, presentation creation, and measurement tool creation, were completed by following the stages suggested by Johnson and Johnson (2017).

Theoretical Framework

The conceptual framework of this study consists of two main dimensions that are stated and emphasized in the context of the study. The first of these is for some applications of Web 2.0s that allow PSTs to develop content. The other one is about the CLA that PSTs have adopted while developing content with Web 2.0s.

Web 2.0s

Web 2.0s are blogs, podcasts, video broadcasts, knowledge development websites, social networks, social tags, which provide an environment for users to collaborate with each other and support the exchange of information and ideas among users (Greenhow, Robelia, & Hughes, 2009; Kurt, 2019). In addition to photo/video sharing and RSS feed applications (Akgündüz, 2016; Akgündüz & Akınoğlu, 2017), users can create online books, word clouds, digital boards, animation, augmented reality applications development, infographics and posters, concept/mind maps. They are platforms that also support applications that allow to develop content such as creating effective presentations, preparing measurement and evaluation tools (Korkmaz, Vergili, Çakır, & Erdoğmuş, 2019; Kurt, 2019). These applications, which enable content development, provide teachers and students with the opportunity to create their own content, modify and control the created or existing content, socialize using the content, and encourage students to be active participants in the classroom and contribute to the content in the teaching-learning processes (Hall, 2008).

Among the Web 2.0s, which have a wide variety of alternatives, information about the tools used in the context of this study and the features of these tools are presented in Figure 1:
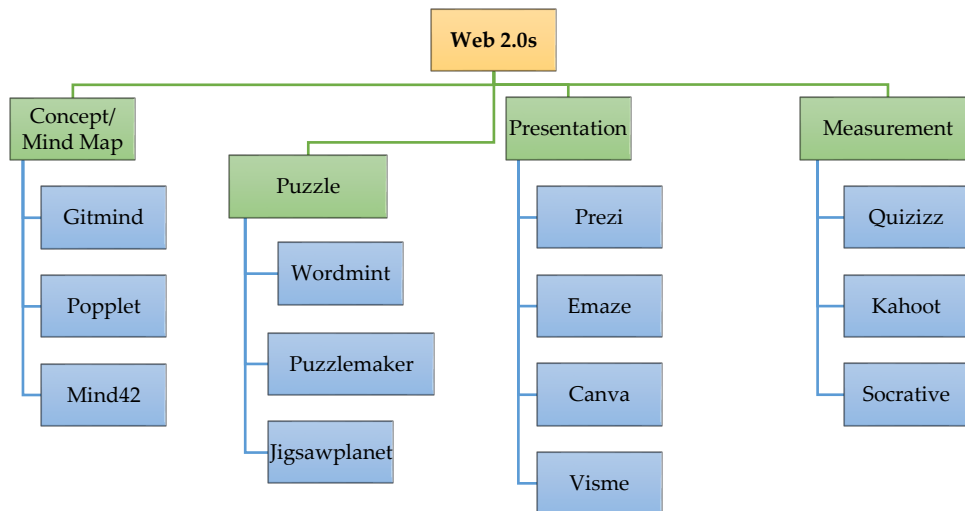
Figure 1. Pattern showing Web 2.0 Tools by using PSTs

Concept/Mind map creation tools: *Gitmind* allows users to create their own templates from a computer, tablet or smartphone, or edit their mind maps using different previously prepared templates. *Popplet* is one of the most popular mind mapping tools. When this tool was first developed, flash support was mandatory to be able to use the tool, but later it was updated and an improvement was achieved that can be run without flash support. Popplet tool provides the opportunity to work as a group while creating mind maps with the collaboration button. It is possible to create a free mind map using this tool. *Mind42* is an online mind map tool that allows users to visualize their thoughts. It is completely free and the mind maps created are specific to the user, but the user can share the mind map they have prepared with others if they wish.

Puzzle creation tools: *Wordmint* is a tool for creating five different puzzles for free. If it is desired to create more than five puzzles, the previous saved puzzles must be deleted. In addition, it is possible to download the puzzles of different users who prepare puzzles using this tool for free. The *Puzzlemaker* tool is a puzzle creation tool for teachers, students, and parents. It offers the ability to create and print customized word searches, crossovers, math puzzles and more using your own word lists. *Jigsawplanet* is a puzzle creation tool that allows images to be designed as puzzles. It is very easy to use. This application provides users with access to millions of free puzzles created by a large community, as well as the opportunity to create, play, share and compete with other users.

Presentation creation tools: *Prezi* is a web-based presentation creation platform that works with the "focus-back-focus" or "enlarge-reduce" principle, which has been developed since 2009 (Tanyeri, 2019). Prezi allows all design ideas to be organized on a single canvas. Any desired content can be added anywhere on this canvas. These contents can be text, graphics, images, videos, PDF documents or a website. *Emaze*, on the other hand, is a Web 2.0 tool that offers the opportunity to create effective and creative presentations, as well as many features. It is an alternative application for creating presentations with ready-made presentation templates and transition effects. While it offers users the opportunity to create new presentations, it also offers the opportunity to edit existing ppt and pdf files by uploading them. *Canva* is a free online design platform that offers the ability to create effective presentations among many features. While it offers a lot of ready-made templates to users, it also allows them to design by choosing their own blank templates. *Visme* is a free online design platform with many features like Canva, including effective presentation preparation. There are ready-

made templates and graphics classified in various fields. While it allows users to make their own designs, it also gives the opportunity to create an effective presentation by choosing one of the ready-made templates.

Assessment and evaluation tools: *Quizizz* is an online application developed by a group that aims to increase students' motivation, where fun and interactive surveys, exams and quizzes can be created, evaluated quickly and supported by feedback. It allows to prepare different types of questions such as multiple choice, true-false, survey, open-ended, fill-in-the-blank. *Kahoot* is a fun tool used to make learning fun. With Kahoot, quiz, survey, discussion and ranking questions can be created. It allows to prepare different types of questions such as multiple choice, true-false, survey, open-ended, fill-in-the-blank. At the end of the exams, participant answers are analyzed and the best participants are reflected on the screen. *Socrative* is a tool that provides fun and engaging interactions for students, while providing an effective way for educators to monitor and evaluate learning, saving time. Instant feedback in this app is a vital part of the learning process. It allows to prepare multiple choice, true-false and short answer questions.

CLA

CLA is a process-oriented learning approach in which learners work in small groups of heterogeneous individuals to achieve a certain common goal, taking individual responsibilities and working together to help each other in understanding the content of learning (Johnson, & Johnson, 2014; Liebech-Lien, 2021; Sharan, 2015; Siegel, 2005; Slavin, 2011). Tasks and rewards in cooperative base groups contribute to positive interdependence among students, each student's sense of individual accountability for improving the success of the group goal, and the development of social skills as well as supporting groupmates (Johnson, & Johnson, 2014; Johnson, Johnson & Holubec, 2013; Slavin, 2011; Yeşilyurt, 2009). These mentioned differences emphasize the principles of cooperative learning groups. Cooperative learning groups have five basic principles: positive interdependence, individual accountability, promotive interaction, social skills and group processes (Johnson & Johnson, 2014; Johnson, Johnson & Holubec, 2013; Slavin, 2014). Positive interdependence is the perception that each learner in the group is connected to each other and that if one of the learners does not perform the task, the others will not be successful. Group members need to integrate their own efforts with those of other members of the group to complete the task assigned to the group. The work of each individual in the group benefits the group. Certain strategies can be used to strengthen positive interdependence in cooperative learning. For example, common rewards (each with an extra 5 points if all learners in the group get 90% or more correct on the test), division of tasks (give each group member a portion of the total task to be completed or knowledge), and complementary roles (reader, supervisor, promoter, detailer etc.) can be used. Individual accountability is that the performance of each student in the group is evaluated and the results of this evaluation affect the group and the individual. The purpose of cooperative learning groups is to make each member a stronger individual. Students learn together so that they can then perform higher individually. To ensure that each member is empowered, students are held individually responsible for doing their share of the work. In order to structure individual accountability, an individual test can be given to each student, a student's product can be chosen randomly to represent the whole group, or each student can be made to explain what they have learned to a classmate. Promotive interaction is the encouragement of the success of the learners in the group by helping, assisting, supporting, encouraging and praising each other's efforts. Because certain cognitive activities and dynamics between people emerge only when learners encourage each other's learning. These include verbally explaining how to solve problems, discussing the nature of concepts learned, teaching one's knowledge to classmates, and relating the present to past learning. Responsibility to peers, the ability to influence each other's reasoning and conclusions, social modeling, social support, and interpersonal rewards all increase as promotive interactions between group members increase. In addition, the verbal and nonverbal responses of other group members provide important information about a student's performance. Quiet students are disinterested students who do not contribute

to the learning of others as well as themselves. Groups need to be small (2-4 members) to achieve meaningful promotiveinteraction. Social skills require interpersonal skills and small group skills to increase the success of a collaborative venture. People should be taught leadership, decision-making, confidence-building, communication and conflict-management skills as purposefully and precisely as academic skills. Placing all socially unskilled individuals in a group and telling them to cooperate does not guarantee that they will be able to do this effectively. Group processes draw inferences about group processes when group learners discuss how well they have achieved group goals and maintained effective working relationships. Groups therefore need to identify which members' work is helpful and unhelpful, and make decisions about what behaviors to continue or change. When difficulties arise in relating to each other, students should engage in group work and identify, describe and solve the problems they face while working effectively together.

Focus of the present study and research questions

As reviewed, studies have proven that Web 2.0s make learning-teaching processes effective, content development using these tools contributes positively to PSTs' self-efficacy, and CLA improves learning outcomes in the context of teacher education. However, it is seen that there is information about the views of PSTs on the use of CLA, which has motivating effects, in distance education (Zorlu, 2020) and its effects on creative thinking and reflective thinking in learning a new technology and developing material using this technology (Birişçi, & Karal, 2011; Urhan, & Erdem, 2018). In addition, while it is seen that there are studies in which traditional groups are used in content development with Web 2.0s in PSTs education and there is information about the opinions of pre-service teachers about Web 2.0s (Gürsoy, & Orhan-Göksün, 2019; Onbaşılı, 2020), the appropriateness of using CLA in content development with Web 2.0s is discussed. There was no information based on the views of the related PSTs. It has been reported that supportive environments should be developed in PSTs training programs that facilitate thinking about the role of new technologies in education and offer opportunities to experiment with new applications to further integrate technology into teaching and learning processes (Tondeur et al. 2018). This study aimed to fill this gap in the field by examining the opinions of PSTs about the appropriateness of CLA, which is known for its supportive effectiveness in teacher education in content development with Web 2.0s, one of the new technologies.

Aim of the Research

General purpose of researh, three objectives have been determined. The first of these objectives is to examine whether CLA is a relevant for developing content with Web 2.0s, the second is to examine PSTs' views on variables that mediate CLA (Positive interdependence, Individual accountability, Promotive Interaction, Group Processing, and Social Skills), and the last one is about Web 2.0s. According to these objectives, the following research questions were determined:

1. What are the views of PSTs on the relevance of CLA for developing content with Web 2.0s?

2. What are the views of PSTs using CLA for developing content with Web 2.0s about the components of CLA?

3. What are the views of PSTs using CLA for developing content with Web 2.0s about Web 2.0s?

Importance of the research

It is thought that the results obtained according to the views of the PSTs in this study will contribute to the education makers and researchers who are effective in the planning and development of PSTs training programs in which CLA will be included in the development of technology literacy skills, in particular content development with Web 2.0s. In addition, it will not only be limited to the results of using CLA in content development with Web 2.0s in PSTs training programs, but will also provide data in terms of improving CLA. Again, it is thought that the results of the study will contribute to the determination of the effects of CLA in

the integration of technology in different disciplines in PSTs training programs and to encourage the instructors. In addition, since there is no study in the literature based on the views of PSTs regarding the studies in which CLA is used in content development with Web 2.0s, it is expected that this study will contribute to the elimination of this deficiency in the literature and present important findings for researchers working in technology integration teaching-learning approaches and qualitative research model.

Methods

In this study, the phenomenology approach, as one of the qualitative research methods, was used. The phenomenology approach is used to highlight the common experiences of a group of individuals (Creswell, 2020). The phenomenon in this study is "the use of CLA in content development with Web 2.0s".

Participants

In studies in which the phenomenology approach is adopted, individuals or groups that experience and reflect the phenomenon that is the subject of the research are used as data sources (Yıldırım, & Şimşek, 2013). For this reason, the participants were selected from among the PSTs who experienced the phenomenon in this study, using the maximum variation sampling method, which is one of the purposive sampling methods. The purpose of the maximum variation sampling method is to determine the common patterns and the values of these patterns among a wide variety of differences related to the phenomenon (Patton, 2014). In this context, attention was paid to the fact that there were participants from nine different cooperative work groups and that the participants were female and male. In addition, attention was paid to the necessity of having at least six participants in phenomenological studies (Sandelowski, 1995). The voluntary participants were PSTs of a sophomore (n= 18) from the Education Faculty of a university in Turkey. The demographic characteristics of the participating PSTs are shown in Table 1.

Table 1. Demographic Characteristics of the Participating PSTs

Colloboration Group Number	Gender	Participant Coding
1	Female	G1T1F
	Male	G1T2M
2	Male	G2T1M
	Female	G2T2F
3	Female	G3T1F
	Female	G3T2F
4	Female	G4T1F
	Male	G4T2M
5	Female	G5T1F
	Female	G5T2F
6	Female	G6T1F
	Male	G6T2M
7	Male	G7T1M
	Female	G7T2F
8	Male	G8T1M
	Male	G8T2M
9	Female	G9T1F
	Male	G9T2M

Instruments

In phenomenological approaches, phenomenological interview is the primary data collection method in order to reach the essence of the meaning of the experience of a phenomenon or the basic structure underlying it (Merriam, 2009). For this reason, a semi-structured interview form consisting of two parts,

developed by the researcher, was used as the basic data collection tool in order to conduct the interviews in the study. In the first part of the interview form, there were questions about the demographic information of the participating PSTs, and in the second part, there were eight questions about the use of CLA for developing content with Web 2.0s. While preparing the interview form, the relevant literature was examined in detail and a draft form was created by the researcher. In order to ensure the validity of the interview form, opinions were obtained from a total of three experts in a Computer and Instructional Technologies, a Curriculum and Instruction, and a Turkish Education Department. In line with the suggestions of the experts, the draft interview form was rearranged and the form was made ready for pilot application. The prepared form was tested with pilot interviews with PSTs who were suitable for being a participant in the study but were not included in the study, and was rearranged and finalized after the pilot study.

Data Collection and Ethical Issues

An informed consent form was shared with all of the pre-service teachers in the group who had experience with the case, including the purposes of the study, how the data obtained from the participants would be processed, the data would be used only for this study, how to protect their personal information, and the researcher's information. Of the 46 PSTs who agreed to participate in the study, 18 participants were included in the study to ensure maximum variation.

Data were collected through online interviews with each participant individually. Online interviews were conducted using a web video conferencing platform (Zoom). Appointment schedule were determined for online interviews with PSTs. All interviews were moderated by the researcher. The interviews were recorded with the consent of the participants. The raw data for the dataset is not publicly available to protect the privacy of individuals under the European General Data Protection Regulation, as respondents indicated that they do not allow the sharing of video and audio files of online conversations with third parties. Video recording was started before each interview.

The information in the informed consent form was repeated at the beginning of the online interviews. Afterwards, participants were asked to verbally declare their willingness to participate in the study. After sharing their demographic information, the participants expressed their general opinions about the use of CLA in content development with Web 2.0s and their suggestions for an alternative approach, if any, with their reasons. Then, their views on the basic principles of this approach were taken. During the online interviews, the basic questions in the form were asked to all participants in the same order, and probe questions were used when necessary. Interviews with the participants lasted between 40 and 50 minutes. Finally, the researcher concluded the themes on which the participants expressed their views.

Data Analysis

Video recordings obtained from the participants of PSTs were converted into digital texts before starting the data analysis. The data were analyzed through MaxQDA, using a thematic approach used to extract themes and concepts related to the relevance and principles of CLA used by PSTs in developing content with Web 2.0s. The thematic approach, in other words, thematic analysis is a method used to analyze qualitative data (Braun, & Clarke, 2006) that requires searching a dataset to identify, analyze and report repetitive patterns and to describe the data analyzed with a pragmatic approach (Coffey, & Atkinson, 1996). But it also includes interpreting the codes in the process of selecting and creating themes. A distinctive feature of thematic analysis is its flexibility to be used in a wide range of theoretical and epistemological frameworks and to be applied to a wide variety of study questions, designs, and sample sizes (Braun, & Clarke, 2006). The analysis was carried out taking into account the stages of "familiarization with the data", "creating the starting codes", "searching for themes", "reviewing themes", "defining and naming categories" and "preparing the report including a selection of explanatory data and citations".

In qualitative research, trustworthiness, which has four criteria, namely credibility (internal validity), reliability (reliability), confirmability (objectivity), and transferability (external validity), is more important than validity and reliability, and these criteria are seen as gold standards (Guba, & Lincoln, 1982: cited in Merriam, 2013). In a qualitative study, it is recommended to specify one or more of these strategies to check the accuracy of the findings (Creswell, 2003). The details of the measures taken to ensure trustworthiness in this study are as follows:

Measures taken to ensure credibility: Long-term interaction and participant confirmation are among the methods used to ensure credibility (Holloway, & Wheeler, 1996: cited in Başkale, 2016). In order to ensure long-term interaction, the interviews were conducted by the researcher and it was ensured that she developed an in-depth understanding of the participant's views. The researcher shared the research results, the meanings derived from the data, and their own interpretations with the participants and asked them to evaluate their validity (Yıldırım & Şimşek, 2013). Thus, confirmations were obtained from the participants.

Measures taken to ensure reliability and confirmability: The detailed introduction of the study method to ensure reliability, the examination of the process and results by another researcher, and the control method to ensure confirmability are among the methods used (Holloway, & Wheeler, 1996: cited in Başkale, 2016). The digital texts of interviews were coded and themed by the researcher, and then another researcher was allowed to place the codes back into the themes. The researcher and another researcher tried to reach an agreement on open coding by discussing codes and themes. Last themes were then developed by discussing open codes and emerging concepts, and when there were disagreements they recoded or redefined concepts and themes to reach a consensus. Thus, it was tried to ensure the confirmability and reliability of the coding. After the final code-theme structure was reached, the findings were transformed into figures containing codes and themes in line with the research questions.

Measures taken to ensure transferability: The forms in which the findings were transformed were supported by direct quotations from the participants. A code system was used to define the participants in detail while giving the citations (G1PST1F: G1=Group1- T1=Pre-Service Teacher 1- F=Female, G2PST2M: G2=Group2- T2= Pre-Service Teacher 2- M=Male………..), and thus evidence was provided for the transferability of the study. Because the detailed introduction of the participants is among the methods to be used in ensuring transferability (Holloway, & Wheeler, 1996: cited in Başkale, 2016).

Ethics Committee Approval

This research was carried out with approval of Fırat University Ethics Committee for Researchs on Social and Human Sciences with the decision numbered "05/11" in the session dated 10.03.2022.

Results

1. Views of PSTs on the Relevance of CLA for developing content with Web 2.0s

PSTs' views on the revelance of CLA for developing content with Web 2.0s are shown in figure 2.
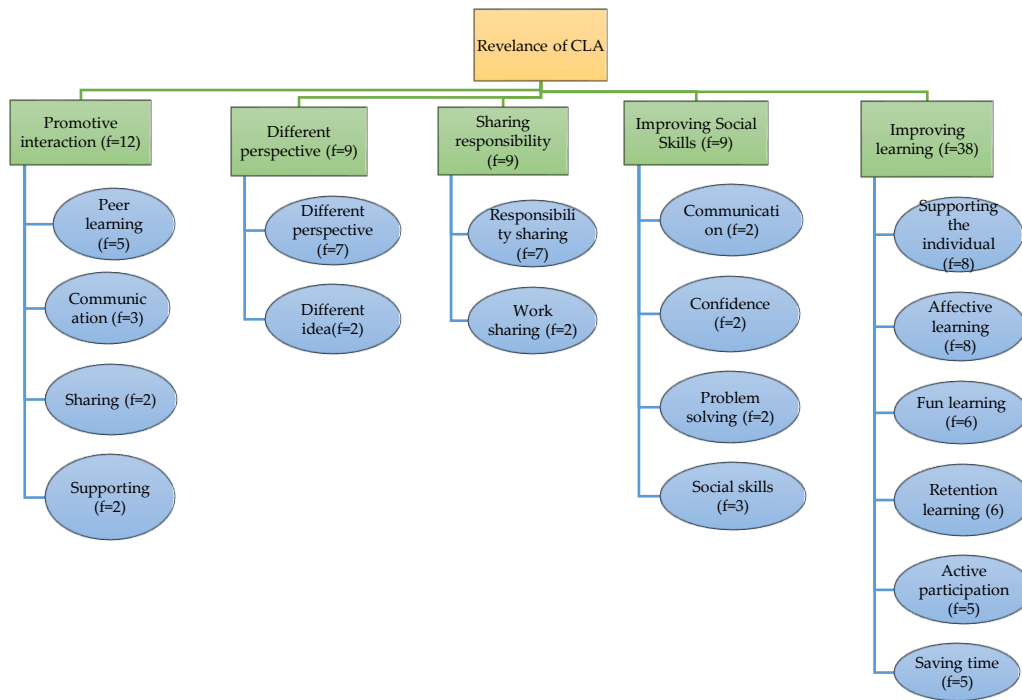
Figure 2. Pattern showing themes and categories regarding the relevance of CLA

The PSTs (n=18) emphasized that CLA was a relevant approach for developing content with Web 2.0s. But two of the PSTs suggested that self-study also could be a relevant approach. Moreover, the #Interviewee G2T2F with a facial expression that she would prefer to self-study said that: *"We had good cooperation while creating material with Web 2.0s. Normally, I had to communicate, although I could not communicate easily. And I learned to communicate. However, I still think that this homework can be prepared by self-study"*. The reasons for the relevance of CLA were "Improving learning", "providing Within group interaction," "different perspective," "Sharing responsibility" and "Improving Social Skills.

The most emphasized (f=38) theme about the relevance of CLA for developing content with Web 2.0s was "Improving learning". PSTs stated that improving learning in CLA was the main reason why CLA was a relevant approach. CLA's improvement in learning is mostly due to structured group work. In such approaches, the support of the learners by their groupmates and the active participation of the individuals in the process improve learning by saving time while providing effective, fun and permanent learning. The opinions of some PSTs regarding these sub-themes are as follows. Interviewee #G1T1F: *"If I were alone, I wouldn't have learned that there are so many Web 2.0s in such a short time. I learned more tools by exchanging ideas with my friends. In addition, while completing our tasks using these tools, everyone took individual responsibility and we actively participated in all processes. We also completed each other's shortcomings in the group. When we all learned, our self-confidence increased."* Interviewee #G4T2M: *"It would be too boring if we did these tasks individually. But it was a lot of fun as a group and we completed our tasks well knowing our responsibilities. CLA was a more appropriate approach to content development with Web 2.0 tools."* Interviewee #G3T1F: *"we did the work by sharing and we played a part in completing at least some of the work ourselves. For this reason, our learning became more permanent and we developed as individuals."*

PSTs emphasized that CLA provides promotive interaction. Some of the PSTs' views on these themes were as follows. Interviewee #G9T2M: *"It's my first time encountering Web 2.0 tools. If I didn't have group friends, I would have a hard time on my own. But in every situation I did or did not do well, it was more effective to communicate with my group friends and learn together."* Interviewee #G7T2F: *"When I created the questions in the task related to assessment and evaluation according to the outcome-content table, I was praised by my groupmates. such good*

interactions show that CLA is a relevant approach." Interviewee #G6T1F: *"When I had difficulties, I asked my group friends for help. they were helping me too. Since I am not alone and we support each other in the group, I can say that CLA is a relevant approach."*

PSTs emphasized the "different perspective" by mentioning the fact that by using CLA, individuals with different perspectives were together in a group. PSTs' expressed these themes as follows. Interviewee #G5T2F: *"Since there are individuals with different perspectives and different ideas in cooperative learning, we realized that we come up with more creative solutions and that we understand more easily."* Interviewee #G8T1M: *"CLA was very effective in terms of bringing together people with different perspectives. We exchanged ideas with my groupmates for each task. One of us was adding or correcting the other's idea."*

The PSTs stated that one of the reasons CLA was a relevant approach for developing content with Web 2.0s was the sharing of responsibilities related to tasks in the group. The PSTs' views on this theme are as follows. Interviewee #G2T2F: *"Yes, because it is very difficult for you to see every detail on wide platforms and to take so much responsibility in a short time. However, we learned every detail effectively because we divided the responsibility within the group using cooperative learning."* Interviewee #G1T2M: *"I thought it was a relevant approach. Because it was an easier learning process for me. I shared this responsibility with my friends on the subjects that I can learn by taking more responsibility by myself. I had the opportunity to learn more easily with their help."*

One of the themes that the PSTs highlighted over the relevance of CLA was that it improved social skills. In this theme, PSTs stated that CLA was a relevant approach for communication skills and socialization through group work, and to building self-confidence through fulfilling individual responsibilities and completing tasks. PSTs' views on this theme are as follows. Interviewee #G1T1F: *"If I were alone, I wouldn't have learned that there are so many Web 2.0s in such a short time. I learned more tools by exchanging ideas with my friends. In addition, while completing our tasks using these tools, everyone took individual responsibility and we actively participated in all processes. We also completed each other's shortcomings in the group. When we all learned, our self-confidence increased."* Interviewee #G4T1F: *"I also think that as I communicate with group members to complete assignments, I gain a more social identity."*

2. Views of PSTs used "CLA for developing content with Web 2.0s" about CLA

PSTs' views on the CLA components followed in the process of using CLA in content development with Web 2.0s are shown in Figure 3.
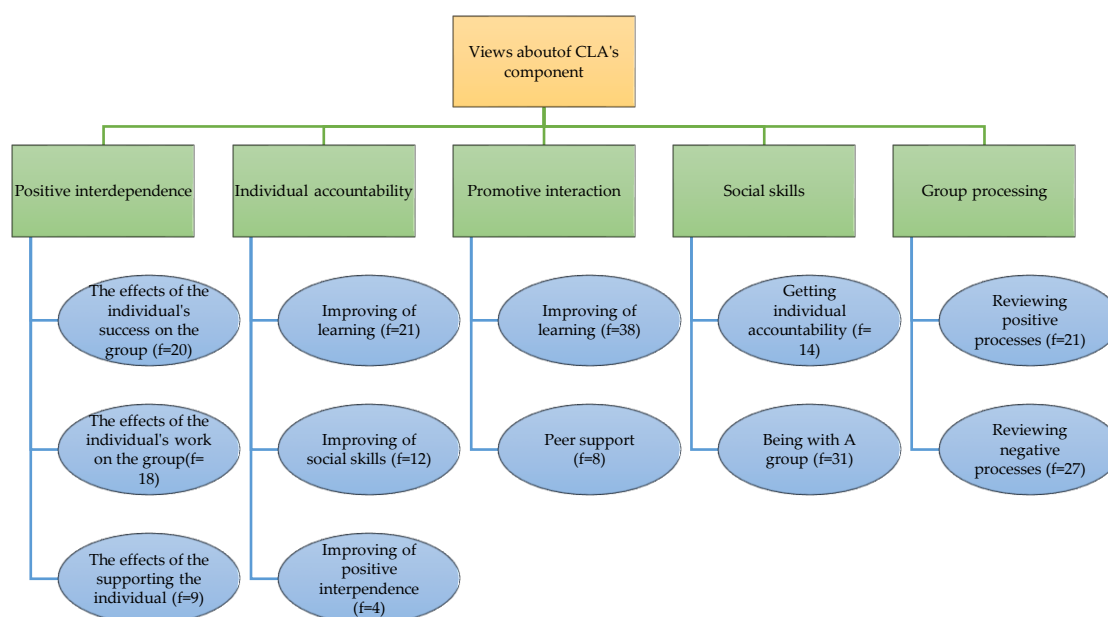
Figure 3. Pattern showing themes and categories

Most of the PSTs emphasized that the success/failure of the individual affects the group success and it is effective for positive interdependence. In addition, in term of pre-service teachers, individual studies benefit both the individual and the group, while the individual's failure to work affects both the individual and the group negatively. Supporting the individual by peers contributes to the individual's sense of belonging to the group. Some of the PSTs views are as follows. Interviewee #G7T1M: *"…At the end of the colloborative work, we create common material, in which case the success or failure of any person will affect this product. Naturally, the success or failure of an individual affects the success of the group."* Interviewee #G8PST2M: *"Everyone in the group fulfilled their own responsibility, as the understanding of 'We either go out together or sink together' prevailed in the group. because the success of each person in the group would either increase the success or decrease the success by affecting the success of the group."* Interviewee #G2T2F: *"In this process, we shared every extra research we did individually and every extra information we learned with our group friends. All of these have both improved us and benefited other friends in our group. But a friend of ours did not do her duty. then we could have been harmed as a group. We tried to motivate that friend so that this would not happen, and prevented our group from being negatively affected. There was a positive solidarity between us."* Interviewee #G5T1F: *"When someone in the group does not do their duty, delays or disrupts, other members of the group are disturbed by this situation and this prevents effective teamwork."*

PSTs emphasized that taking individual accountability in developing content with Web 2.0 tools improves learning, social skills and positive interpendence. While taking individual accountability improves learning by ensuring the learning and active participation of all members of the group, also realizing a more equitable, motivating and permanent learning improves learning. While PSTs mentioned that individual accountability develop sense of responsibility, empathy and self-confidence, he emphasized the perception of group success and drew attention to the fact that individual accountability create positive solidarity. The PSTs' views on these themes are as follows. Interviewee #G6T2M: *"It was good for us to learn more efficiently that a different person took responsibility in each task, even though the responsibility of that task changes. For example, different people researched the most effective Web 2.0 tool for each task. everyone was responsible for researching the Web 2.0 tool on at least one assignment. so we all learned."* Interviewee #G9T1F: *"All members of the group must work on each assignment and at some stage of each assignment so that fair learning can take place."* Interviewee #G3T2F: *"The awareness that it is my responsibility to specialize on a subject makes it more motivating for me to complete that job."* Interviewee #G8T1M: *"The fact that everyone in the group took the responsibility of researching and teaching a web 2.0 tool to other people provided both equality in the group and the sense of responsibility of each individual in the group."* Interviewee #G5T2F: *"Taking responsibility as an individual has increased our individual motivation and self-confidence."* Interviewee #G7T1M: *"The fact that everyone took on a similar responsibility in turn increased the group's empathy towards each other after a few assignments."* Interviewee #G1T2M: *"We were more careful because any mistake we made would affect the success of the whole group. I think this is a good thing."*

While PSTs emphasized that promotive interaction improves learning more, they stated that it makes learning effective, easy, comfortable, and fun. The PSTs also pointed out that peers support and help each other. The views of some PSTs regarding these sub-themes are as follows: Interviewee #G6T1F: *"I think learning something with our peers or learning something from our peers is more effective than individual learning. I learned more effectively and easily by asking my groupmate what I did not know and getting immediate feedback."* Interviewee #G4T2M: *"The advantageous aspect for me of learning how to use the Web 2.0 tool from my friend in the group was that I could easily ask my friend questions that were on my mind. We supported each other by helping each other in our shortcomings. Sometimes, one friend accomplished more than he should have. We congratulated him at that time. We had nice group interaction."* Interviewee #G2T2F: *"There was constant movement in our group. Everyone was trying to teach each other something. For example, in the concept map assignment, there was a lot of complexity in the group. At that time, we all supported each other's learning by discussing what a concept map was using the documents we had."*

While PSTs emphasized that working in groups on CLA improves social skills, they also stated that taking individual responsibility was also effective in social skills. Being a group improves communication skills while improving problem-solving, conflict management, and socialization skills. Individual responsibility, on the other hand, improves the skills of speaking and taking responsibility while developing more empathy skills. In addition, the PSTs emphasized that both being a group and taking individual responsibility helped individuals improve their self-confidence. The PSTs' views on these themes are as follows. Interviewee #G9T1F: *"I communicated more with my friends. I socialized more by exchanging ideas with my friends in both my own group and other groups. When I succeeded in my individual tasks, my self-confidence increased."* Interviewee #G3T2F: *"Being in a group with people we didn't know very well before, strengthened my communication with them. We communicated very well with each other because we had to be in constant communication due to the homework we did."* Interviewee #G2T1M: *"If a problem occurred, presenting the idea to solve the problem helped me gain problem-solving skills."* Interviewee #G5T1F: *"We learned to work in harmony in a team. If there was a problem, we solved it in a short time without reflecting on the homework. Sometimes we had a hard time coming up with a common idea, but we got over it"*. Interviewee #G6T2M: *"There were some difficulties while performing their duties in the team, but we helped each other by approaching each other with tolerance and empathy. Because we can experience those difficulties by ourselves."* Interviewee #G3T1F: *"My speaking skill improved in the narration task for which I was personally responsible. After this assignment, I think that I will be able to express my thoughts more easily by speaking in the environments I am in."* Interviewee #G7T2F: *"I think that making presentations to my groupmates improves my self-confidence."* Interviewee #G4T1F: *"We worked with the group, came up with different ideas, and discussed them down to the last detail. I think our self-confidence has improved in terms of defending one's opinion to the end."*

PSTs mentioned that they improved the group processes in CLA by evaluating the situations that negatively and positively affect their work. In addition to the evaluations of identifying/describing/solving problems or identifying/defining/solving deficiencies, PSTs tried to overcome the negativities arising from individual studies. In addition, PSTs also emphasized that there are positive evaluations of continuing the process in accordance with task sharing or effective communication within the group. The views of some PSTs regarding these sub-themes are as follows: Interviewee #G8T2M: *"When something didn't go well during homework, we talked about what the problem was and then had everyone offer solutions. These conversations allowed us to solve the problem faster and save time."* Interviewee #G9T2M: *"After each assignment, our teacher gave feedback on how we could do the homework better. After these feedbacks, we, as a group, talked about our shortcomings and took care not to do it in the next assignment."* Interviewee #G6T2M: *"In our group, especially one of our friends did not fulfill his responsibilities in the first assignment. Although we helped him to take responsibility for that homework, we talked as a group about his negative attitude after the homework."*. Interviewee #G2T1M: *"When we received good feedback about our first assignment after the assignment we made at the beginning, we continued the process in accordance with this assignment."* Interviewee #G1T1F: *"I think that we have achieved the right distribution of tasks by establishing the right communication. We used most of the things we would benefit from, and we avoided the things that would harm our work."*

3. Views of PSTs used "CLA for developing content with Web 2.0s" about Web 2.0s

PSTs' views regarding their professional life use/not use of Web 2.0s used in the process of using CLA in content development with Web 2.0s are shown in Figure 4.
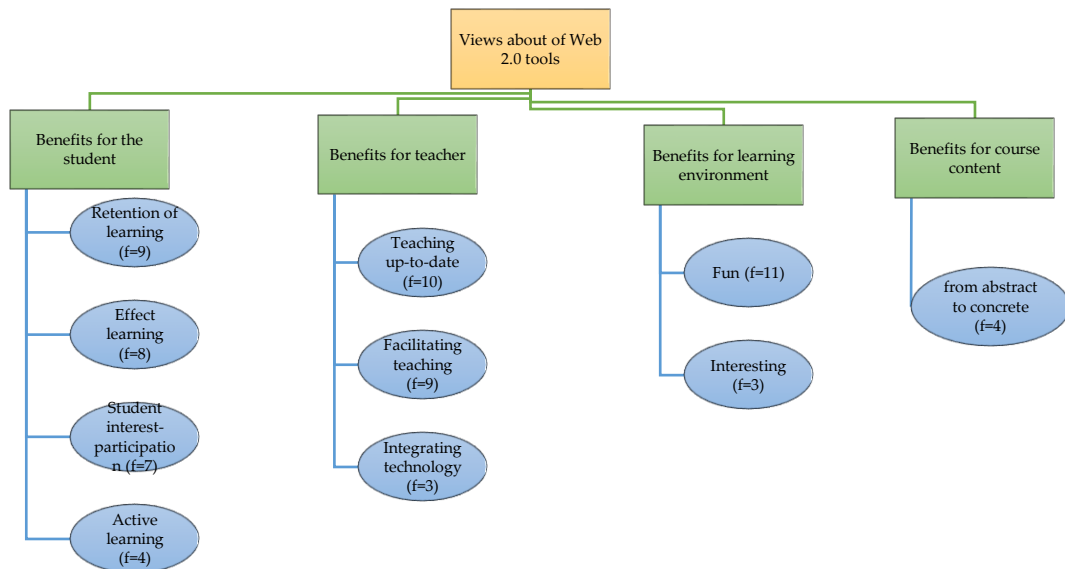
Figure 4. Pattern showing themes and categories

Except for the interviewee #G6T1F, who said "maybe I will encounter infrastructure problems. So, I think I won't use them.", all other PSTs reported that they would use Web 2.0s in professional life. PSTs who stated that they would use Web 2.0s because of the benefits they provided, emphasized these benefits as "student", "teacher", "learning environment" and "course content".

Most of the PSTs emphasized that Web 2.0s made the students learning permanent and effective, as well as enabled the student's participation by attracting the student's attention, and providing active learning for the student. Some of PSTs' views are as follows. Interviewee #G7T2F: *"I will use Web 2.0s because these tools increase permanent and effective learning by providing multimedia."* Interviewee #G4T1F: *"Because students' doing activities and using materials in accordance with contemporary approaches rather than classical learning methods can make their learning more permanent and more effective."* Interviewee #G8T2M: *"Students are interested in the activities in which such tools are used and thus they participate in the lesson."* Interviewee #G9T2M: *"Students' learning by seeing, experimenting, and using their own skills provides more active learning."*

The PSTs stated that Web 2.0s would provide benefits to teachers in providing up-to-date teaching and integrating technology into teaching and that these tools would be used to facilitate teaching. Some of the PA's views on these sub-themes are as follows. Interviewee #G3T1F: *"Using these tools when I become a teacher will enable me to reach the status of an up-to-date and innovative teacher for my students."* Interviewee #G5T2F: *"I believe that these web tools, which allow preparing different activities (puzzle, concept map, test questions, etc.) will facilitate teaching."* Interviewee #G5T1F: *"Yes, I definitely will use Web 2.0 tools. Because technology is now a part of education. And activities prepared on paper are insufficient for learning. More visual and interactive activities are needed."*

PSTs mentioned that Web 2.0s were get learning environments Fun and interesting. The PSTs' views on these themes are as follows. Interviewee #G7T1M: *"I think it will be more effective. At the same time, it attracts more attention of students as it adds fun to the environment."* Interviewee #G4T2M: *"Because using only the blackboard in an abstract lesson like mathematics is both very bored and an incomplete method for students who see mathematics as a big problem. Therefore, Web 2.0s come to our rescue to make the course environment fun."* Interviewee #G8T1M: *"I also think that these tools will make learning environments more attractive by saving them from monotony."*

Finally, few of the PSTs stated that Web 2.0s would benefit the course content while emphasizing that these tools would embody abstract concepts. The PSTs' views on these themes are as follows. Interviewee

#G2T2F: *"There are many abstract concepts in mathematics. The materials we prepare with these tools embody abstract concepts. So that, these abstract concepts become concrete in the minds of the students. This makes the lesson meaningful."*

Discussion and Conclusions

This phenomenology study seeks to examine in-depth, PSTs' views about both the relevance of the CLA in developing content with Web 2.0s and Web 2.0s. For this purpose, the findings obtained from the thematic analyses are interpreted and discussed along with the literature. In this section, I discuss the study's limitations, present interpretations of the main findings, and offer recommendations for both policymakers, and PSTs' educators, and researchers.

Discussion

In terms of this study's results, CLA in PSTs education is a relevant approach to content development with Web 2.0s, as it improves learning, provides within-group interaction, allows different perspectives, allows sharing of responsibility, and improves social skills. The main reason why PSTs find CLA is a relevant approach for developing content with Web 2.0s is that it improves learning. CLA's improving learning is mostly due to highly structured collaborative group work. In such approaches, the support of the learners by their groupmates and the active participation of the individuals in the process improve learning by saving time while providing effective, fun and permanent learning. This result, obtained from the views of PSTs, supported the research results that revealed that CLA increases academic achievement in PSTs education (Cecchini et al. 2021; Chen, & Lin 2020; Karataş & Özcan, 2015; Yıldız, 2021). In addition, this result of the study confirmed the views of different PSTs that CLA improves learning (Kimmelmann, & Lang, 2019; Şimşek et al. 2014). CLA, which has been shown to improve learning in PSTs education, based on both theoretical and research results, is a relevant approach for learning a new technology such as Web 2.0 tools and developing content using this technology. As stated by the PSTs in this study, I think that highly-structured collaborative workgroups are the most effective reason to improve learning. Another reason is related to different perspectives. Because the participant PSTs in another study concluded that different perspectives make learning easier for them (Kimmelmann, & Lang, 2019). In addition, each individual's taking individual accountability that will affect both person self and the group's success is one of the reasons why CLA is effective in improving learning. Moreover, unlike the homogeneous group in traditional group work, the coexistence of individuals with different abilities and competencies may be the reason why this approach is found relevant by PSTs in strengthening the weaknesses of individuals by their peers in technology-based and cooperative works.

Another key finding of the study concerns the components of CLA. In terms of participant PSTs in this study, positive interdependence is highly affected by the achievement and effort of the individual. In addition, the support of the individual by groupmates also ensures the formation of positive interdependence. As per PSTs, individual accountability improves learning by ensuring the learning of all group members and the active participation of the individual in the process. CLA with individual accountability provides more equitable, motivating, and permanent learning while contributing to the development of a sense of responsibility, empathy, and self-confidence. CLA provides effective, easy, comfortable, and fun learning by enabling promotive interaction. In addition, CLA provides the development of social skills of the individual with both individual accountability and being a group feature. As one of the structured group work, CLA provides the development of problem-solving, conflict management, socialization, and communication skills when used in content development with Web 2.0s. The desired effect of CLA is possible by reviewing the situations that affect the group processes positively or negatively. This can be indirectly interpreted as the cooperative learning carried out during the implementation process of the study is highly structured. The views of PSTs about the five variables that need to be taken into account in order for cooperative learning to achieve the desired result in teacher education revealed that there is no sharp distinction between these

components, moreover, they are interlocked. So this is Cecchini et al. (2021) study and the information in the literature (Johnson & Johnson, 2014; Johnson, Johnson & Holubec, 2013; Slavin, 2014). Among the views of PSTs about positive interdependence, the view that the individual's effort is for their own benefit supports the motivationalist, and the view that the individual's effort is for the benefit of the group supports the socialists (Slavin, 2014). In highly-structured collaborative working groups, each component contributes directly or indirectly to improving learning. However, it is thought that the effects of cooperative learning on learners and learners' success largely depend on the quality of the group's interaction (Battisch, Solomon, & Delucchi, 1993; Johnson, & Johnson, 2008; Webb, 2008), making learning effective, easy, comfortable, and fun in content development with new technologies such as Web 2.0s. It should be noted that no matter how highly-structured collaborative group work is, individuals failing to make the necessary effort despite individual accountability or failing to be successful despite their efforts may adversely affect the process. However, the component of CLA's group processing is very effective in preventing these negative situations.

The third key finding of this study concerns PSTs' use of Web 2.0s in their professional life. As per PSTs, Web 2.0s are benefit tools for students, teachers, the learning environment, and course content. These tools, which increase the participation of the students by attracting their attention, make the learning of the students permanent and effective. It also facilitates teaching for teachers who aim to integrate technology into teaching and provide up-to-date teaching. While Web 2.0s provide benefits in making learning environments fun and interesting, they also provide benefits in embodying the abstract concepts in the course content. It is noteworthy that almost all of the PSTs developing content with Web 2.0s have positive views about Web 2.0s. These benefits of Web 2.0s are the reason why PSTs consider using Web 2.0s in their future professional life. In previous studies, PSTs used Web 2.0s to students (Çelik, 2021; Dabbagh & Kitsantas, 2012; Gürsoy & Orhan-Göksün, 2019; Hall, 2008; Jones et al. 2010; Magnuson, 2013; Onbaşılı, 2020; Özer & Albayrak- Özer). , 2017; Özpınar, 2020; Tatlı, İpek-Akbulut, & Altınışık, 2019), teachers (Byrne, 2009; Dabbagh & Kitsantas, 2012; Hall, 2008; Jones et al., 2010; Langset, Jacobsen, & Haugsbakken, 2018; Magnuson, 2013 ; Onbaşılı, 2020; Özer & Albayrak- Özer, 2017; Özpınar, 2020; Tatlı, Akbulut & Altınışık, 2019), learning environments (Hall, 2008; Onbaşılı, 2020; Tatlı, Akbulut & Altınışık, 2019) and course contents (Çelik , 2021; Hall, 2008; Tatlı, İpek-Akbulut, & Altınışık, 2019) confirmed the view that they are tools that benefit. It is thought that PSTs' awareness of the benefits of Web 2.0s provides clues about integrating technologies into their lessons in their future professional life. Because it is very important for PSTs to be aware of the benefits of Web 2.0s and to adopt them in their professional activities (Gürsoy & Orhan-Göksün, 2019; Tatlı, İpek-Akbulut, & Altınışık, 2016).

Conclusions

In conclusion, this phenomenology study confirmed that CLA, which has been known for its positive effects on PSTs education for many years, is a relevant approach for developing content with Web 2.0s. In addition, these results contribute to the existing knowledge by suggesting that the use of highly structured collaborative working groups in creating technology-supported content in PSTs' education will contribute to the development of PSTs' technology literacy and cooperation basic skills. In this context, it is determined that there are some important issues in PSTs education: CLA can be an appropriate approach that could contribute to the improvement of PSTs' learning and the development of both technology literacy and cooperation basic skills. The five principles of CLA that must be considered for improving learning are interlocking, not contiguous, but adjacent. Even if individual responsibilities are not adequately fulfilled, especially in ensuring personal accountability, this unfavorable situation is prevented by the principle of group processes. Developing content with Web 2.0s provides evidence for future technology adoption, assuming that PSTs will contribute to improving their technology literacy skills. In addition, Web 2.0 tools provide a lot of benefits to variables such as student, teacher, learning environment, and course content.

The practical recommendations of this phenomenology study are addressed to teacher educators and PSTs' training program policymakers. CLA should be used for PSTs to develop content with new technologies. Considering the positive effects of CLA on developing content with Web 2.0s, it should be ensured that CLA is widespread in different courses in PSTs training programs. CLA should be used to develop pre-service teachers' technology literacy and collaboration basic skills. In learning-teaching processes using CLA, high-structured designs should be made in accordance with the five principles of CLA. Considering the contribution of content development with Web 2.0s to technology literacy, it should be ensured that teacher candidates develop content with similar technologies.

Future research could use the qualitative results obtained from this study to contribute to the discussion of the reasons for the quantitative results revealing the effects of PSTs on technology literacy and collaboration skills. It could also use these results to compare results used other pedagogical approaches for developing content with Web 2.0s in PSTs' training.

Limitations

Findings and results in this study should be evaluated considering various limitations of the study. The most important limitation of the study is related to the participant group. The participant group consists of pre-service mathematics teachers in the teacher training program, which includes the pre-service part of teacher education. Because in order to obtain deeper views, the participants should have experience with the situation in the research. For this reason, the participants were selected only from pre-service mathematics teachers. A study can be conducted with the participants who have experienced a similar situation, including teachers either who are studying in a different department in the PSTs training program or in post-service teacher education. Another limitation of the study is related to the research method. The research was designed in a phenomenological pattern. The effects of the intervention could have been more clearly demonstrated by designing an experimental study on the process. However, mixed methods research requires long-term designs. I did not have enough time to design the study according to the mixed methods research. Another limitation of the study is related to the diversity in the data. It could be done more effectively by observing how CLA is applied in developing content with Web 2.0s, and by collecting reflective diaries from PSTs. Although reflective diaries for their collaborative work were collected from PSTs during the process, they were not considered appropriate as a data collection tool since they were not qualified to fully reflect the process. It was not possible to make observations because cooperative learning activities included in-class and out-of-class practices and there were too many cooperative groups. For this reason, the data constituting the study was limited to interviews and documents. Despite these limitations, I believe my study contributes to relevant data and can help both teacher educators and researchers move forward.

REFERENCES

Akgündüz, D. (2016). Yeni nesil okulda teknoloji entegrasyonu [Technology integration in the newgeneration school]. In M. Yavuz (Ed.), *Yeni Nesil Okul-Araştıran Okul [New Generation School-Researching School]* (p.p. 135–185), Egitim Yayinlari.

Akgündüz, D., & Akınoğlu, O. (2017). The impact of blended learning and social media-supported learning on the academic success and motivation of the students in science education. *Education & Science, 42*(191), 69–90. DOI: 10.15390/EB.2017.6444

Albion, P. R. (2008). Web 2.0 in teacher education: Two imperatives for action. *Computers in the Schools, 25*(3-4), 181-198. https://doi.org/10.1080/07380560802368173

Baran, B. & Ata, F. (2013). University students' web 2.0 technologies usage, skill levels and educational usage. Education and Science, *38*(169), 192-208.

Barnes, J., & Shirley, I. (2007). Strangely familiar: Cross-curricular and creative thinking in teacher education. *Improving Schools, 10*(2), 162-179. https://doi.org/10.1177/1365480207078580

Başal, A. (2016). Dijmat projesi: İngilizce öğretmenlerinin dijital ders materyali geliştirme algıları [Dijimat project: English teachers' perceptions of digital course material development]. Özcan In Demirel and Serkan Dinçer (Eds). *Eğitim Bilimlerinde Yenilikler ve Nitelik Arayışı [Innovations and Qualification Search in Educational Sciences].* (p.p. 1247 -1260). Pegem Akademi Press.

Başkale, H. (2016). Determination of validity, reliability and sample size in qualitative studies. *E-Journal of Dokuz Eylul University Nursing Faculty, 9*(1), 23-28.

Battistich, V., Solomon, D., & Delucchi, K. (1993). Interaction processes and student outcomes in cooperative learning groups. *The Elementary School Journal, 94*(1), 19-32.

Bilgin, İ. & Geban, Ö. (2004). Investigating the effects of cooperative learning strategy and gender on re-service elementary teacher students' attitude toward science annd achievement of science teaching class I. *Hacettepe University Journal of Education, 26*, 9-18.

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., Miller-Ricci, M., & Rumble, M. (2012). Defining Twenty-First Century Skills. In: Griffin, P., McGaw, B., Care, E. (eds) *Assessment and Teaching of 21st Century Skills*. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-2324-5_2

Birişçi, S., & Karal, H. (2011). Effect of collaborative studies on prospective teachers' creative thinking skills while designing computer based material. *Ahi Evran University Journal of Kırşehir Education Faculty, 12*(2), 203-219.

Boulton, H, & Hramiak, A. (2014) Cascading the use of Web 2.0 technology in secondary schools in the United Kingdom: identifying the barriers beyond pre-service training. *Technology, Pedagogy and Education, 23*(2), 151-165. https://doi.org/10.1080/1475939X.2013.802994

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77-101. https://doi.org/10.1191/1478088706qp063oa

Byrne, R. (2009). The effect of Web 2.0 on teaching and learning. *Teacher Librarian, 37*(2), 50-53.

Cecchini, J. A., Carriedo, A., Méndez-Giménez, A., & Fernández-Río, J. (2021): Highly-structured cooperative learning versus individual learning in times of COVID-19 distance learning, *European Journal of Teacher Education*. https://doi.org/10.1080/02619768.2021.1991305

Chen, J., & Lin, T. F. (2020). Do cooperative-based learning groups help students learn microeconomics?. *SAGE Open, 10*(3), 1-7. https://doi.org/10.1177/2158244020938699

Cheng, M. M., Cheng, A. Y., & Tang, S. Y. (2010). Closing the gap between the theory and practice of teaching: Implications for teacher education programmes in Hong Kong. *Journal of Education for Teaching, 36*(1), 91-104. https://doi.org/10.1080/02607470903462222

Coffey, A., & Atkinson, P. (1996). Making sense of qualitative data: Complementary research strategies. Sage Publications, Inc.

Creswell, J. W. (2020). Qualitative research methods. (Çev.Eds M. Bütün and S.B. Demir,.) Siyasal Kitapevi.

Creswell, J. W. (2003). *Research design: qualitative, quantitative and mixed methods approaches.* California: Sage Publications.

Çakıroglu, E., & Çakıroglu, J. (2003). Reflections on teacher education in Turkey. *European Journal of Teacher Education, 26*(2), 253-264. https://doi.org/10.1080/0261976032000088774

Çelik, T. (2021). Examınıng formative evaluation experiences of prospective socil studies teachers using Web 2.0 applications. *Milli Eğitim Dergisi, 50*(231), 173-198. https://doi.org/10.37669/milliegitim.713075

Dabbagh, N., & Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and higher education*, *15*(1), 3-8. https://doi.org/10.1016/j.iheduc.2011.06.002

Donmuş-Kaya, V. (2022). A bibliometric analysis of using Web 2.0s in educational research area. *International Online Journal of Education and Teaching (IOJET), 9*(1). 194-216.

Erten, P. (2020). Preservıce teachers' perceptions of 21st century skills competence and their views on gaining these skills. *Milli Eğitim Dergisi, 49* (227), 33-64. Retrieved from https://dergipark.org.tr/en/pub/milliegitim/issue/56322/778233

Eser, M. (2020). The investigation of pre-service teachers' Web 2.0 practical content development self-efficacy belief. *Instructional Technology and Lifelong Learning (ITALL)*, *1*(1), 122-137.

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now?. Educational researcher, 38(4), 246-259. https://doi.org/10.3102/0013189X09336671

Gündüz, S., & Odabaşı, F. (2004). The importance of instructional technologies and material development course at pre-service teacher education in information age. *TOJET: The Turkish Online Journal of Educational Technology*, *3*(1), 43-48.

Gürsoy, G., & Goksun, D. O. (2019). The experiences of pre-service science teachers in educational content development using Web 2.0 tools. *Contemporary Educational Technology*, *10*(4), 338-357. https://doi.org/10.30935/cet.634168

Hall, R. (2008). The impact of the read/write web on learner agency. *E-Learning and Digital Media, 5*(3), 284-296. https://doi.org/10.2304/elea.2008.5.3.284

Hsu, P. S. (2016). Examining current beliefs, practices and barriers about technology integration: A case study. *TechTrends*, *60*(1), 30-40. https://doi.org/10.1007/s11528-015-0014-3.

Johnson, D.W., & Johnson, R. T. (2017) The use of cooperative procedures in teacher education and professional development, Journal of Education for Teaching, 43(3), 284-295, https://doi.org/10.1080/02607476.2017.1328023

Johnson, D. W., & Johnson, R. T. (2014). Cooperative Learning in 21st Century. *Anales de Psicología/Annals of Psychology*, *30*(3), 841-851. http://dx.doi.org/10.6018/analesps.30.3.201241

Johnson, D. W., Johnson, R. T., & Holubec, E. J. (2013). *Cooperation in the Classroom* (9th ed.). Edina, MN: Interaction Book Company.

Jones, N., Blackey, H., Fitzgibbon, K., & Chew, E. (2010). Get out of MySpace!. *Computers & Education, 54*(3), 776-782. https://doi.org/10.1016/j.compedu.2009.07.008

Karataş, S. & Özcan, S. (2015). The effect of creative activities in cooperative learning environment on students' creative and critical thinking and their academic achievement. *Journal of Educational Technology Theory and Practice (ETTP)*, *5*(2), 1-21. https://doi.org/10.17943/etku.56500

Kimmelmann, N., & Lang, J. (2019) Linkage within teacher education: cooperative learning of teachers and student teachers, *European Journal of Teacher Education,* *42*(1), 52-64, https://doi.org/10.1080/02619768.2018.1547376

Korkmaz, Ö., Vergili, M., Çakır, R., & Erdoğmuş, F. U. (2019). Plickers Web 2.0 ölçme ve değerlendirme uygulamasının öğrencilerin sınav kaygıları ve başarıları üzerine etkisi. *Gazi Eğitim Bilimleri Dergisi, 5*(2), 15-37. https://dx.doi.org/10.30855/gjes.2019.05.02.002

Kul, U., Aksu, Z., & Birisci, S. (2019). The relationship between technological pedagogical content knowledge and web 2.0 self-efficacy beliefs. *Online Submission*, *11*(1), 198-213. https://doi.org/10.15345/iojes.2019.01.014

Kumar, S., & Vigil, K. (2011). The net generation as preservice teachers: Transferring familiarity with new technologies to educational environments. *Journal of Digital Learning İn Teacher Education, 27*(4), 144-153. https://doi.org/10.1080/21532974.2011.10784671

Kurt, A.A. (2019). Web araçları [Web Tools]. In Yalın Kılıç Türel (ed.). *Öğretim Teknolojileri [Instructional Technologies]*. Asos Press.

Lai, K. W., & Hong, K. S. (2015). Technology use and learning characteristics of students in higher education: Do generational differences exist?. *British Journal of Educational Technology*, *46*(4), 725-738. https://doi.org/10.1111/bjet.12161

Lamb, S., Maire, Q., & Doecke, E. (2017). Key skills for the 21st century: An evidence-based review. https://vuir.vu.edu.au/35865/1/Key-Skills-for-the-21st-Century-Analytical-Report.pdf

Langset, I. D., Jacobsen, D. Y., & Haugsbakken, H. (2018). Digital professional development: towards a collaborative learning approach for taking higher education into the digitalized age. *Nordic Journal of Digital Literacy*, *13*(01), 24-39. https://doi.org/10.18261/issn.1891-943x-2018-01-03

Liebech-Lien, B. (2021). Teacher teams–A support or a barrier to practising cooperative learning?. *Teaching and Teacher Education, 106*, 103453. https://doi.org/10.1016/j.tate.2021.103453

Magnuson, M. L. (2013). Web 2.0 and information literacy instruction: Aligning technology with ACRL standards. *The Journal of Academic Librarianship*, *39*(3), 244-251. https://doi.org/10.1016/j.acalib.2013.01.008

McLoughlin, C., & Lee, M. J. (2010). Personalised and self-regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. *Australasian Journal of Educational Technology*, *26*(1). https://doi.org/10.14742/ajet.1100

Merriam, S. B. (2013). *Qualitative research: A guide to design and implementation* (Trans. Selahattin Turan.). Nobel Press.

Onbaşılı, Ü. İ. (2020). The effects of science teaching practice supported with web 2.0 tools on prospective elementary school teachers' self-efficacy beliefs. *International Journal of Progressive Education*, *16*(2), 91-110. DOI: 10.29329/ijpe.2020.241.7

Özer, Ü. & Özer, E. A. (2017). Social studies and computer and ınstructional technologies teacher candidates' views towards Web 2.0 in education. In *International Congress on Politic, Economic and Social Studies,* 3, 106-118

Özpınar, İ. (2020). Preservice teachers' use of Web 2.0 tools and perspectives on their use in real classroom environments. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *11*(3), 814-841. https://doi.org/10.16949/turkbilmat.736600

Patton, M. Q. (2014). *Qualitative research and evaluation methods*. (Trans. M. Bütün, & S. B. Demir,). Pegem Akademi.

Preston, J. P., Wiebe, S., Gabriel, M., McAuley, A., Campbell, B., & MacDonald, R. (2015). Benefits and challenges of technology in high schools: A voice from educational leaders with a Freire echo. *Interchange*, *46*(2), 169–185.

Rahimi, E., van den Berg, J., & Veen, W. (2015). Facilitating student-driven constructing of learning environments using Web 2.0 personal learning environments. *Computers & Education, 81*, 235-246. https://doi.org/10.1016/j.compedu.2014.10.012

Sadaf, A., Newby, T. J., & Ertmer, P. A. (2012). Exploring pre-service teachers' beliefs about using Web 2.0 technologies in K-12 classroom. *Computers & Education, 59*(3), 937-945. https://doi.org/10.1016/j.compedu.2012.04.001

Sandelowski, M. (1995). Sample size in qualitative research. *Research in nursing & health*, *18*(2), 179-183. https://doi.org/10.1002/nur.4770180211

Sharan, Y. (2015). Meaningful learning in the cooperative classroom. *Education 3-13*, *43*(1), 83-94. https://doi.org/10.1080/03004279.2015.961723

Siegel, C. (2005). An ethnographic inquiry of cooperative learning implementation. *Journal of school Psychology*, *43*(3), 219-239. https://doi.org/10.3200/JOER.98.6.339-349

Slavin, R. E. (2014). Making cooperative learning powerful. *Educational Leadership*, *72*(2), 22-26.

Slavin, R. E. (2011). *Instruction based on cooperative learning*. (Ed: R*ichard E. Mayer and Patricia A. Alexander)*. Handbook of Research on Learning and Instruction. Routledge Press.

Şimşek, U., Örten, H., Topkaya, Y., & Yıllar, B. (2014). Opinions of prospective teachers about cooperative learning techniques. *The Journal of Turkish Social Research*, *18*(1), 231-257.

Taşdemir, A., & Sarikaya, M. (2005). A research on the effects of cooperative learning on prospective science teachers learning of solution chemistry. *Ahi Evran University Journal of Kırşehir Education Faculty*, *6*(2), 197-207.

Tatli, Z., Akbulut, H. İ., & Altinisik, D. (2019). Changing Attitudes towards Educational Technology Usage in Classroom: Web 2.0 Tools. *Malaysian Online Journal of Educational Technology, 7*(2), 1-19. http://dx.doi.org/10.17220/mojet.2019.02.001

Timur, S., Yilmaz, Ş., & Küçük, D. (2021). Investigation of the Effects of Web 2.0 Applications on the Self-Efficacy Beliefs of Science Teacher Candidates. *Journal of Education Faculty in Istanbul Aydın University*, *7*(2), 291-311.

Tondeur, J., Pareja-Roblin, N., van Braak, J., Voogt, J., & Prestridge, S. (2017). Preparing beginning teachers for technology integration in education: ready for take-off?. *Technology, Pedagogy and Education, 26*(2), 157-177. https://doi.org/10.1080/1475939X.2016.1193556

Urhan, N., & Erdem, M. (2018). Contributions on reflective thinking of digital documentary production in collaborative project based learning process. *Ankara University Journal of Faculty of Educational Sciences (JFES)*, *51*(1), 27-53. https://doi.org/10.30964/auebfd.406235

Vona-Kurt, E. (2017). Evaluation of the high learning contribution of Web 2.0 practices in university students perspective. *Journal of Current Researches on Social Sciences*, *7*(1), 417-434.

Yazıcı, S., Ocak, İ. & Bozkurt, M. (2021). Analysis of educational studies on Web 2.0 tools. *Eğitim ve Toplum Araştırmaları Dergisi*, *8*(2), 474-487. https://doi.org/10.51725/etad.1009299

Yeşilyurt, E. (2009). The views of students on the effect of cooperative learning on student behaviors. *Fırat University Journal of Social Science, 19*(2), 161 - 178.

Yıldırım, A. & Şimşek, H. (2013). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri [Qualitative research methods in the social sciences]* (9th ed.). Seçkin Press.

Yıldız, E. (2021). The effect of cooperative story and poster practices on science teacher candidates' academic achievement. *Marmara University Atatürk Education Faculty Journal of Educational Sciences*, *53*(53), 342-362. https://doi.org/10.15285/maruaebd.689187

Zorlu, F. (2020). Investigation of the preservice science teachers' views and suggestions on the application of the cooperative learning model in distance education environments. *International Journal of Social and Educational Sciences*, *7*(14), 219-232. https://doi.org/10.20860/ijoses.835074

Evaluation of Middle School 7th Grade Science Skill-Based Questions According to the Revised Bloom Taxonomy

Research Article

Rıdvan CELIK[1], Gulen ONAL KARAKOYUN[2], Erol ASILTURK[3*]

[1]*Batman Merkez Kultur Middle School, Batman, Turkey,* 0000-0003-2553-1564

[2]*Van Yuzuncu Yil University, Muradiye Vocational High School, Van, Turkey,* 0000- 0002-7675-0006

[3]*Firat University, Faculty of Education, Department of Science Education, Elazığ, Turkey,* 0000-0001-8126-7812

ARTICLE INFO	ABSTRACT
Article History: Received: 14.01.2022 Available online: 04.08.2022	The aim of this research is to evaluate the 7th grade science skill-based questions published by the Ministry of National Education of the Republic of Turkey in the 2019-2020 academic year, according to the revised Bloom taxonomy. In this study, document analysis method, one of the qualitative research methods, was used. The data of the research consists of 7th grade science skill-based questions published by the Ministry of National Education in the 2019-2020 academic year. In the study, 143 science questions were evaluated according to the revised Bloom taxonomy. Each of the aforementioned questions was examined separately and it was determined which levels they belong to in the "cognitive process" and "knowledge" dimensions of the revised Bloom Taxonomy. When the questions were evaluated according to the cognitive process dimension of the revised Bloom taxonomy, it was determined that the questions were stacked on the levels of understanding and application. When the questions were evaluated according to the knowledge dimension, it was determined that the questions were stacked on the levels of procedural knowledge and conceptual knowledge. While the majority of the questions (86.71%) are related to low-level skills, only 13.29% of them are related to high-level skills. **Keywords:** Cognitive skill, revised bloom taxonomy, science education, question analysis

Introduction

In today's education system, it is important to train students to have analytical and high-level thinking skills rather than to be successful in exams and get high scores. For this reason, it is very important for teachers to use questions that prioritize analytical and high-level thinking (Akanngbe & Enero, 2015; Nayiroglu et al.

2021). If students constantly encounter questions that require low-level mental thinking skills, they have difficulty in solving problems, cannot develop high-level thinking skills, and have difficulty using them (Seo, Kim, & Chae, 2010; Tsaparlis & Zoller, 2003). For this reason, questions play an important role in the development of students' analytical and high-level thinking skills (Nakiboglu & Yildirir, 2011; Ilhan et al. 2021). There are different classification systems that show the level of the questions to be used to determine the cognitive level of the student (Roohani, Taheri & Poorzangeneh, 2013). One of the most important of these classification systems is Bloom Taxonomy. Bloom Taxonomy is one of the most important systems that are taken into account when both measurement-evaluation and curriculum development activities are carried out. The most important reasons for the widespread use of Bloom taxonomy are that this taxonomy can level the cognitive domain, give importance to measurement-evaluation and ensure the consistency of the questions (Gunduz, 2009; Tanik & Saracoglu, 2011). According to Bloom Taxonomy, there are three different learning areas. These areas are; cognitive learning, affective learning and psychomotor learning (Bloom, Engelhartand & Furst, 1956). Cognitive domain is grouped under six different categories. These categories are knowledge, conception, application, analysis, synthesis and evaluation. The categories are ordered from concrete to abstract and from simple to complex. The original taxonomy schema was assumed to represent the cumulative hierarchy; that is, mastering each simple category is a prerequisite for mastering the next more complex category. Bloom et al. (1956), with their classification on thinking skills, differentiated lower and higher level skills. While knowledge, conception and application are classified as low-level thinking skills, analysis, synthesis and evaluation are classified as high-level thinking skills (Sahinel, 2002).

Claiming that Bloom taxonomy has shortcomings and that some additions should be made on its current state, Krathwohl proposed a revised taxonomy in which the concepts in the taxonomy are more interrelated (Krathwohl, 2002; Bumen, 2006; Yesilyurt, 2012). The revized Bloom Taxonomy is also known as the renewed Bloom taxonomy. The revised Bloom Taxonomy includes two dimensions. These dimensions are "knowledge" and "cognitive process". The "cognitive process" dimension is quite similar to original Bloom Taxonomy. The "knowledge" step in Bloom Taxonomy has been changed to "remembering". The "synthesis" step in Bloom Taxonomy has been changed to "creation". The creation step has been taken to the next level (Tutkun, 2012). As a result, the knowledge dimension of the revised Bloom Taxonomy includes the following levels, respectively; factual knowledge, conceptual knowledge, procedural knowledge and metacognitive knowledge. In the cognitive process dimension, there are the following levels, respectively; remembering, understanding, applying, analyzing, evaluating and creating (Amer, 2006).

There are many studies in the literature in which different exam questions are evaluated according to the original/revised Bloom Taxonomy (Akanngbe & Enero, 2015; Amer, 2006). For example, Ayvaci and Turkdogan (2010) evaluated the written exam questions of the science course according to revised Bloom Taxonomy in a study they carried out. As a result of their research, they determined that more than fifty percent of the written exam questions they examined were related to the level of understanding and remembering. Guven (2014) evaluated 516 questions in the textbooks distributed to students by the Ministry of National Education according to the Revised Bloom Taxonomy. As a result of the research, it was concluded that the questions for high-level cognitive levels were few and the low-level questions constituted the majority. Guven and Aydin (2017) evaluated and classified 156 questions in the 8th Grade Science book of 2004 according to the Revised Bloom Taxonomy. As a result of the research, they found that 48.72% of the questions were related to understanding, 23.72% to analysis, 13.46% to application, 12.18% to remembering, 0.64% to evaluation and 1.28% to creation. As a result of these findings, it was evaluated that most of the questions were at the lower level of the cognitive dimension, and that there were very few questions suitable for the higher level cognitive steps.

Turkey is a country with a large number of students. An exam called as "High School Entrance Exam" (HSEE) has been held for middle school students in Turkey since the 2017-2018 academic year. Students are placed in the high schools of their choice by evaluating the scores they get from the LGS exam. Only 10% of the students who take the exam are entitled to be placed in one of the high schools of their choice. 90% of the students are placed in one of the schools closest to their addresses. LGS exam is a new type of exam for Turkey that includes skill-based questions. For this reason, the Ministry of National Education has been publishing skill-based sample questions in all fields from the 1st semester of the 2019-2020 academic year in order for students to get used to and adapt to the new exam system.

Purpose of the Research

The aim of this research is to examine the 7th grade science skill-based questions published by the Ministry of National Education of the Republic of Turkey in the 2019-2020 academic year, according to the Revised Bloom taxonomy. The problem statement of this study is as follows; "How is the distribution of skill-based science questions according to the revised Bloom Taxonomy?"

Method

Research Pattern

In this study, document analysis method, one of the qualitative research methods, was used. Document analysis is the examination of the existing written source of the researched subject (Iskamya, 2011; Hitchcock & Hughes, 1995). Document analysis is also defined as the examination of visual materials containing information related to the event or phenomena planned to be investigated in an orderly manner (Yildirim & Simsek, 2008). The main purpose of document analysis is to examine the obtained documents in a theory-oriented, systematic and data-based manner (Bowen, 2009; Saglamoz & Soysal 2021).

Data Source

The data of the research consists of 7th grade science skill-based questions published by the Ministry of National Education in the 2019-2020 academic year.

The questions can be accessed at the address "https://odsgm.meb.gov.tr/www/5-6-ve-7-sinif-duzeylerinde-beceri-temelli-sorular-yayimlanmistir/icerik/491". In the study, 143 science questions were evaluated according to the revised Bloom taxonomy. The distribution of the questions examined within the scope of the research according to the units is given in Table 1.

Table 1. Distribution of Examined Questions by Units

No	Unit Name	Subject Area Name	Number of Questions
1	Solar System and Beyond	Earth and Universe	20
2	Cell and Divisions	Creatures and Life	20
3	Force and Energy	Physical Events	20
4	Pure Substances and Mixtures	Matter and Nature	20
5	Interaction of Light with Matter	Physical Events	20
6	Reproduction, Growth and Development in Living Things	Creatures and Life	23
7	Electric circuits	Physical Events	20
		TOTAL	143

Analysis of Data

Within the scope of the research, 143 science questions were analyzed based on the "cognitive process" and "knowledge" dimensions of the revised Bloom Taxonomy. Each of the mentioned questions was evaluated separately by three researchers and it was determined which levels they belong to in the "cognitive process" and "knowledge" dimensions of the revised Bloom Taxonomy. The questions that all three researchers coded

the same were accepted as "consensus", and the questions that they coded differently were accepted as "disagreement". The formula suggested by Miles and Huberman (1994) was used for the reliability of the research conducted as mentioned below. The formula is: reliability = consensus / (consensus + disagreement) x100. According to this formula, the reliability of the research was calculated as 89%. The questions on which there was a difference of opinion were re-negotiated by three researchers and a consensus was reached by taking expert opinions, and thus the coding was given its final shape. In order to better understand how the analysis and classification of the questions are made, an example (unit 3, question 1) is given below.

1. A group of students design the following dynamometers by scaling springs of the same size but different thickness, made of the same material.
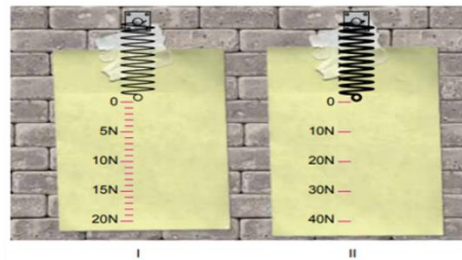
With the dynamometers they designed, the students aim to measure the weight of the fruits whose masses are given in the image.(1 Kg ~ 10N)

Which of the following comments about students' measurements is incorrect?

A)   The weight of the banana is measured in different sizes on dynamometers.

B)   While the weight of the watermelon can be measured in the II. dynamometer, it cannot be measured in the I. dynamometer.

C)   When the melon is hung on the dynamometers separately, the spring in the I. dynamometer gets longer.

D)   While the weight of the grape can be measured exactly on the I dynamometer. II. cannot be measured on a dynamometer.

The above question is at the procedural knowledge level in terms of knowledge dimension. As for the cognitive process dimension, it is at the application stage. In the question, two different dynamometers are given, which are made of the same material and have different thicknesses (one can be thought of as thick and the other thin), although they are the same length. The scaling of the dynamometers is also different. While the first dynamometer measures 0-20 Newton in 1 Newton divisions, the second dynamometer measures 0-40 Newton in 10 Newton divisions. In the question, some statements were given about the ability to measure the weight of different fruits with both dynamometers, and the wrong one was asked to be marked. Procedural knowledge deals with how to do things and the order of their execution (Anderson et. all. 2001). In addition, knowledge of the criteria for determining when to use the appropriate action is also within the scope of procedural knowledge. Considering these issues, the above question was coded as the knowledge dimension in the procedural knowledge level. As the cognitive process dimension, the application level was coded. Because it is a type of question in which students are asked to solve a problem they encounter based on the knowledge they have learned.

Findings

As a result of the analyzes and coding on the questions, it was determined which of the levels of "factual knowledge", "conceptual knowledge", "procedural knowledge" and "metacognitive knowledge" belonged to each question (knowledge dimension). Similarly, it was determined which of the levels of "remembering", "understanding", "application", "analyzing", "evaluation" and "creating" each question belonged to (cognitive

process dimension). In order to facilitate the presentation of the findings, the results of the analysis according to the revised Bloom taxonomy of the questions are presented in the tables below, separately for each unit. While the horizontal column of the tables is related to the cognitive process dimension, the vertical column is related to the knowledge dimension. The distribution of unit 1 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 2.

Table 2. Distribution of Unit 1 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	4	1	0	0	0	0	5	20
conceptual knowledge	0	9	0	0	0	0	9	45
procedural knowledge	0	2	2	0	0	0	4	20
metacognitive knowledge	0	0	0	0	1	1	2	10
Total	4	12	2	0	1	1	20	100
%	20	60	10	0	5	5	100	

When Table 2 is examined, it is seen that 20% of the 1st unit questions are in the factual knowledge dimension. 80% of the questions in the factual knowledge dimension are at the remembering level and 20% at the understanding level. 45% of the 1st unit questions are in the dimension of conceptual knowledge and all of these questions are at the understanding level. 20% of unit 1 questions are in procedural knowledge dimension. 50% of these questions in the procedural knowledge dimension are at the understanding level and 50% at the application level. 10% of unit 1 questions are in the metacognitive knowledge dimension. 50% of the questions in the metacognitive knowledge dimension are at the evaluation level and 50% are at the creation level. The distribution of unit 2 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 3.

Table 3. Distribution of Unit 2 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	4	1	0	0	0	0	5	25
conceptual knowledge	1	9	0	0	0	0	10	50
procedural knowledge	0	1	3	1	0	0	5	25
metacognitive knowledge	0	0	0	0	0	0	0	0
Total	5	11	3	1	0	0	20	100
%	25	55	15	5	0	0	100	

When Table 3 is examined, it is seen that 25% of the 2nd unit questions are in the factual knowledge dimension. 80% of the questions in the factual knowledge dimension are at the remembering level and 20% at the understanding level. 50% of the 2nd unit questions are in the dimension of conceptual knowledge. 90% of the questions in the dimension of conceptual knowledge are at the understanding level, 10% at the remembering level. 25% of unit 2 questions are in procedural knowledge dimension. 60% of these questions in the procedural knowledge dimension are at the application level, 20% at the understanding level and 20%

at the analyzing level. There are no questions related to metacognitive knowledge dimension among the 2nd unit questions. The distribution of unit 3 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 4.

Table 4. Distribution of Unit 3 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	0	0	0	0	0	0	0	0
conceptual knowledge	0	2	0	0	0	0	2	10
procedural knowledge	0	1	14	3	0	0	18	90
metacognitive knowledge	0	0	0	0	0	0	0	0
Total	0	3	14	3	0	0	20	100
%	0	15	70	15	0	0	100	

When Table 4 is examined, it is seen that there are no questions in the dimension of factual knowledge among the questions of the 3rd unit. 10% of the 3rd unit questions are in the dimension of conceptual knowledge and all of these questions are at the understanding level. 90% of unit 3rd questions are in procedural knowledge dimension. 78% of these questions in the procedural knowledge dimension are at the application level, 17% at the analyzing level and 5% at the understanding level. There are no questions related to metacognitive knowledge dimension among the 3rd unit questions. The distribution of unit 4 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 5.

Table 5. Distribution of Unit 4 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	1	1	0	0	0	0	2	10
conceptual knowledge	0	5	0	0	0	0	5	25
procedural knowledge	0	4	4	4	0	0	12	60
metacognitive knowledge	0	0	0	0	1	0	1	5
Total	1	10	4	4	1	0	20	100
%	5	50	20	20	5	0	100	

When Table 5 is examined, it is seen that 10% of the 4th unit questions are in the factual knowledge dimension. 50% of the questions in the factual knowledge dimension are at the remembering level and 50% at the understanding level. 25% of the 4th unit questions are in the dimension of conceptual knowledge. All of the questions in the dimension of conceptual knowledge are at the understanding level. 60% of unit 4 questions are in procedural knowledge dimension. 33.3% of these questions in the procedural knowledge dimension are at the application level, 33.3% at the understanding level and 33.3% at the analyzing level. 5% of the 4th unit questions are in the dimension of metacognitive knowledge. All of the questions in the dimension of metacognitive knowledge are at the evaluation level. The distribution of unit 5 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 6.

Table 6. Distribution of Unit 5 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	0	0	0	0	0	0	0	0
conceptual knowledge	0	7	0	0	0	0	7	35
procedural knowledge	0	1	12	0	0	0	13	65
metacognitive knowledge	0	0	0	0	0	0	0	0
Total	0	8	12	0	0	0	20	100
%	0	40	60	0	0	0	100	

When Table 6 is examined, it is seen that there are no questions in the dimension of factual knowledge among the questions of the 5th unit. 35% of the 3rd unit questions are in the dimension of conceptual knowledge and all of these questions are at the understanding level. 65% of unit 5 questions are in procedural knowledge dimension. 92% of these questions in the procedural knowledge dimension are at the application level and 8% at the understanding level. There are no questions related to metacognitive knowledge dimension among the 3rd unit questions. The distribution of unit 6 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 7.

Table 7. Distribution of Unit 6 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	4	0	0	0	0	0	4	17
conceptual knowledge	1	9	0	3	0	0	13	57
procedural knowledge	0	1	4	1	0	0	6	26
metacognitive knowledge	0	0	0	0	0	0	0	0
Total	5	10	4	4	0	0	23	100
%	22	44	17	17	0	0	100	

When Table 7 is examined, it is seen that 17% of the unit 6 questions are in the factual knowledge dimension. All of the questions in the factual knowledge dimension are at the remembering level. 57% of the unit 6 questions are in the dimension of conceptual knowledge. 69% of the questions in the dimension of conceptual knowledge are at the understanding level, 23% at the analyzing level and 8% at the remembering level. 26% of unit 6 questions are in procedural knowledge dimension. 66% of these questions in the procedural knowledge dimension are at the application level, 17% at the analyzing level and 33.3% at the understanding level. There are no questions related to metacognitive knowledge dimension among the unit 6 questions. The distribution of unit 7 science questions in the context of knowledge dimension and cognitive process dimension is given in Table 8.

Table 8. Distribution of Unit 7 Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	0	0	0	0	0	0	0	0
conceptual knowledge	1	3	0	0	0	0	4	20
procedural knowledge	0	0	12	4	0	0	16	80
metacognitive knowledge	0	0	0	0	0	0	0	0
Total	1	3	12	4	0	0	20	100
%	5	15	60	20	0	0	100	

When Table 8 is examined, it is seen that there are no questions in the dimension of factual knowledge among the questions of the unit 7. 20% of the unit 7 questions are in the dimension of conceptual knowledge. 75% of the questions in the dimension of conceptual knowledge are at the understanding level and 25% at the remembering level. 80% of unit 7 questions are in procedural knowledge dimension.75% of these questions in the procedural knowledge dimension are at the application level and 25% at the analyzing level. There are no questions related to metacognitive knowledge dimension among the unit 7 questions. The distribution of all of the questions analyzed within the scope of the research (143 in total) in the context of knowledge dimension and cognitive process dimension are given in Table 9.

Table 9. Distribution of All Questions in the Context of Knowledge Dimension and Cognitive Process

	remembering	understanding	application	analyzing	evaluation	creating	Total	%
factual knowledge	13	3	0	0	0	0	16	11
conceptual knowledge	3	44	0	3	0	0	50	35
procedural knowledge	0	10	51	13	0	0	74	52
metacognitive knowledge	0	0	0	0	2	1	3	2
Total	16	57	51	16	2	1	143	100
%	11	40	36	11	1	1	100	

When Table 9 is examined, it is seen that 11% of the 7th grade science questions are in the factual knowledge dimension. 81% of the questions in the factual knowledge dimension are at the remembering level and 19% at the understanding level. 35% of the 7th grade science questions are in the dimension of conceptual knowledge. 88% of the questions in the dimension of conceptual knowledge are at the understanding level, 6% at the analyzing level and 6% at the remembering level. 52% of the 7th grade science questions are in procedural knowledge dimension. 69% of these questions in the procedural knowledge dimension are at the application level, 18% at the analyzing level and 13% at the understanding level. 2% of the 7th grade science questions are in the dimension of metacognitive knowledge. 67% of the questions in the metacognitive knowledge dimension are at the evaluation level and 33% at the creation level.

The levels of remembering, understanding and applying in the revised Bloom taxonomy are low-level cognitive process skills; analysis, evaluation and creation levels are considered as high-level scientific process

skills (Sahinel, 2002). When such an evaluation is made, the distribution of the questions examined within the scope of this research in the form of low-level and high-level questions on a unit basis is presented in Figure 1.
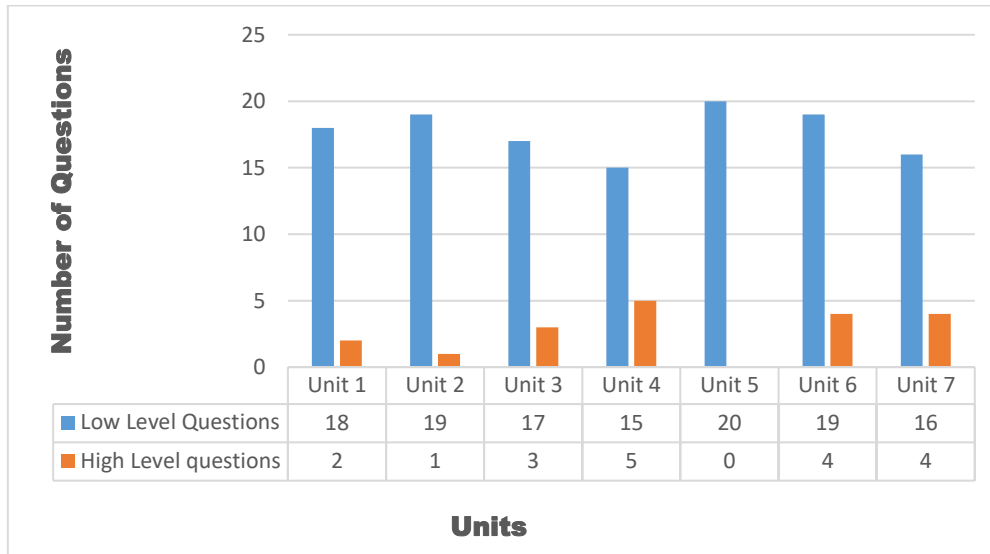
Figure 1. Low-Level and High-Level Question Distributions of the Units

When Figure 1 is examined, it is understood that 124 (86.71%) of 143 7th grade science skill-based questions measure low-level skills, and 19 (13.29%) measure high-level skills.

Discussion and Conclusion

When the questions were evaluated according to the cognitive process dimension of the revised Bloom taxonomy, it was determined that the questions were stacked on the levels of understanding and application. According to the cognitive process dimension, 40% of the questions are at the understanding level, 36% at the application level, 11% at the remembering level and 11% at the analyzing level. The questions in the evaluation and creation level also constituted 2% of all questions. When the questions were examined according to the knowledge dimension, it was determined that the questions were stacked on the levels of procedural knowledge and conceptual knowledge. 52% of the questions are in procedural knowledge, 35% in conceptual knowledge, 11% in factual knowledge, and 2% in metacognitive knowledge. These results show that while the majority of the questions (86.71%) are related to low-level skills, only 13.29% of them are related to high-level skills. Skill-based questions are those that are expected to provide students with some skills. In particular, it should be aimed to gain high-level skills (Ayvaci & Turkdogan, 2010). However, when the results of the current study are examined, it is seen that more importance is given to low-level skills such as knowing and recognizing concepts, establishing relationships between concepts and recognizing symbols in the evaluation process of students. The large number of questions related to low-level skills indicates that the majority of the questions are aimed at making the mental processes that require memorization functional. It is a known fact that directing students to memorize limits their analytical/scientific thinking skills (Sanca et al. 2021). In order to enable students to gain creative, analytical and scientific thinking skills, experts and teachers who prepare questions should also consider Bloom taxonomy and increase the number of questions for high-level skills.

Akyurek (2019) evaluated the Science questions in the Transition from Basic Education to Middle Education (TEOG) Exam held in 2017 and the High School Entrance Exam held in 2018 according to the revised Bloom taxonomy. As a result of his research, he determined that the questions asked in the exams are generally at the understanding level in the cognitive process dimension and generally at the procedural knowledge level in the knowledge dimension. The results of Akyurek (2019)'s research are similar to the

results of the current research. Akpinar & Ergin (2006), in their research called "Evaluation of Science Teachers' Written Exam Questions", evaluated the written exam questions of science teachers from different schools. As a result of their research, they concluded that, similar to the results of the current research, the questions prepared by the teachers were mostly (95.3%) related to low-level levels such as knowledge, comprehension and application. In a study conducted by Sanca (2021) et al., it was aimed to evaluate middle school skill-based questions according to the revised Bloom taxonomy. For this purpose, Sanca et al. analyzed 180 skill-based questions. As a result of their research, similar to the results of the current research, they found that the questions stacked on the understanding level in terms of cognitive process dimension. Sanca (2011) et al. also determined that the questions were generally related to lower level levels, similar to the results of the current study. Guven & Aydin (2017) evaluated the questions in the 8th Grade Science Curriculum according to Bloom taxonomy in their study. In this study, they concluded that the number of questions in the lower-level cognitive levels is higher than the questions in the higher-level cognitive levels. As a result of their research, Guven & Aydin (2017) also determined that the questions are generally related to the understanding level and that there are very few questions belonging to the evaluation and creation levels.

When the results of the current study are evaluated together with the results of the different studies given above, it is understood that the skill-based questions published by the Ministry of National Education and the exam questions prepared by the teachers are generally of the type that can measure low-level cognitive skills. Only 3 of the 143 questions examined in the current study are at the metacognitive knowledge level. In addition, there are only 2 questions for the evaluation level and only 1 for the creation level. This is an issue that needs to be considered. Evaluating students with questions measuring low-level skills can also reduce students' interest and curiosity about science lessons. In order to raise individuals with high-level skills such as problem solving, reading comprehension, and visual interpretation, it is necessary to use more questions that can measure high-level skills.

Jean Piaget suggested that the process of perceiving the world by individuals occurs in four different periods. According to this theory, the cognitive development process of individuals proceeds in the following order; sensory-motor period, preoperational period, concrete operational period and formal operational period. The concrete operational period covers individuals between the ages of 7-11. The formal operational period covers individuals 11 years and older. The questions examined in the present study were prepared for 7th grade students. 7th grade students are in the formal operational stage by age. Individuals in the formal operational stage are at a level to acquire high-level mental thinking skills. For this reason, teachers or experts who will prepare questions should definitely take this situation into consideration. In this sense, it may be beneficial to provide teachers with in-service training in order to increase their question preparation and question analysis skills. In this type of training, taking into account the Bloom taxonomy, question samples suitable for various levels, especially for high-level scientific process skills, should be shared with teachers.

REFERENCES

Akanngbe, J. M., & Enero, U. J. (2015). Classification of end- of- chapter questions in senior school chemistry textbooks used in Nigeria, *Electronic Journal of Science Education*, *19*(7), 1-16.

Akpinar, E., & Ergin, O. (2006). Evaluation of written exam questions of science teachers, *Journal of National Education*, 172, 225-231.

Akyurek, G. (2019). Examination of LGS and TEOG exams according to science curriculum and renewed bloom taxonomy, *Master Thesis*, Necmettin Erbakan University, Institute of Educational Sciences, Konya.

Amer, A. (2006). Reflections on Bloom revised taxonomy, *Electronic Journal of Research in Educational Psychology*, *4*(1), 231-230.

Anderson, L. W., Krathwohl, D. R., Airasian, P., Cruikshank, K., Mayer, R., Pintrich, P., & Wittrock, M. (2001). A taxonomy for learning, teaching and assessing: a revision of Bloom taxonomy, New York.

Ayvaci, H. S., & Turkdogan, A. (2010). Analysis of science and technology course written questions according to the reconstructed Bloom taxonomy, *Turkish Journal of Science Education*, *7*(1), 13-25.

Bloom, B. S., Engelhart, M. D., & Furst, E. J. (1956). Taxonomy of educational objectives: The classification of educational goals, Handbook 1: Cognitive Domain, New York: David Mckay.

Bowen, G. A. (2009). Document analysis as a qualitative research method, *Qualitative Research Journal*, *9*(2), 27

Bumen N. T. (2006). A milestone in curriculum development: revised bloom taxonomy, *Education and Science*, *31*(142), 3-14.

Gunduz Y. (2009). Analysis of 6th, 7th and 8th grade science and technology questions according to measurement tools and Bloom cognitive domain taxonomy, *Yuzuncu Yil University Journal of Education Faculty*, *6*(1), 150-165.

Guven, C. (2014). Examining the questions in the 6th, 7th, 8th grades science and technology curriculum according to the revised Bloom taxonomy, *Master Thesis*, Ahi Evran University, Institute of Science and Technology.

Guven, C., & Aydin, A. (2017). Examining the questions in the 8th grade science and technology curriculum according to the cognitive process dimension of the revised Bloom taxonomy, *Journal of the Turkish Chemical Society*, *2*(1), 87–104.

Hitchcock G., & Hughes D. (1995). Research and the teacher: A qualitative introduction to school based research (2nd Ed.), London: Routledge

Ilhan, A., Tutak T., & Ekinci, N. (2021). A study on the relationship between mobbing and professional burn out perceptions of secondary school mathematics teachers, *Shanlax International Journal of Education* 9, 88-104

Iskamya U. (2011). Analysis of pre-service science teachers' questioning preferences and questions asked in secondary education entrance exams according to Bloom taxonomy, *Master Thesis*, Canakkale Onsekiz Mart University, Institute of Educational Sciences, Canakkale.

Krathwohl, D. W. (2002). A Revision of Bloom taxonomy: an overview, *Theory into Practice*, *41*(4), 212-218.

Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook, Thousand Oaks, CA: Sage Publications.

Nakiboglu, C. & Yildirir, H. E. (2011). Analysis of Turkish high school chemistry textbooks and teacher - generated questions about gas laws, *International Journal of Science and Mathematics Education*, 9, 1047-1071.

Nayiroglu, B. Tutak, T., & Tutak A. M (2021). Review of the views of secondary school maths students on skills-based questions, *Shanlax International Journal of Education*, 9, 105-111.

Roohani, A., Taheri, F. & Poorzangeneh, M. (2013). Evaluating four corners textbooks in terms of cognitive processes using Bloom Revised Taxonomy, *Research in Applied Linguistics*, *4*(2), 51-67.

Saglamoz, F. & Soysal Y. (2021). An investigation of the outcomes of 2018 primary science course curriculum according to the revised Bloom taxonomy, *Istanbul Aydın University Education Faculty Journal*, *7*(1), 111-145.

Sahinel, S. (2002). Eleştirel düşünme. Ankara: Pegem Yayıncılık.

Sanca, M., Artun H., Bakirci, H. & Okur, M. (2021). Evaluation of secondary school skill-based questions according to the restructured bloom taxonomy, *YYU Journal of Education Faculty*, *18*(1), 219-248,

Seo, Y. J., Kim, H. S., & Chae, H. K. (2010). Analysis of the end-of-chapter questions in chemistry II according to revised Bloom taxonomy of educational objectives, *Journal of the Korean Chemistry Society*, *54*(3), 329-337.

Tanik N. & Saracoglu S. (2011). Examination of science and technology course written questions according to the revised Bloom taxonomy, *Journal of Turkish Science Research Foundation*, *4*(4), 235-246.

Tsaparlis, G., & Zoller, U. (2003). Evolution of higher vs. lower-order cognitive skills-type examination in chemistry: implications for university in class assessment and examinations, *University Chemistry Education*, *7*(2), 50-57

Tutkun, O. F. (2012). An overview of Bloom revised taxonomy, *Sakarya University Journal of Educational Sciences Institute*, *1*(3), 14-22.

Yesilyurt, E. (2012). Evaluation of pre-service teachers' competency in writing test situation questions about cognitive domain, *Kastamonu Journal of Education*, *20*(2) 519-530.

Yildirim, A. & Simsek, H. (2008). Qualitative research methods in the social sciences, Ankara, Seckin Publishing.

The Relationship Between Innovative Pedagogy Practices and Digital Material Design Competencies of Teachers

Research Article

Aysenur KULOGLU[1]

[1]*Fırat University, Faculty of Education, Department of Educational Science, Elazığ, Turkey* 0000-0003-0217-8497

ARTICLE INFO	ABSTRACT
	The fact that students exist, survive and had a quality life in the technology-oriented world of the future is of crucial importance. Thus, the education system is required to adapt to innovations and teachers need to possess innovative pedagogy and digital material design competence. In this regard, this study aimed to examine the relationship between innovative pedagogy practices and digital material design competencies of teachers. 262 teachers working in Public Elementary Schools in a city in the eastern part of Turkey participated in the study. The relational survey model was adopted in the study and the data were collected using "Innovative Pedagogy Practices Scale for Teachers" and "Digital Material Design Competencies Scale". The findings showed that the participants had high levels of innovative pedagogy practices and digital material design proficiency perceptions. It was found that participants' proficiency in innovative pedagogy and digital material design perceptions did not differ by gender and discipline. In addition, a significant difference was not found with regard to the work experience in the innovative pedagogy practices of the participants. However, there was a significant difference in the digital material design proficiency perceptions with regard to work experience. It was also found that innovative pedagogy practices and digital material design competency perceptions differed significantly by educational status. Accordingly, innovative pedagogy practices and digital material design competency perceptions increased with the increase in education level. The relationship between innovative pedagogy practices and digital material design competencies of the participants was positive and moderate in all sub-dimensions. Therefore, it can be concluded that teachers having cognitive competence related to innovative pedagogy practices also have high digital material design competencies. **Keywords:** Pedagogy, Innovative Pedagogical Practices, Digital Material Design.

[1] Corresponding author's address: Fırat University
Telephone: +905452019713
e-mail: adonder@firat.edu.tr

Introduction

In recent years, the technology has become important in education, which is a comprehensive and multidimensional concept. New generation virtual-digital technologies have changed and even transformed the meaning, roles and functions of education as well as educational concepts and actors. This transformation is called digital transformation in education (Küçükoğlu & Akça, 2021). As a result, nowadays, education is perceived almost completely as being linked to technology, which requires a new kind of pedagogy. In this sense, digital pedagogy is the understanding of education in the Information Age we live in. Digital pedagogy, which is the result of technological transformation in education, gives innovative educational roles to the teachers, who are the main actors in teaching process. Of these roles, the most important one is that teachers should be able to come up with digital instruction design in line with innovative pedagogy since they play a critical role in terms of reflecting the innovative pedagogy in the classrooms. In order to fulfill their innovative pedagogical roles and responsibilities, teachers are expected to have sufficient content knowledge, blend this knowledge with pedagogical knowledge and transfer them to students through appropriate teaching methods and techniques (Mishra, Koehler, Henriksen, 2011; Rojas, 2008) due to the fact that innovative pedagogy necessitates teachers to design appropriate digital material on the subject, to be able to develop teaching strategies and make evaluations (Çiltaş & Akıllı, 2011; Tükenmez, 2014). Unsurprisingly, pedagogy changes over time depending on the developments and changes in science, technology and society. Change, which is an obligation as a result of the basic dynamics in the 21st century, entails significant innovations and adaptations (Carvalho, Teixeira, Olim, Campanella, Costa; 2020; Dawe, 2004). In this sense, it is anticipated that societies that adapt to the innovations and changes in education would exist in the future (Dawe, 2004).

Innovations and changes which have emerged as a result of the change of education with the 21st century dynamics indicates change of teachers, students, administrators, parents and the environment associated with education (Alagül & Gürsel, 2018). In this context, this study focused on the changes in the competence, position, role and responsibilities of teachers. The innovative teacher of the digital paradigm in the 21st century is expected to have the essential competencies of the digital age as well as academic knowledge and skills, and to have an innovative mindset and behavior enabling transmission of the knowledge and skills of this age to the students (Süer, 2019) since innovative education, a requirement of digital pedagogy, also necessitates the development of pedagogical knowledge for an effective learning process (Grosser & Nel, 2013). Such a requirement has paved the way for the emergence of a new concept: innovative pedagogy practices. Indeed, there is a global trend towards the need to renovate education from traditional teaching and learning to more innovative forms of pedagogical practice (Ottestad, 2010). Innovative pedagogy practices aim to train research-oriented, exploratory, creative individuals who are open to change and able to manage and analyze information by determining the educational and psychological factors that have great influence on students' physical, personal characteristics and cognitive skills (Stukalenko, Zhakhina, Kukubaeva, Smagulova, Kazhibaeva, 2016; Süer, 2019). Innovative pedagogical practices are shaped through factors such as in-school and out-of-school policies, teacher attitudes and skills, and student characteristics (Owston, 2007). They help students to make connections between thoughts, to reveal new ideas, to reason, to help them deal with issues systematically and to think about hypothesis (Okolie, Igwe, Mong, Nwosu, Kanu & Ojemuyide, 2021). Innovative pedagogy encourages students to inquiry, understand and analyze the knowledge, enable them to discover their own creativity through problem solving, help them think critically, which, in turn, enables students to take responsibility for their learning (Leite & Zabalza, 2012; Vieira, Mamede & Lima, 2008). These practives will help students expand their learning areas and acquire the skills and competencies they need (Kozma & Anderson, 2002), and thus, they will assisst students in adaptation to the 21st century information age and continuous learning (Kozikoğlu & Altunova, 2018). In line with digital pedagogy, teachers need to possess the knowledge, skills and competencies that will enable them to gain all the aforementioned characteristics to students.

Digital teaching design and practice, which is another focus of this study, requires digital material design due to increasing technological developments in the 21st century and the need to adapt these developments in education (Gündüz Çetin & Gündoğdu, 2022). In this sense, the examination of education systems in different countries reveals that innovative pedagogical practices encourage the use of technology in the education, especially by teachers and in schools (Kozma & Anderson, 2002). Innovative pedagogy has devoted great significance to the need to use technology in each aspect of education in different ways inside and outside the classroom (Salmon, 2005; Ottestad, 2010). In innovative pedagogical practices, technology can be used in to conduct a number of activities such as doing research, questioning, being open to online learning, and reaching the correct information (Naifeld, Simon, 2017).

Although it is a global trend, innovative pedagogy and digital material design has also affected the Turkish Education System. In addition, in Turkey, which has embraced the policy of development through education, it is unlikely that education will not be influenced by developments in digital technologies. Therefore, today's teacher should have the ability to understand, use and produce technology as well as having content and pedagogical knowledge (Uzun, Akay, 2021; Şahin, 2019; YÖK, 2007). Therefore, in line with 21st century education approach, teachers need to possess technological competencies, in other words, digital technological competencies, as well as traditional competencies. Such a requirement has brought about the concept of technological-pedagogical content knowledge (TPACK) which includes technological competencies along with content and pedagogical knowledge (Koehler, Mishra, 2009).

TPACK refers to teachers' reflection of content knowledge to the teaching through different technology-supported tools, that is to say digital materials. The most critical role TPACK imposes on teachers is to design suitable digital material for the student and topic, and apply it in an appropriate way. Digital materials vary from presentations based on very advanced computer knowledge and pictures to complex simulations. Today, TPACK requires knowing and using new generation digital technologies such as cloud computing, artificial intelligence, virtual reality, internet of things, 3D printers, web.2.0, web.3.0 (Kocaman-Karoğlu, Bal-Çetinkaya & Çimşir, 2020; Anderson, 2007). They also include different technological applications such as educational social network (edmodo, class dojo), presentation (prezi), augmented reality (quiver) (Karademir,2018) as well as animations, videos, simulations (Howell, O'Domell, 2018; Taşlıbeyaz, Karaman, 2015; Jones, Fox, 2017). On the other hand, TPACK, as a requirement of innovative pedagogy, entails Information and Communication Technologies (ICT) support, which includes virtual and digital 2 or 3 dimensional models, shapes and written, visual and audio materials (Coklar, Kuş, 2018; Uzun, Akay, 2021). These digital materials developed with new generation technologies (Edson, Thomas, 2016) can only turn into digital students of the 21st century with teachers having TPACK competence (Smaldino, Lowthor, Mims, Russell, 2015). In addition, today's digital students born into technology actually learn best in technology-based environments called innovative pedagogy. In this sense, studies in the literature show that such innovative digital education environments not only provide a rich environment for education and different perspectives, but also provide motivation to students and support their analysis ability araştırmalar (Yavuz-Konokman, 2019; Kalyuga, Liu, 2015; Zwart, Van Luit, Noroozi, Goei, 2017). Therefore, it is obvious that the innovative pedagogy of the 21st century transformed by digital technologies is the learning way of the students of this age, and that education and teaching offerd to them should include digital environments. However, whether teachers have these innovative pedagogy practices and the digital material design competence should be examined in detail. Digital material design and innovative pedagogy practices are two phenomena which support each other. In this context, this study aimed to analyze the relationship between innovative pedagogy practices and digital material design competencies of teachers.

Methodology

Research Model

In this study on the relationship between innovative pedagogy practices and digital material design competencies of teachers, the relational survey method, one of the quantitative research approaches, was adopted. Relational survey model consists of two or more variables and provides statistical comparisons by determining the existence and amount of the relationship between the determined variables (Büyüköztürk, Çakmak, Akgün, Karadeniz & Demirel, 2013).

Universe and Sample

The sample of the study consisted of elementary school teachers working in state schools in the 2021-2022 academic year. A total of 262 teachers participated in the study. Simple random sampling method was used in sample selection. According to Karasar (2009), using the simple random sampling method enables an equal probability for all sampling units to be included in the study. The demographic characheristics of participants is given in Table1.

Table 1. Demographic information of the participants

Variable	*Groups*	*Frequency (n)*	*Percentage (%)*
Gender	Female	131	50
	Male	131	50
Discipline	Social Studies	50	19.1
	Science	48	18.3
	Methematics	45	17.2
	Turkish	41	15.6
	Classroom Teacher	52	19.8
	Foreign Language	26	9.9
Work Experience	1-5 years	57	21.8
	6-10 years	70	26.7
	11-15 years	50	19.1
	16-20 years	85	32.4
Educational Status	Undergraduate	207	79
	Graduate	55	21
	Total	262	100

Data Collection Tools

Innovative Pedagogical Practices Scale for Teachers

Two scales were used in data collection. The first one was "Innovative Pedagogical Practices Scale for Teachers (IPPST)" (Süer & Oral, 2021). The Cronbach's Alpha value was determined as .88 in the original scala development study. In this study, the Cronbach's Alpha value of the scale was found to be .95. In addition, The KMO value of the scale was .92 and Bartlett's test value was 6538.318. The scale consists one dimension and 46 items.

Digital Material Design Competencies Scale (DMDCS)

The second data collection tool was Digital Material Design Competencies Scale (DMDCS). It was developed by Göçen Kabaran and Uşun (2021). The Cronbach's Alpha value was found as .98 in the original scala development study. In this study, the Cronbach's Alpha of the scale value was calculated as .90. These results indicated that the Digital Material Design Competencies Scale was reliable. The KMO value of the scale was found as .89, and the Bartlett's value as 2387.36. The scale is 5-point Likert type and consists of 31 items.

The scale has 4 sub-dimensions: "Design and Development Competence (DDC)", "Technical Competence (TC)", "Technopedagogical Competence (TPC)", "Implementation and Evaluation Competence (IEC)".

Data Analysis

SPSS 22.0 package program was used in the analysis of data. In general, it took 18-29 minutes for teachers to answer the scales. Innovative Pedagogy Practices and Digital Material Design Competencies of the participants were examined by calculating the arithmetic mean for scales and their sub-dimensions. The interpretation of the arithmetic averages was as follows: 1.00-1.79 "Very Low", 1.80-2.59 "Low", 2.60-3.39 "Moderate", 3.40-4.19 "High" and 4.20-5.00 "Very High". It was examined whether the data had normal distributions and it was found that the Skewness value of the Innovative Pedagogical Practices Scale for Teachers (IPPST) was between -1.187 and -.042, and the Kurtosis value was between -.606 and 1.718. In addition, the Skewness value of the Digital Material Design Competencies Scale changed between -.922 and .255, and the Kurtosis value between -.826 and .073. Skewness and Kurtosis values between -2 and +2 indicates a normal distribution (George & Mallery, 2010). Descriptive statistics were produced using frequency, standard deviation and percentage values based on participants' demographic information. Since the normality of the data was ensured, t-test and ANOVA were performed to examine Innovative Pedagogy Applications and Digital Material Design Competencies of the participants. The LSD test was used as a Post-hoc test to determine the source of difference and the significance level was set at .05. Finally, correlation analysis was performed to investigate the relationship between participants' Innovative Pedagogy Practices and Digital Material Design Competencies.

Findings

Innovative pedagogy practices and digital material design levels of the participants are shown in Table2.

Table 2. Participants' Innovative Pedagogy Applications and Digital Material Design Levels

	N	*X*	*Sd*	*Level*
Innovative Pedagogical Practices	262	3.75	.55	High
Digital Material Design	262	3.51	.76	High
Design and Development Competence	262	3.22	.86	Moderate
Technopedagogical Competence	262	3.66	.83	High
Technical Competence	262	3.52	.81	High
Implementation and Evaluation Competence	262	3.72	.83	High

Table 2 showed that participant had high levels of Innovative Pedagogy Practices (X=3.75) and Digital Material Design proficiency (X=3.51). In addition, they had moderate levels of Design and Development Competence (X=3,22) and high levels of "Technopedagogical competencies" (X=3.66), "Technical competencies" (X=3.52), "Implementation and Development Competence" Evaluation Competence" (X=3.72) .

Table 3 shows the results of t-test performed to investigate gender difference in Innovative Pedagogy Practices and Digital Material Design competencies.

Table 3. Comparison of the participants' opinions with regard to gender

	Gender	*N*	*X*	*Sd*	*t*	*p*
A. Innovative Pedagogical Practices	Female	131	3.78	.53	.68	0.49
	Male	131	3.73	.57		
B. Digital Material Design	Female	131	3.47	.75	-.84	0.40
	Male	131	3.55	.77		

As shown in Table 3, it was found that there was no significant difference between the Innovative Pedagogy Practices and Digital Material Design competencies of the teachers in terms of gender.

The results of ANOVA conducted to examine whether the Innovative Pedagogy Practices and Digital Material Design competencies of the participants differed by discipline are presented in Table 4.

Table 4. Comparison of the participants' opinions with regard to discipline

	Discipline	*N*	*X*	*Sd*	*F*	*p*
A. Innovative Pedagogical Practices	a. Mathematics	45	3.68	.58	1.590	0.163
	b. Classroom	52	3.93	.54		
	c.Science	48	3.79	.58		
	d. Foreign Language	26	3.67	.43		
	e.Turkish	41	3.68	.47		
	f.Social Studies	50	3.70	.60		
	Total	262	3.75	.55		
B. Digital Material Design	a. Mathematics	45	3.45	.75	.497	0.778
	b. Classroom	52	3.64	.68		
	c.Science	48	3.48	.79		
	d. Foreign Language	26	3.59	.46		
	e.Turkish	41	3.48	.82		
	f.Social Studies	50	3.44	.87		
	Total	262	3.51	.76		

ANOVA results revealed that there was no significant difference in participants' Innovative Pedagogy Practices and Digital Material Design competencies scores in terms of discipline.

Table 5 presents the findings of ANOVA performed to investigate whether the Innovative Pedagogy Practices and Digital Material Design competencies of the participants differed by work experience.

Table 5. Comparison of the participants' opinions with regard to work experience

	Work Experience	**N**	**X**	**S**	**F**	**p**	**Difference**
A. Innovative Pedagogical Practices	a.1-5 years	57	3.81	.540	.287	0.83	-
	b.6-10 years	70	3.74	.478			
	c.11-15 years	50	3.76	.633			
	d.16-20 years	85	3.72	.579			
B. Digital Material Design	a.1-5 years	57	3.66	.610	4.236	0.00*	a>d
	b.6-10 years	70	3.66	.606			b>d
	c.11-15 years	50	3.49	.797			
	d.16-20 years	85	3.29	.889			
	Total	262	3.51	.760			

Table 5 did not reveal a significant difference in participants' Innovative Pedagogy Practices scores in terms of work experience. However, it was found that participants' Digital Material Design competencies differd by work experience (F=4.236; p=0.000 <0.05). In order to determine the source of difference, LSD test was performed. Accordingly, it was found that participants with 1-5 years and 6-10 years of work experience had higher Digital Material Design competencies than those with 16-20 years of seniority. In addition, it was revelaed that Digital Material Design competencies of the participants with 1-5 years of work experience were higher than those with 6-10 years of work experience.

The findings of t-test conducted in order to examine whether the partcipants' scorsed differed by educational status are shown in Table 6.

Table 6. Comparison of the participants' opinions with regard to educational status

	Educational Status	N	X	S	t	p
A. Innovative Pedagogical Practices	Undergraduate	207	3.71	.54	-2.162	0.03*
	Graduate	55	3.89	.58		
B. Digital Material Design	Undergraduate	207	3.44	.76	-3.002	0.00*
	Graduate	55	3.78	.66		

As seen in Table 6, there was a significant difference in participants' Innovative Pedagogy Practices and Digital material design competencies scores in terms of educational status. Partcipants having a graduate degree were found to have higher Innovative Pedagogy Practices scores (t=- 2.162, p<.05). Similarly, it was found that participants with a graduate degree had higher Digital Material Design competencies (t=- 3.002, p<.05)

Table 6. The relationship between innovative pedagogy practices and digital material design competencies of the participants

	(1)	(2)	(3)	(4)	(5)	(6)
1. Innovative Pedagogical Practices	1					
2. Digital Material Design	,696**	1				
3. Design and Development Competence	,645**	,906**	1			
4. Technical Competence	,651**	,902**	,753**	1		
5. Technopedagogical Competence	,628**	,941**	,800**	,781**	1	
6. Implementation and Evaluation Competence	,590**	,871 **	,664**	,733**	,836**	1

**p<.01, N=262

Table 6 revealed a moderate (r= .696; p<.01) relationship between innovative pedagogy practices and digital material design competencies of the participants. In addition, it was found that Innovative Pedagogy Practices positively and moderately correlated with Design and Development Competence (r= .645; p<.01), Technical Competence (r= .651; p<.01), Technopedagogical Competence (r= .628; p<.01) and Implementation and Evaluation Competence (r= .590; p<.01).

Discussion, Conclusion and Recommendations

As the dynamics of this age, the innovative pedagogy of the 21st century and the digital material design competencies complement each other. Hence, teachers in the 21st century are expected to have both of these competencies together. In fact, a teacher having innovative pedagogical competence should be able to design digital material, which is the primary indicator of the innovativeness. Dağhan et al., (2017) indicated that the 21st century teacher should possess ICT literacy. Accordingly, they found that the participants' innovative pedagogy implementation competencies and digital material design competency perceptions were high. Similarly, participants' TPACK competency perceptions which consists of these competencies were also high. Furthermore, participants had high levels of technical competence and implementation and evaluation competece. Similar studies also support these findings (Süer, 2019; Carvalho et al., 2020). These findings of the present study indicated that participants considered themselves competent in innovative pedagogy practices and digital material design.

The examination of participants' perceptions of proficiency in innovative pedagogy and digital material design with regard to demographic variables showed remarkable findings. For example, it was notable that

gender, discipline and work experience did not have an influence on the participants' perceptions of innovative pedagogy and digital material design competency. In this sense, Süer and Oral (2021) argues that branch teachers are actually expected to be more competent in digital material design since they are more familiar with the technology by nature. Similarly, it is anticipated in general that young teachers with less work experience are more proficient in digital material design than teachers having more work experience due to their generation characteristic. On the other hand, the present study revealed a significant difference between participants' perceptions of innovative pedagogy and digital material design in terms of educational status. It was found that participants having a graduate degree had higher levels of innovative pedagogy and digital material design. This may be due to the fact that teachers keep up with new developments with graduate education and constantly renew their knowledge in theory and practice (Kırgın, 2021). It is anticipated that following new developments will also contribute to innovative pedagogy practices of teachers (Alabaş, Kamer, Polat, 2012).

The correlation analysis revealed a positive and moderate relationship between participants' innovative pedagogy practices and digital material design competencies including all sub-dimensions. This relationship means that teachers with innovative pedagogy practices also have high levels of digital material design competency. Considering the co-occurrence of the individual's cognitive competence is related to skills required for designing materials, such a finding is actually an expected one. It is important that participants consider themselves competent in innovative pedagogy and digital material design since innovative pedagogy is closely related to using technology in education and teaching (Salmon, 2005). However, the possibility that the perceptions of teachers participated in this study may not reflect the real situation should not be ignored. Perception and reality may not always be the same (Türk, 2014). Accordingly, higher levels of innovative pedagogical competencies and and digital material design competency reported in this study should be handled with a caution. Actually, participants' moderate levels of design and development competence supports this cautious approach. In addition, similar studies in the literature have showed that there are significant problems in digital-based educational practices in Turkey (Gökbulut, Keserci, Akyüz, 2021; Mishra, Koehler, 2006; Yılmaz, Üredi, Akbaşlı, 2015; Şimşek, Yazıcı, 2021;). Furthermore, it has been reported that, except for Covid-19 period, the use of digital technologies in the teaching process of the Turkish education system is mostly limited to smart boards (Elçiçek, 2019; Tataroğlu Taşdan, 2021) and there are numerous problems regarding its use (Güven, Akar Vural, 2017; Yılmaz, 2020; Smith, Higgins, Wall & Miller, 2005). Therefore, it is possible that the participants regarded themselves as as more competent than they were in the innovative pedagogy of the 21st century and digital material design competencies, which is the dynamic of this age. The reason for this possibility may be the anxiety about being seen as inadequate. A second possibility is that the participants may have high self-efficacy perceptions about the topic. Actually, the fact that the participants' digital material design competence perceptions were at a moderate level in the study was actually a declaration of their anxiety. Similarly, Bediroğlu (2021) stated that pre-service science teachers had a moderate level of digital material design competency. Tatlı and Akbulut (2017) also stated that pre-service teachers considered themselves moderately competent in developing computer-based materials. Similarly, it was found that teachers had lack of knowledge about the material development process, such as color-shape mismatch and using remarkable elements, as well as their technology-related inadequacies (Şimşek, 2021). All of these findings essentially shows that there is a widespread lack of teachers in digital material design. Although it is largely about teacher education they recieved (Schoepp, 2005), it can also be argued that teachers failed to improve themselves in this regard. What needs to be done is to provide trainings that will ensure the professional development of teachers for general ICT (Gisbert- Cervera & Lazaro- Cantabrana, 2015). In this regard, training should be provided to ensure the professional development of teachers for general ICT (Gisbert- Cervera & Lazaro- Cantabrana, 2015). Teachers' inadequacies in preparing digital materials overshadow their competence in innovative pedagogy, and as a result has negative reflections on the

classroom (Şimşek, 2021). Such a situation may eventually prevent the integration of digital technologies into classrooms in education systems (Pan-Franklin, 2011; Karademir, 2018).

As a result, it is satisfying that the participants' innovative pedagogy and digital material design perceptions were found to be high in the study. However, it should also be noted that the the perception is not necessarily consistent with the real situation. On the other hand, the fact that the participants generally considered themselves competent in the competencies required by the innovative pedagogy of the 21st century may actually reflect their wishes, demands and desires in this regard. Even if there is no other reason, the innovative pedagogy of the participants and their optimistic attitudes towards digital material design can be considered as a strong chance for adaptation of the 21st century digital pedagogy into the education system. In addition, a willingness and positive attitude may stimulate activation of teachers' demands on a topic, which in turn lead tham to improve themselves. When this situation becomes widespread, change can support cultural awareness (Memmedova, 2019). In fact, it appears that there is a serious need for such a situation. As a dynamic society, Turkey is clearly in need of adaptation and updating on the subject of developing and changing new education systems (Carvalho, Teixira, Olim, Campanella, Costa; 2020). In this context, teachers should ensure "consistency between the objectives of the school" with their competence in innovative pedagogy (Owston, 2007).

REFERENCES

Alabaş, R., Kamer, S. T. & Polat, Ü. (2012). Öğretmenlerin kariyer gelişimlerinde lisansüstü eğitim: tercih sebepleri ve süreçte karşılaştıkları sorunlar. *E-Uluslararası Eğitim Araştırmaları Dergisi*, 3(4), 89-107.

Alagül, Ö. & Gürsel, F. (2018*). Beden Eğitimi Öğretmenlerının pedagojık yenılık öğrenırken çalışma koşullarının rolü. S. Dinçer (Ed.)*, Değişen Dünyada Eğitim içinde (385-395). Ankara: Pegem Akademi.

Araujo, R. & Belian, R. (2018). Concepçoes de professores universitarios sobre inovaçao pedagogica. *Revista Internacional de Educaç~ao Superior*, *4*(2), 387-400.

Bediroğlu, R. (2021). *Fen bilgisi öğretmen adaylarının dijital öğretim materyali geliştirme öz-yeterlikleri* (Doctoral dissertation). Yıldız Teknik Üniversitesi, Fen Bilimleri Enstitüsü.

Büyüköztürk, Ş. (2009). Sosyal bilimler için veri analizi el kitabı. Ankara: Pegem Akademi.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E. Karadeniz, Ş. & Demirel F. (2013). Bilimsel araştırma yöntemleri. Ankara: Pegem Akademi Yayıncılık.

Carvalho, A., Teixeira, S. J., Olim, L., Campanella, S. and Costa, T. (2020). Pedagogical innovation in higher education and active learning methodologies- a case study. Education+Trainig. *63*(2). 196-213.

Çiltaş, A. & Akıllı, M. (2011). Öğretmenlerin pedagojik yeterlikleri. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi.* (4) , 64-72.

Dağhan, G., Nuhoğlu Kibar, P., Menzi Çetin, N. , Telli, E. & Akkoyunlu, B. (2017). Bilişim teknolojileri öğretmen adaylarının bakış açısından 21. yüzyıl öğrenen ve öğretmen özellikleri. Eğitim Teknolojisi Kuram ve Uygulama, 7 (2) , 215-235 . DOI: 10.17943/etku.305062

Dawe, S. (2004). *Vocational education and training and innovation.* National Centre for Vocational Education Research Ltd.

Edson, A. J. & Thomas, A. (2016). *Transforming preservice mathematics teacher knowledge for and with the enacted curriculum: The case of digital instructional materials. In Handbook of research on transforming mathematics teacher education in the digital age* (pp. 215-240). IGI Global.

Elçiçek, Z. (2019). Öğretmen adaylarının akıllı tahta uygulamalarına ilişkin tutumlarının incelenmesi. *Electronic Journal of Social Sciences*. *18*(71). 1215-1221.

George, D., & Mallery, P. (2010). *SPSS for windows step by step: A Simple Guide and Reference* (17.0 update (10a ed.) b.). Boston: Pearson.

Gisbert Cervera, M. & Lázaro Cantabrana, J. L.(2015). Professional development in teacher digital competence and improving school quality from the teacher perspective: A case study. *New Approachers in Educational Research*, 4(2), 115-122. 10.7821/naer.2015.7.123

Göçen Kabaran, G. & Uşun, S. (2021). Dijital materyal ţasarımı yeterlikleri ölçeği (DMTYÖ): bir ölçek geliştirme çalışması. *Eğitim Teknolojisi Kuram ve Uygulama, 11*(2) , 281-307. DOI: 10.17943/etku.864296

Gökbulut, B., Keserci, G. & Akyüz,A. (2021). Digital material design competencies of academicians working at the faculty of education and teachers. *Sosyal Bilimler ve Eğitim Dergisi (JOSSE)*. 4(1), 11-24.

Grosser, M. M. & Nel, M. (2013). The relationship between the critical thinking skills and the academic language proficiency of prospective teachers. *South African Journal of Education, 33*(2), 1–17. https://doi.org/10.15700/saje.v33n2a639

Gündüz Çetin, İ. & Gündoğdu, K. (2022). E-twinning proje uygulamalarına ilişkin öğretmen görüşleri. *Elektronik Sosyal Bilimler Dergisi. 21*(81). 76-90.

Güven, H. & Akar Vural, R. (2017). İlkokullarda görev yapan İngilizce öğretmenlerinin akıllı tahta kullanıma ilişkin öz değerlendirmeleri. *Adnan Menderes Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*. 4(2). 69-86.

Karademir, T. (2018). *Teknolojinin benimsenmesine ekolojik bir yaklaşım: sürdürülebilir bir dijital öğretim materyali geliştirme ekosistemi*. (Yayınlanmamış Doktora Tezi). Ankara Üniversitesi, Eğitim Bilimleri Enstitüsü.

Karasar, N. (2009). *Bilimsel araştırma yöntemi*. Ankara: Nobel Yayın Dağıtım.

Kırgın, F.(2021). *Eğitim yönetimi alanında yüksek lisans yapmış okul müdürlerinin bakış açılarındaki farklılıklar* (Yayın No. 706127) (Yüksek Lisans Tezi). Lisansüstü Eğitim Enstitüsü, Düzce Üniversitesi. https://tez.yok.gov.tr/UlusalTezMerkezi/

Kozikoğlu, İ. & Altunova, N. (2018). Öğretmen adaylarının 21.yüzyıl becerilerine ilişkin öz-yeterlik algılarının yaşam boyu öğrenme eğilimlerini yordama gücü. *Yükseköğretim ve Bilim Dergisi*. 8(3), 522-531.

Kozma, R.B. & Anderson, R.E. (2002). Qualitative case studies of innovative pedagogical practies using ICT. *Journal Of Computer Assisted Learning*. 18. 387-394.

Küçükoğlu, T. M. & Akça, M. (2021). Covid 19 salgınıyla birlikte eğitimde dijital dönüşüm (ss.3-30) içinde Covid-19 salgınında çok boyutlu etkiler (Ed.S. Karaköse). Ankara: İKSAD Yayınları.

Leite, C. & Ramos, K. (2010). *"Questoes da formaçao pedagogico-didatica na sua relaçao com a profissionalidade docente universitaria: Alguns pontos para debate"*, in Leite, C. (Ed.), Sentidos da pedagogia no Ensino Superior. CIIE.

Memmedova, K. (2019). Yenilikçi pedagojik süreçte psikolojik engeller ve onların yok edilme yolları. *Anadolu Tüt Eğitim Dergisi. 1*(1) 1-8.

Mishra, P. & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017-1054.

Naifeld, E. & Simon, E. (2017). Teaching students' understanding of innovative pedagogy. *European Scientific Journal. 13*(4), 15-26.

Okolie, U. C., Igwe, P. A., Mong, I.K., Nwosu, H.E., Kanu, C. & Ojemuyide, C. C. (2021) . Enhancing students' critical thinking skills through engagement with innovative pedagogical practices in Global South, *Higher Education Research & Development*, DOI: 10.1080/07294360.2021.1896482

Ottestad, G. (2010). Innovative pedagogical practive with ICT in three Nordic countries- differences and similarities. *Journal of Computer Assisted Learning. 26*. 478-491.

Owston, R. (2007). Contextual factors that sustain innovative prdagogical practive using technology: an international study. *J Educ Change.* 8, 61-77. http://dx.doi.org/10.1007/s10833-006-9006-6

Pan, S. C. & Franklin, T. (2011). In-Service teachers' self-efficacy, Professional development, and web 2.0 tools for ıntegration. *New Horizons in Education, 59*(3), 28-40.

Rojas, R. L. M. (2008). *Pedagogical content knowledge in early childhood: A study of teachers' knowledge*. (Yayınlanmamış Doktora tezi). Loyola Unıversity.

Salmon, G. (2005). Flying not flapping: a strategic framework for eLearning and pedagogical innovation in higher education institutions. *ALT-J, 13*(3), 201-218.

Schoepp, K. (2005). Barriers to technology integration in a technology-rich environment. *Learning and Teaching in Higher Education: Gulf Perspectives, 2*, 1-24.

Silva, M. R.(2018). Secondary educations BNCC reform :The revival of a dusty discourse. *Educação em Revista. 34*, 1-15. https://doi.org/10.1590/0102-4698214130

Smaldino, S. E.; Lowther, D.L.; Mims, C. & Russell, D.R. (2015, Eylül). *Öğretim teknolojileri ve öğrenme araçları.* (Çev. Ed. Asım Arı). Eğitim Kitabevi: Konya.

Smith, H. J., Higgins, S., Wall, K. ve Miller, J. (2005). Interactive whiteboards: Boon or bandwagon? A crical review of literature. *Journal of Computer Assisted Learning*, 21, 91-101.

Stukalenko, N. M., Zhakhina, B. B., Kukubaeva, A. K., Smagulova, N. K. ve Kazhibaeva, G. K. (2016). Studying innovation technologies in modern education. *International Journal of Environmental and Science Education, 11*(14), 6612-6617.

Süer, S. (2019). *Sınıf öğretmenlerinin tenilikçi pedagoji uygulamalarına ilişkin görüşlerinin değerlendirilmesi.* [Publication No.](Doktora tezi). https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Süer, S. & Oral, B. (2021). Öğretmenler için yenilikçi pedagoji uygulamaları ölçeği: Geçerlik ve güvenirlik çalışması. *Mersin Üniversitesi Eğitim Fakültesi Dergisi.* 17(1), 132-147.

Şimşek, F. M. (2021). *21. yüzyılda öğrenmeyi görünür kılmak; Montessori eğitiminde dijital değerlendirme araçlarının kullanımının incelenmesi* (Yayımlanmamış Yüksek Lisans Tezi). Yıldız Teknik Üniversitesi, Sosyal Bilimler Enstitüsü.

Şimşek, M. & Yazıcı, K. (2021). Examining the digital learning material preparation competencies of pre-service mathematics teachers. *Participatory Educational Research (PER). 8*(3), 323-343.

Tataroğlu-Taşdan, B.(2021). Matematik eğitiminde akıllı tahta kullanımını inceleyen araştırmaların betimsel içerik analizi. *Buca Eğitim Fakültesi Dergisi, 52*, 724-743.

Tatlı, Z. & Akbulut, H. İ. (2017). Öğretmen adaylarının alanda teknoloji kullanımına yönelik yeterlilikleri . *Ege Eğitim Dergisi, 18* (1) , 31-55 . DOI: 10.12984/egeefd.328375

Tükenmez, S. (2014*). İlköğretim matematik öğretmenlerinin farklı hizmet sürelerine sahip olma durumlarına göre pedagojik alan bilgilerinin incelenmesi.* (Yayımlanmamış Yüksek Lisans Tezi). Marmara Üniversitesi.

Türk, M.S. (2014). Medyanın gerçeklik inşası ve geçerlik algısı. *Düşünce Dünyasında Türkiz Siyaset ve Kültür Dergisi. 5*(28). 9-32.

Uzun, N. B. & Akay, C. (2021). Öğretmenlerin dijital materyal oluşturabilme öz-yeterlilikleri ölçeğinin geliştirilmesi . *Kesit Akademi Dergisi, 7* (26) , 240-254

Vieira, F., Mamede, A. & Lima, C. (2008), *"Staging pedagogy for autonomy: two plays.* Pedagogy for Autonomy in Language Education in Europe: Theory, Practice and Teacher Education, Authentik.

Yavuz-Konokman, G. (2019). *Dijital öğretim teknolojilerinin hazırlanması ve eğitsel ortamlarda kullanımı: Dijital öyküleme ve dijital kavram haritası.* Yanpar-Yelken, T. (Ed.), Öğretim teknolojileri içinde (65-98). Ankara: Anı Yayıncılık.

Yılmaz, Z. A. (2020). Fen bilimleri öğretmenlerinin FATİH projesi ve akıllı tahta hakkındaki görüşleri. *International Journal of Scholars in Education*, *3*(1), 71-83.

Yılmaz, M., Üredi, L. & Akbaşlı, S. (2015). Sınıf öğretmeni adaylarının bilgisayar yeterlilik düzeylerinin ve eğitimde teknoloji kullanımına yönelik algılarının belirlenmesi. *Uluslararası Beşeri Bilimler ve Eğitim Dergisi, 1*(1), 105-121.

YÖK. (2007), "*Türkiye'nin Yükseköğretim Stratejisi",* YÖK, Ankara.

Zwart, D. P., Van Luit, J. E., Noroozi, O. & Goei, S. L. (2017). The effects of digital learning material on students' mathematics learning in vocational education. *Cogent Education, 4*(1), 1313581. doi:10.1080/2331186x.2017.1313581.

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A Comparison of Computerized Classification Testing Methods over Different Size Item Pools

Research Article

Seda DEMIR[1]

[1]*Tokat Gaziosmanpaşa University, Faculty of Education, Department of Educational Science, Tokat, Turkey* 0000-0003-4230-5593

ARTICLE INFO	ABSTRACT
Article History: Received: 06.02.2022 Available online: 19.08.2022	The aim of this paper, which is comprised of two studies, is to examine different classification criteria, item selection methods and ability estimation methods used in computerized classification testing applications in terms of average classification accuracy (ACA), average test length (ATL), and measurement precision under the constraint conditions with and without content balancing and item exposure control. In the first study, 48 simulation conditions for 1000 examinees and item pools with 300, 600 and 900 items were created. In the second one, 16 conditions were created by making use of 822 examinees' responses to a real paper and pencil test with eighty items. In the first study, it was found that there were similar and higher values in terms of ACA, while the expected a posteriori (EAP) estimator had a slight advantage over the sequential probability ratio test (SPRT) in terms of ATL. Further, the extension of the item pool increased the test efficiency. Upon an examination of content balancing and item exposure control, test efficiency was more adversely affected when one of the methods from SPRT, the cutscore based maximum Fisher information (MFI-CB), and EAP or the pool with 300 items was used. On the other hand, in the second study it was found that test efficiency for particularly confidence interval CI: 98% was higher when the ability estimator was the weighted likelihood estimation (WLE). Moreover, the common finding by two studies was that SPRT was more useful in maximazing the classification accuracy compared to confidence interval classification criterion. **Keywords:** computerized classification testing, classification criteria, item selection methods, ability estimation methods

Introduction

Considered as a system that constantly evolves and changes, education and teaching process has been strengthening its dynamic nature due to the developments in information and communication technologies.

Computerized adaptive testing (CAT), in this sense, contributes to more efficient and accurate assessments thanks to its technological convenience. The main purpose of CAT is to iteratively estimate the latent ability and then select and administer the most suitable item that has maximum information at the current performance of an examinee (Eggen & Straetmans, 2000). This iteration continues until the test termination criterion (e.g. achieving maximum test length, maximization at the current ability estimate) has been satisfied. In CAT, unlike the traditional paper and pencil tests, examinees are administered tests from different item pools depending on their differentiating ability levels and individualized performance (Bao, Shen, Wang & Bradshaw, 2021). Further, CATs can provide better estimation accuracy with fewer items than required by traditional tests (Bao et al., 2021; Fan, Wang, Chang, & Douglas, 2012; Thompson, 2009). In addition to precise and efficient ability estimation, the computerized classification testing (CCT) is preferred when the main goal of testing individuals is to assess the accuracy of classification made in two or more categories such as "pass" or "fail" classification. Based on the test results, precise and efficient classification with fewer items at the extremes is essential in that such important decisions as school graduation, recruitment, high-stakes tests are made in line with the ability estimation parameters (Thompson & Ro, 2007). High test efficieny denotes the ability estimate with fewer items at the extremes and lower standard error of estimation in CAT applications (van der Linden & Hambleton, 1996), whereas it represents the ability estimate with fewer items at the extremes and fewer classification errors in CCT applications (Thompson, 2009).

Purpose and Significance of the Study

The main premise of this study is to compare the conditions in the CCT applications via Monte Carlo (MC) and Post Hoc (PH) simulations. In this sense, this paper consists of two studies. The performance of the different classification criterias, item selection methods and ability estimation methods used in CCT applications in terms of average classification accuracy (ACA), average test length (ATL), the correlation between true and estimated ability levels (r), bias, root mean squared error (RMSE), and mean absolute error (MAE) values over different size item pools consisting of unidimensional and dichotomous items in the Study I and over a real data set in the Study II were examined. The subproblems of the study are listed as follows:

Study I: In the MC simulation study. Given that the item pools with 300, 600 and 900 items are used when the indifference region constant value of the sequential probability ratio test (SPRT) classification criterion are δ: .10 and δ: .20 and the confidence level of the confidence interval (CI) classification criterion are 90% and 98%, how do the values of ACA, ATL, r, bias, RMSE, and MAE change in two-category classifications in which the followings are considered together?

1. The estimate based maximum Fisher information (MFI-EB) and cutscore based maximum Fisher information (MFI-CB) item selection methods, and weighted likelihood estimation (WLE) and expected a posteriori (EAP) ability estimation methods,

2. MFI-EB and MFI-CB item selection methods, and WLE and EAP ability estimation methods along with content balancing and item exposure control.

Study II: In the PH simulation study. In the Study II, it eas aimed to answer the first and the second subproblems examined in the Study I as the third and fourth subproblems over an item pool with eighty items based on a real paper and pencil test.

Upon examining the studies on the CCT applications in the previous research, scholars generally delved into the comparisons of classification criteria (e.g. Kingsbury & Weiss, 1980; Spray & Reckase, 1996; Thompson, 2009) and item selection methods (e.g. Eggen, 1999; Lin & Spray, 2000) or the performances of the classification criteria crossing with different item selection methods (e.g. Eggen & Straetmans, 2000; Thompson & Ro, 2007). Further, no consideration was given to the content balancing and item exposure control in most of the previous studies. However, examinees are administered a test with high validity which properly represents each of the

content areas as much as possible in the CAT applications with content balancing. On the other hand, when the item exposure control is implemented, not only is measurement precision maintained, but also test security and pool utilization are considered (Leroux et al., 2019). At this point, it can be noted that considering the contributions of the correct classifications based on the test results to selection, monitoring and placement of examinees, new CCT applications with different research designs will make valuable contributions to the literature. Conducted on both simulations and a real data set, this study offers contributions to the previous literature.

In line with the purpose of the study, the SPRT and CI classification criteria, design of the research, data generation, CCT simulation conditions and data analysis process were described. Then, the findings were discussed based on the previous research. Finally, recommendations were provided for future applications and studies.

Sequential Probability Ratio Test (SPRT)

The SPRT is applied to classify examinees by selecting the best items through algorithms based on the statistical hypothesis test (Eggen & Straetmans, 2000; Lin & Spray, 2000; Spray & Reckase, 1996). Through the SPRT, the likelihood ratios of alternative hypotheses that are for making classification decisions are compared. If the two likelihoods of two hypotheses are similar, another item is administered to the examinee. Otherwise, the one which is sufficiently larger for the other is accepted. This procedure continues until one of the two hypotheses is accepted (Reckase, 1983). The SPRT is used to make classification decision by testing if the θ_i ability level of an examinee is equal to a fixed value below (θ_1) or above (θ_2) the cutscore. The space between these two points (θ_1 and θ_2) is called as the indifference region. If the test administered is intended to make a pass/fail decision in one of the two categories, a cutscore (θ_0) is used and the hypotheses illustrated below in Figure 1 based on δ indifference region constant value can be structured for the classification decision for the examinee.
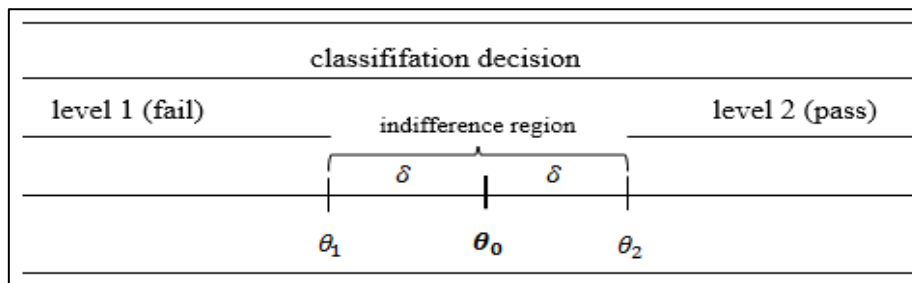
Figure 1. Classification decision for two-category classifications

$$H_0: \theta_i \leq \theta_0 - \delta = \theta_1 \qquad \text{(level 1)}$$

$$H_1: \theta_i \geq \theta_0 + \delta = \theta_2 \qquad \text{(level 2)}$$

According to the hypothesis tests, the lower bound of the indifference region is $\theta_1 = \theta_0 - \delta$, while the upper one is $\theta_2 = \theta_0 + \delta$. The difference of the value $\theta_2 - \theta_1 = 2\delta$ is equal to the indifference region which is considered as acceptable for classification decisions close to θ_0.

The ratio of likelihood function based on the null hypothesis (H_0) or the alternative hypothesis (H_1) is formulated for dichotomous items as follows:

$$LR(\underline{x}) = \frac{L(\theta_2; \underline{x})}{L(\theta_1; \underline{x})} = \frac{\prod_{i=1}^{k} L(\theta_2; x_i)}{\prod_{i=1}^{k} L(\theta_1; x_i)} = \frac{\prod_{i=1}^{k} P_i(\theta_2)^{x_i}[1 - P_i(\theta_2)]^{1-x_i}}{\prod_{i=1}^{k} P_i(\theta_1)^{x_i}[1 - P_i(\theta_1)]^{1-x_i}}$$

In this formulation, $L(\theta_2; \underline{x})$ refers to the the likelihood of observing the k observed dichotomous item responses ($\underline{x} = x_1, x_1, \ldots x_i, \ldots x_k$) given θ_2, while $L(\theta_1; \underline{x})$ corresponds with likelihood given θ_1. $P_i(\theta_1)$ and $P_i(\theta_2)$ refer to the probabilities of a correct response to item i, conditional on θ_1 and θ_2. At the beginning of a

test, LR(x) is equal to 1.0 (Lin, 2011). According to the Type I and Type II error rates (α and β), the decision-making process regarding to which group the examinee will be assigned is applied as follows (Wald, 1947).

When $A = \beta/(1-\alpha)$ and $B = (1-\beta)/\alpha$,

- If $\log(A) < LR(x) < \log(B)$, select another item and continue taking observations.

- If $LR(x) \leq \log(A)$, *H₀* is accepted, the examinee is classified as failed, and the test is terminated.

- If $LR(x) \geq \log(B)$, *H₀* is rejected, and the examinee is classified as passed, and the test is terminated.

During the practice, the minimum and maximum test lengths are mostly determined. When the maximum test length is achieved, but a decision cannot be made yet, the critical value $(\log(A) + \log(B))/2$, which denotes the midpoint of the interval of $(\log(A), \log(B))$, is calculated. A forced classification is performed by rejecting *H₀* if the $LR(x)$ value is greater than the critical value and the examinee is considered as passed. Otherwise, the *H₀* is accepted and the examinee is considered as failed (Lin, 2011). Additionally, it must be noted that since it is mostly determined $\alpha = \beta$ in studies, it is calculated as $(\log(A) + \log(B))/2 = 0$.

Confidence Interval (CI)

Confidence interval (CI) is formulated as a statistical estimation problem (Eggen & Straetmans, 2000). The purpose with CI is to classify the examinee into the suitable category, by comparing the confidence level for the *j* examinee's estimated ability $\hat{\theta}_j$ with cutscore after the administration of each item. For example, if the confidence interval determined for the exams in which examinees are classified into two categories, such as passed or failed is above the predetermined cutscore, then the examinee is classified as passed. On the other hand, the examinee is classified into the category "failed" if the confidence interval is below the cutscore. When the predetermined confidence interval contains a predetermined cutscore, a new item is administered. In the CI approach, based on the maximum likelihood estimation (or the Bayesian estimation procedure), the confidence interval for the ability is constructed, using the conditional standard error of measurement (CSEM) as follows (Hambleton & Swaminathan, 1985; Thompson, 2007):

$$\hat{\theta}_j - z_\alpha(CSEM) \leq \theta_j \leq \hat{\theta}_j + z_\alpha(CSEM) \qquad \text{and} \qquad CSEM = 1/\sqrt{TI(\theta)}$$

In this formulation, *zα* denotes the standart deviation that defines the 1-α confidence interval. In this study, the CSEM, used to determine the condifence interval, was calculated, using the test's information function (Embretson & Reise, 2000).

Methodology

Please give information about the method (sampling, research method, data collection if applicable, etc). Also Ethics Committee Approval information (the title of the ethics committee, date, and number) must be stated clearly in the method section as well as on the last page of the manuscript.

Design

This study is a descriptive one in its nature in that it rests on the comparisons of different classification criterias, item selection methods and ability estimation methods used in CCT applications over different size item pools and over a real data set. Descriptive studies are employed to thoroughly describe a given state of affair or phenomenon and are designed to obtain information about current status of existing condition (Creswell, 1994; Fraenkel, Wallen & Hyun, 2012). This study is also a simulation study. Other research methods are used to answer such questions as "what happened, and how, and why?", whereas simulation seeks for answering the questions "What if?". In simulations, it is possible to examine more complex systems since they can provide different possible conditions in the future (Dooley, 2002). The dependent variables of the study are ACA, ATL, the correlation between true and estimated ability levels *(r)*,

bias, RMSE, and MAE values. The independent ones, on the other hand, are classification criterion (SPRT- δ: .10, SPRT- δ: .20, CI- 90%, CI- 98%), item selection methods (MFI-EB, MFI-CB), ability estimation methods (WLE, EAP), and size of the item pools (300 items, 600 items, 900 items).

Data Generation

In the MC simulation part, the first study in this paper, the items pools were composed of 300, 600 and 900 items based on the the three-parameter logistic model (3PL) from the Item Response Theory (IRT) models in order to address the parameter c which is of great importance in the high-stakes testing. For the items in the pool, the a parameter was generated from a uniform distribution $U[0.5, 2.0]$ to represent medium and high levels of discrimination, the b parameter was generated from a normal distribution $N(0, 1.5)$ to be close to the actual values in applications, and the c parameter was calculated from a normal distribution $N(0.20, 0.05)$ again to be close to an actual application. Further, ability parameters of 1000 examinees were generated from a normal distribution $N(0, 1)$ within a range of (-3, +3). On the other hand, in the PH simulation part, the second study in this paper, a real data set were used based on the paper and pencil test of a foreign language exam in a university. The data set consists of the item responses of a test with 80 items administered to 822 examinees. The item and ability paramaters as well as the item response parameters in the PH simulation were calculated from this real administration.

CCT Simulation Conditions

Starting point. The available prior information on examinees can be used as a starting point in the CCT applications (Weiss & Kingsbury, 1984; Yang, Poggio, & Glasnapp, 2006). However, the population mean is mostly used as the starting point (Thompson, 2007). In the current study, the starting point was defined as $\theta = 0$.

Item selection. The intelligent item selection methods by which computers evaluate the unadministered items in the pool and select the best item to administer next are classified into two types, cutscore based (CB) and estimate based (EB) (Thompson, 2007). The item selection method maximizing Fisher information (maximum fisher information- MFI) at the cutscore is employed with the SPRT. The MFI method is for maximizing information at a single point, the probability of a correct response P and the probability of a wrong response Q, and is formulated as follows (Embretson & Reise, 2000):

$$I_i(\theta) = [\frac{\partial P_i(\theta)}{\partial \theta}]^2 / P_i(\theta) Q_i(\theta)$$

Along with its usage as cutscore based, MFI is used estimate based, as well (Eggen, 1999; Reckase, 1983). When estimate based is used as a criteria for item selection, the equations of the calculation remains the same, but calculations are made based on the current ability estimate of examinee at each point in the test (Thompson, 2007). In the present study, MFI-EB and MFI-CB item selection methods are preferred to be able to compare these two methods.

Ability estimation. An examination of the literature has revealed that common ability estimation methods based on the binary scoring (1-0) and unidimensional IRT are Maximum Likelihood Estimation (MLE), Marginal Maximum Likelihood Estimation (MMLE), Weighted Likelihood Estimation (WLE), Maximum A Posteriori (MAP), and expected a posteriori (EAP). Warm (1989) notes that all of these ability estimation methods presents biased estimates to such extent. Bias can systematically affect the precision of the classification decisions (Wang & Wang, 2001). According to Warm (1989), WLE is a method reducing bias and working on the basis of item parameters and a weighting function specific to ability levels. Accordingly, the ability estimator used in this study was the WLE. The EAP, on the other hand, can show bias in favor of the estimated ability levels in the case of small item pool size. As the number of the items increased, the bias would be reduced, but it was not known how many items would reduce the bias and to what extent (Wainer &

Thissen, 1987). Considering the size of the item pools used in this study, the EAP ability estimation method was used as the other ability estimation method since it can make fast, efficient and unbiased estimations as much as possible.

Classification criteria. SPRT, CI, and Bayesian decision theory are basic classification criteria based on IRT. All three classification criteria require fewer items than traditional fixed-form tests and provide a similar classification accuracy (Kingsbury & Weiss, 1983). However, as the indifference region larger, the SPRT is expected to produce better results (Eggen, 1999). On the other hand, as the confidence interval becomes wider, CI is expected that it requires more items and achieves higher classification accuracy rate. Accordingly, in their studies in which the confidence interval was reported between 70% and 90%, Eggen and Straetmans (2000) note that as the confidence interval becomes wider, the classification accuracy increases but test length is a bit larger. Therefore, the classification criteria considered in this study are the SPRT and the CI. Further, the indifference region constant value of the SPRT classification criterion was δ: .10 and δ: .20 and the confidence level of the CI classification criterion was determined as 90% and 98%.

Content balancing. In the previous studies on the CCT applications, the spiraling method (Kingsbury & Zara, 1989) (e.g. Finkelman, 2008; Huebner, 2012) and the constrained CAT method (e.g. Eggen & Straetmans, 2000; Huebner & Li, 2012) were generally used for content balancing. In the constrained CAT procedure used for content balancing, there is high predictability of content sequencing. However, the Modified Multinomial Model (MMM), one of the content balancing methods generally used in the CAT procedures, not only prevents high predictability of content sequencing, but provides better desired content rates (Lin, 2011). Accordingly, the MMM was preferred as the content balancing approach in this study. Further, considering the size of the item pools and other simulation conditions, the minimum test length was 10 items, with a maximum of 35 items in the Study I, whereas the minimum test length was 3 items, with a maximum of 9 items in the Study II. When the MMM method was used in the simulation conditions, the item pools created with 300, 600, and 900 items generated in the R program for Study I were divided into three content areas by randomly selecting items. Following this, item selection procedure was applied considering the content areas based on the functions and loops formed by the researcher. The target proportions of the content areas were adjusted to be 45%, 30% and 25%, respectively. Since the item pool with eigthy items in the Study II had already consisted of foreign language subtests of 45%, 30% and 25%, no additional intervention was made.

Item exposure control. An examination of the literature has revealed that the randomesque procedure, which randomly selects the next item to be administered, and the Sympson-Hetter Method (SH-Sympson & Hetter, 1985), which is based on the conditional selection procedure, are generally preferred as the item exposure control approaches. Since the randomesque procedure was thought that it would be inefficient in test conditions, using the item eligibility method was preferred (IE-van der Linden & Veldkamp, 2004), which was based on the SH method and more successful in item exposure control than the SH method (Huebner, 2012) in this study. The desired maximum item exposure rate was set as $r_{max} = .20$, which is a common value for the maximum desired exposure rate (Huebner, 2012; Leung, Chang, & Hau, 2002).

Number of classification categories and cutscore. In this study, the generated ability parameters in the Study I and the estimated ability parameters in the Study II were used while determining the cutscores in classifications with two categories. In both studies, the cutscore was determined in line with the study by Eggen and Straetmans (2000). Accordingly, the first half of the ability values ranked from low to high were defined as the Level 1 items, the second one as the Level 2 items. Following this, calculating the 70% of the highest ability in the Level 1 was defined as the cutscore. Accordingly, the cutscore for the Study I was CS = 0.00, while it was CS = -1.00 for the *Study II.*

Data Analysis

100 replications were performed for each of the MC (48 conditions) and PH (16 conditions) simulation conditions generated, and the values of the dependent variables were obtained by calculating the average of the replications. The value of the correlation between true and estimated ability levels (*r*) was calculated using the Pearson correlation coefficient, while the bias, RMSE, and MAE values were calculated with following formulas (Miller, & Miller, 2004) written in the R program.

$$Bias = \frac{\sum_{i=1}^{n}(\widehat{\theta_\iota} - \theta_i)}{n} \; , \quad RMSE = \sqrt{\frac{\sum_{i=1}^{n}(\widehat{\theta_\iota} - \theta_i)^2}{n}} \; , \quad OMH = \frac{\sum_{i=1}^{n}|\widehat{\theta_\iota} - \theta_i|}{n}$$

In these formulas $\widehat{\theta_\iota}$ is the last estimated ability level, θ_i is the true ability level and n is the number of examinees.

Results

Study I

Study I was carried out with MC simulations.

Results on the first subproblem. Table 1 shows the values calculated by averaging the 100 replications performed for each simulation condition related to the first research subproblem.

Table 1. Comparison of the CCT applications in Study I.

AEM	CC	ISM	IPS	ACA	ATL	*r*	Bias	RMSE	MAE
WLE		MFI-EB	300	.92	31.35	.96	-0.010	0.29	0.23
			600	.93	30.58	.96	-0.009	0.28	0.21
	SPRT		900	.93	30.26	.96	-0.010	0.27	0.21
	δ: 0.10	MFI-CB	300	.92	29.26	.93	0.016	0.37	0.28
			600	.93	27.97	.93	0.020	0.37	0.28
			900	.93	27.50	.93	0.021	0.37	0.27
		MFI-EB	300	.92	21.14	.94	-0.011	0.36	0.28
			600	.93	20.17	.94	-0.011	0.36	0.27
	SPRT		900	.93	19.83	.94	-0.008	0.35	0.27
	δ: 0.20	MFI-CB	300	.92	19.45	.90	0.019	0.44	0.33
			600	.93	18.42	.90	0.019	0.44	0.33
			900	.93	18.02	.90	0.022	0.44	0.33
		MFI-EB	300	.89	11.90	.90	0.015	0.46	0.36
	CI		600	.89	10.77	.91	0.014	0.45	0.35
	90%		900	.88	10.43	.91	0.014	0.45	0.35
		MFI-CB	300	.90	12.15	.87	0.021	0.49	0.38
			600	.90	10.83	.87	0.019	0.49	0.38
			900	.89	10.47	.87	0.025	0.49	0.38
		MFI-EB	300	.88	13.81	.91	0.016	0.45	0.35
	CI		600	.89	11.81	.91	0.017	0.45	0.35
	98%		900	.89	11.09	.91	0.014	0.45	0.34
		MFI-CB	300	.89	14.20	.87	0.021	0.48	0.37
			600	.90	11.98	.87	0.160	0.48	0.37
			900	.90	11.21	.87	0.027	0.48	0.37
EAP		MFI-EB	300	.92	30.64	.96	0.000	0.27	0.21
	SPRT		600	.92	29.75	.96	-0.001	0.27	0.21
	δ: 0.10		900	.93	29.31	.96	0.003	0.26	0.20
		MFI-CB	300	.92	29.12	.93	0.000	0.36	0.27
			600	.93	28.04	.93	0.000	0.36	0.27

AEM	CC	ISM	IPS	ACA	ATL	*r*	Bias	RMSE	MAE
			900	.93	27.44	.93	0.001	0.36	0.27
		MFI-EB	300	.92	20.08	.94	0.001	0.35	0.27
	SPRT		600	.93	19.13	.94	0.000	0.34	0.26
	δ: 0.20		900	.93	18.68	.94	-0.001	0.34	0.26
		MFI-CB	300	.92	19.41	.90	0.000	0.43	0.33
			600	.93	18.36	.90	0.001	0.43	0.33
			900	.93	18.00	.90	-0.001	0.43	0.33
		MFI-EB	300	.89	12.12	.91	0.002	0.41	0.32
	CI		600	.89	10.81	.91	0.000	0.41	0.32
	90%		900	.89	10.43	.91	0.001	0.40	0.32
		MFI-CB	300	.89	11.82	.87	0.001	0.48	0.38
			600	.89	10.68	.87	-0.001	0.48	0.38
			900	.89	10.36	.87	0.000	0.48	0.37
		MFI-EB	300	.88	14.21	.91	0.002	0.40	0.31
	CI		600	.90	11.92	.91	-0.002	0.40	0.31
	98%		900	.90	11.14	.91	0.001	0.40	0.31
		MFI-CB	300	.89	13.59	.88	-0.002	0.48	0.37
			600	.90	11.67	.88	-0.003	0.48	0.37
			900	.90	10.98	.87	0.001	0.48	0.37

Note. AEM= ability estimation method, CC= classification criterion, ISM= item selection method, IPS= item pool size, ACA= average classification accuracy, ATL= average test length, *r*= the correlation between true and estimated ability levels, RMSE= root mean squared error, MAE= mean absolute error, WLE= weighted likelihood estimation, EAP= expected a posteriori, SPRT= sequential probability ratio test, CI= confidence interval, MFI-EB= maximum fisher information method on the basis of estimated-ability, MFI-CB= maximum fisher information method on the basis of cutscore.

As shown in Table 1, it is seen that the ACA is .92 for the item pools with 300 items, and is quite high with .93 in the other item pools, while the ATL ranged from 18.02 to 31.35 when the SPRT is the classification criterion and the ability estimator is the WLE. On the other hand, the ACA ranged from .88 to .90 which is relatively low, whereas the ATL ranged from 10.43 to 14.20 when the classification criterion is CI. In the comparison over the ability estimators WLE and EAP, it is seen that there are similar results in terms of ACA regardless of the classification criteria. However, the ATL slightly decreased (between 18.00 and 30.64) with the SPRT classification criterion, but it almost remained the same with the CI classification criterion.

As for the SPRT, the growth of δ, that is, a larger indifference region, did not affect the ACA, but it decreased the ATL as it had been expected. On the other hand, a wider confidence interval did not produce significant difference in the ACA, but increased the ATL, especially in the 300-item pool as it had been expected. Additionally, there were similar results in terms of test effectiveness when the MFI-EB or MFI-CB item selection method were used together with the same classification criteria. Further, it was found that test efficiency was relatively low, especially under the conditions with the pools including 300 items regardless of the classification criteria and item selection method.

The correlation values (*r*) were calculated between .90 and .96 for the SPRT and between .87 and .91 for the CI regardless of the ability estimation method. Under the conditions in which item selection methods were crossing with different classification criteria, the ones in which MFI-EB item selection approach was used produced higher correlations when compared with MFI-CB for the both classification criteria. Although bias values were mostly close to each other under all conditions, they were found to be lower when the item selection method was MFI-EB and the ability estimator was EAP. A similar case is available for the RMSE value, which takes into account the standard error of the estimation along with the bias, and for the MAE value. Accordingly, lower bias, RMSE and MAE values were calculated when the MFI-EB item selection

method was used together with each classification criterion, either the SPRT or the CI. The expansion of the item pool did not affect the bias, the RMSE, and MAE values.

Results on the Second Subproblem. Table 2 shows the values calculated by averaging the 100 replications performed for each simulation condition related to the second research subproblem, where the content balancing and item exposure control are also performed.

Table 2. Comparison of the CCT applications where the content balancing and item exposure control are also performed in Study I.

AEM	CC	ISM	IPS	ACA	ATL	r	Bias	RMSE	MAE
WLE		MFI-EB	300	.90	33.41	.95	-0.005	0.33	0.26
			600	.92	32.10	.96	-0.010	0.29	0.23
	SPRT		900	.92	31.45	.96	-0.010	0.28	0.22
	δ: 0.10	MFI-CB	300	.89	33.52	.92	-0.004	0.42	0.32
			600	.91	31.70	.93	0.006	0.38	0.29
			900	.92	30.57	.93	0.010	0.37	0.28
		MFI-EB	300	.90	25.24	.93	-0.017	0.39	0.30
			600	.92	22.42	.94	-0.015	0.37	0.28
	SPRT		900	.92	21.44	.94	-0.015	0.36	0.27
	δ: 0.20	MFI-CB	300	.90	24.68	.90	0.007	0.46	0.35
			600	.91	21.54	.90	0.011	0.44	0.34
			900	.92	20.36	.90	0.014	0.44	0.33
		MFI-EB	300	.87	11.98	.89	0.017	0.50	0.39
	CI		600	.88	10.74	.89	0.014	0.48	0.37
	90%		900	.88	10.40	.90	0.015	0.47	0.36
		MFI-CB	300	.88	12.57	.85	0.010	0.53	0.42
			600	.88	10.91	.86	0.019	0.51	0.40
			900	.88	10.49	.86	0.017	0.50	0.39
		MFI-EB	300	.87	14.04	.89	0.017	0.50	0.38
	CI		600	.88	11.76	.90	0.016	0.47	0.37
	98%		900	.88	11.07	.90	0.017	0.47	0.36
		MFI-CB	300	.87	15.07	.86	0.010	0.52	0.40
			600	.89	12.14	.86	0.014	0.50	0.39
			900	.89	11.24	.86	0.016	0.50	0.39
EAP		MFI-EB	300	.90	33.12	.95	0.001	0.31	0.25
	SPRT		600	.92	31.61	.96	0.000	0.28	0.22
	δ: 0.10		900	.92	30.79	.96	0.000	0.27	0.21
		MFI-CB	300	.89	33.55	.92	0.002	0.38	0.30
			600	.91	31.62	.93	0.000	0.36	0.28
			900	.92	30.46	.93	0.000	0.36	0.27
		MFI-EB	300	.90	24.19	.93	0.000	0.36	0.28
	SPRT		600	.92	21.31	.94	0.000	0.34	0.27
	δ: 0.20		900	.92	20.25	.94	-0.002	0.34	0.26
		MFI-CB	300	.90	24.96	.90	0.001	0.43	0.33
			600	.91	21.59	.90	0.000	0.43	0.33
			900	.92	20.37	.90	-0.001	0.43	0.33
		MFI-EB	300	.88	12.55	.90	-0.001	0.44	0.34
	CI		600	.88	10.82	.90	0.001	0.43	0.34
	90%		900	.88	10.43	.90	0.002	0.42	0.33
		MFI-CB	300	.88	12.62	.86	0.000	0.51	0.40
			600	.88	10.79	.86	0.001	0.50	0.39
			900	.88	10.38	.86	0.002	0.50	0.39

AEM	CC	ISM	IPS	ACA	ATL	r	Bias	RMSE	MAE
		MFI-EB	300	.87	15.27	.90	0.000	0.43	0.33
	CI		600	.89	12.03	.90	0.001	0.42	0.33
	98%		900	.89	11.13	.91	0.000	0.41	0.32
		MFI-CB	300	.86	15.16	.87	-0.001	0.50	0.38
			600	.89	11.97	.87	-0.002	0.50	0.39
			900	.89	11.07	.86	0.001	0.49	0.39

As shown in Table 2, it is seen that the ACA ranged from .89 to .92 regardless of the ability estimator for the SPRT, but the CI ranged from .87 to .89 with the ability estimator WLE and ranged from .86 to .89 with the ability estimator EAP. Further, when either the WLE or the EAP ability estimators were used, the applications with the SPRT classification criterion were implemented approximately between 20 and 34 items, whereas the applications with the CI classification criterion were implemented approximately between 10 and 15 items. The expansion of the item pools increased the ACA but decreased the ATL. As an important finding from the research, a larger indifference region, did not affect the ACA, but it decreased the ATL as it had been expected. On the other hand, a wider confidence interval did not produce significant difference in the ACA, but increased the ATL. In summary, test efficiency increased in the event of the expansion of the item pools, a larger indifference region, and a narrower confidence interval.

The correlation values (*r*) were calculated between .90 and .96 for the SPRT regardless of the ability estimator, and between .85 and .90 for the CI with the ability estimator WLE, but between .86 and .90 for the CI with the ability estimator EAP. Further, higher correlations, lower bias, RMSE and MAE values were calculated under the conditions in which the MFI-EB item selection method was used as it was in Table 1. However, it was found that the size of the item pool, especially item pools over 300 items did not affect the correlation values.

Study II

Study II was carried out with PH simulations using the result of a real test consisting of 80 items.

Results on the Third Subproblem. Table 3 shows the values calculated by averaging the 100 replications performed for each simulation condition related to the third research subproblem, where the ability estimations are WLE or EAP.

Table 3. Comparison of the CCT applications in Study II.

AEM	CC	ISM	ACA	ATL	r	Bias	RMSE	MAE
WLE	SPRT	MFI-EB	.91	9.00	.88	-0.013	0.47	0.37
	δ: 0.10	MFI-CB	.91	9.00	.88	-0.011	0.47	0.36
	SPRT	MFI-EB	.91	9.00	.88	-0.012	0.47	0.37
	δ: 0.20	MFI-CB	.91	9.00	.88	-0.013	0.47	0.37
	CI	MFI-EB	.87	4.08	.78	0.043	0.61	0.46
	90%	MFI-CB	.87	4.07	.79	0.046	0.61	0.46
	CI	MFI-EB	.86	5.17	.81	0.024	0.57	0.44
	98%	MFI-CB	.86	5.18	.81	0.022	0.57	0.43
EAP	SPRT	MFI-EB	.91	9.00	.88	0.017	0.47	0.37
	δ: 0.10	MFI-CB	.91	9.00	.88	0.015	0.47	0.36
	SPRT	MFI-EB	.87	8.38	.86	0.016	0.49	0.38
	δ: 0.20	MFI-CB	.91	9.00	.88	0.015	0.47	0.37
	CI	MFI-EB	.88	4.52	.80	0.017	0.58	0.45
	90%	MFI-CB	.88	4.53	.80	0.014	0.58	0.45
	CI	MFI-EB	.83	5.50	.83	0.018	0.55	0.42

AEM	CC	ISM	ACA	ATL	r	Bias	RMSE	MAE
	98%	MFI-CB	.83	5.50	.82	0.014	0.55	0.42

Note. AEM= ability estimation method, CC= classification criterion, ISM= item selection method, ACA= average classification accuracy, ATL= average test length, *r*= the correlation between true and estimated ability levels, RMSE= root mean squared error, MAE= mean absolute error, WLE= weighted likelihood estimation, EAP= expected a posteriori, SPRT= sequential probability ratio test, CI= confidence interval, MFI-EB= maximum fisher information method on the basis of estimated-ability, MFI-CB= maximum fisher information method on the basis of cutscore.

As shown in Table 3, which displays the values calculated from the PH simulation in which a real data set for item and ability parameters, and item response parameters, it is seen that the maximum number of the items (9) were used for the classifications with the SPRT criterion and the WLE estimator, and the ACA was .91. On the other hand, under the conditions in which the classification criterion used was CI, the classification was performed with 90% confidence level, .87 accuracy and approximately 4 items, and 98% confidence level with .86 accuracy and approximately 5 items. Further, when the ability estimator was EAP and the classification criterion was the SPRT, the ACA was .91, while the ATL was equal to the maximum number of the items. However, the indifference region was δ: 0.20 and the item selection method was MFI-EB, the ACA was calculated as .87, while the ATL was 8.38. Under the conditions in which the classification criterion used was CI, the classification was performed with 90% confidence level, .88 accuracy and approximately 5 items, and 98% confidence level with .83 accuracy and approximately 6 items. Moreover, the correlation values (r) generally varied between .78 and .88, and the lowest correlation value was found when the WLE ability estimation method was used together with the CI classification criterion at 90% confidence level (.78 for MFI-EB, .78 for MFI-CB). 79) was obtained. Further, for both ability estimation methods, the highest correlations (.88 and .86) were calculated under the conditions with the SPRT classification criterion. Although the calculated bias, RMSE and MAE values were generally close to each other in all conditions, the highest values were calculated when the WLE ability estimation method was used together with the CI classification criterion at 90% confidence level. Additionally, slightly lower bias, RMSE and MAE values were calculated for both ability estimation methods under the conditions with the SPRT classification criterion.

Results on the Fourth Subproblem. Table 4 shows the values calculated by averaging the 100 replications performed for each simulation condition related to the fourth research subproblem, where the ability estimations are WLE or EAP and content balancing and item exposure control are also performed.

Table 4. Comparison of the CCT applications where the content balancing and item exposure control are also performed in Study II.

AEM	CC	ISM	ACA	ATL	r	Bias	RMSE	MAE
WLE	SPRT	MFI-EB	.88	9.00	.77	-0.076	0.69	0.54
	δ: 0.10	MFI-CB	.89	9.00	.77	-0.096	0.70	0.54
	SPRT	MFI-EB	.88	9.00	.75	-0.087	0.71	0.55
	δ: 0.20	MFI-CB	.88	9.00	.77	-0.088	0.70	0.53
	CI	MFI-EB	.86	4.11	.65	-0.064	0.78	0.61
	90%	MFI-CB	.86	4.11	.65	-0.065	0.78	0.60
	CI	MFI-EB	.85	5.35	.69	-0.090	0.78	0.59
	98%	MFI-CB	.85	5.36	.69	-0.083	0.78	0.59
EAP	SPRT	MFI-EB	.88	9.00	.78	0.016	0.61	0.48
	δ: 0.10	MFI-CB	.89	9.00	.78	0.035	0.61	0.48
	SPRT	MFI-EB	.88	8.99	.79	0.017	0.59	0.46
	δ: 0.20	MFI-CB	.88	8.99	.79	0.016	0.60	0.47
	CI	MFI-EB	.88	4.30	.71	0.018	0.69	0.54
	90%	MFI-CB	.88	4.30	.71	0.020	0.69	0.54
	CI	MFI-EB	.86	5.88	.74	0.020	0.66	0.51
	98%	MFI-CB	.86	5.92	.74	0.011	0.65	0.51

When Table 4 and Table 3 are compared, with the inclusion of content balancing and item exposure control in the PH simulation, the ACA decreased in all conditions when the ability estimator was WLE, whereas the ATL had the maximum number of items when the SPRT classification criterion was used. However, similar values were calculated when the CI classification criterion was used. On the other hand, when the ability estimation method was EAP, the ACA for the SPRT classification criterion decreased in general, while the ATL remained approximately the same. For all that, for the CI classification criterion, at the 90% confidence level, ACA and ATL remained approximately the same, while for the 98% confidence level, ACA increased and ATL increased slightly. In addition, it is seen that the correlation values (r) decrease in all conditions, while the bias, RMSE and MAE values increase. When the ability estimator was the EAP, the ACA for the SPRT classification criterion decreased, while the ATL remained the same. However, the ACA and the ATL remained the same at 90% confidence interval, but the ACA increased, while the ATL slightly increased at 98% confidence interval. Additionally, it was found that the correlation values (*r*) decreased under all conditions, whereas bias, RMSE and MAE values increased.

Discussion and Conclusion

This paper consists of two studies. The first one was devoted to the MC simulations generated from item and ability parameters as well as item response parameters. The second one, on the other hand, is grounded on the PH simulations based on the real exam results. In both studies, the performance of different classification criterias, item selection methods and ability estimation methods used in CCT applications were examined.

Based on the findings in Study I, conducted via MC simulations, there were similar and higher values in terms of ACA, whereas the EAP estimator had a slight advantage over SPRT in terms of ATL in the comparison over WLE and EAP estimates. Additionally, when the SPRT classification criteria was used together with MFI-CB item selection method and the CI classification criteria was with MFI-EB item selection method, a lower average test length was achieved, especially when the ability estimation method was WLE estimation. This finding of the study corroborates with Thompson's (2009) study, which showed that the CI with estimated-based (EB) item selection was more efficient, whereas the SPRT with cutscore-based (CB) item selection would perform better. Further, it was found that there was no significant difference in the ACA but an increase in the ATL in the item pool with 300 items as expected in case of the fact that the size of the indifference region was smaller or the confidence interval was wider. In line with this finding, Reckase (1983), Lau and Wang (1999), Thompson and Ro (2007), and Thompson (2011) also concluded that the SPRT with small indifference region and the CI with wide confidence interval increased the ATL.

The extension of the item pool increased the test efficient, which increased the ACA, but decreased the ATL. Under the conditions in which the MFI-EB was used as the item selection method, the correlation between true and estimated ability levels (r) was calculated as higher. Further, the bias values were relatively low when the EAP estimator was used. This finding is consintent with the studies by Wang and Vispoel (1998), Yang, Poggio, and Glasnapp (2006).

When a comparison between Table 1 and Table 2 is made in order to assess the effect of content balancing and item exposure control on the results in the CCT simulation, it is seen that the test efficiency decreased; that is, the ACA decreased, but the ATL increased under the conditions with the SPRT classification criterion. The calculated correlation values were lower under all conditions, particulary under those with CI classification criterion. Bias values decreased under the conditions with the WLE ability estimator method, but still they were lower under the conditions with the EAP ability estimator method. RMSE and MAE values, on the other hand, were relatively higher, especialy much more in the item pools with 300 items. Based on this finding, it can be recommended that when the content balancing and item exposure control are considered, the item pool can be expanded, by increasing the number of the items in the range of ability at which the

number of the items that exceeds the threshold of item exposure control increased in each content area. Thus, the increase in the ATL and the decrease the ACA can be evaluated. Unlike this finding, Thompson (2007) concluded that item exposure and content balancing constraints generally only serve to increase in the ATL. On the other hand, Wang, Hanson and Lau (1999) had similar finding with the current study and noted that WLE had larger bias in the variable test lengths. Further, Yi, Wang and Ban (2001) concluded that WLE required more items than EAP in the variable test lengths. Another finding of this present study is that when content balancing and item exposure control were considered, test efficiency was more adversely affected compared with other conditions when one of the methods from the SPRT classification criterion, the MFI-CB item selection method, and the EAP ability estimator or the pool with 300 items was used. That is to say, there was higher ATL but lower ACA. Thompson (2009), on the other hand, concluded that when item exposure control constraints were employed, the item selection with CB was more advantageous than EB selection in terms of the ATL. The reason why the findings condradict with each other may be due to the fact that content balancing in this present study unlike the Thompson's (2009) study was used. This is because the efficiency of item selection approaches may vary and the differences between the methods can be sometimes eliminated as the constraints increase.

Another important result from the Study II, conducted via PH simulations, there was higher ACA but relatively lower ATL with EAP ability estimator when the CI classification criterion was used as 98% regardless of item selection approach. Additionally, as the common finding from the both studies, the SPRT provided higher classification accuracy in both WLE and EAP ability estimations, but it achieved this with almost twice as many items when compared with the CI classification criterion. This finding of the study showed that the CI method in terms of the ATL and the SPRT method in terms of the ACA were more advantageous regardless of the ability estimator used in the CCT applications. Thompson and Ro (2007) supported this finding by concluding that the classification decisions made with CI led to lower ACA and ATL when compared with those with SPRT. Nydick et al. (2012), however, concluded that there were similar values in terms of ACA for the SPRT and the CI classification criteria, but the CI had an advantage for the ATL and required fewer items. Thompson (2011), on the other hand, found that the SPRT and CI classification criteria showed similar values when used together with the most informative items at the cutscore in terms of ACA, but the SPRT required fewer items in terms of ATL. In this sense, it can be noted that there is no agreement on the test efficieny provided by the SPRT and CI classification criteria, so future studies are required to focus on this issue. In the current study, it was found that the item selection approach did not affect the ACA and the ATL. Based on this finding, it can be concluded that the small item pool may have reduced the effect of the item selection approach in the CCT application in the Study I and the Study II. Expanding the confidence interval in the CI classification criteria led to increase in the number of the items, namely, ATL to terminate the test. If there were the most informative items at the cutscore in the item pool, the difference observed when the CI is expanded would also be available when the indifference region for the SPRT was smaller. Accordingly, it can be noted that the simulations with larger item pools in the Study I provided results that confirmed this.

When a comparison between Table 3 and Table 4 is made in order to assess the effect of content balancing and item exposure control on the results in Study II, it is seen that the ACA values are generally lower, but the ATL denotes similar values under all conditions except the one in which the ability estimator was the EAP and the CI classification criterion was used as 98%. Additionally, it was found that when the content balancing and item exposure control were performed, correlation values (r) were lower under the all conditions, but bias, RMSE and MAE values increased, which was similar to the results obtained from Study I. In other words, implementing content balancing and item exposure control showed less bias under the conditions in which the ability estimator was the EAP.

Based on the results of this present study, it can be recommended to practitioners that in a CCT application aimed at achieving the highest ACA, the size of the item pool must be large enough in case of the content balancing and/or item exposure control requirements, and the SPRT classification criterion, which perform better in terms of ACA, correlation, bias, RMSE, and MAE values, can be used together with the EAP estimator and MFI-CB item selection method. Additionally, a larger indifference region or a narrower confidence interval can be used for the higher test efficiency. On the other hand, in a CCT application aimed at achieving a lower ATL, CI classification criterion can be alternatively used together with the EAP estimator and MFI-CB item selection method. For the future studies, researchers can use multidimensional item pools and multiple content categories.

Ethics Committee Approval

The authors have to provide and submit an "Ethics Committee Approval" document while submitting their manuscript to IOJES journal. This document should be obtained from the related Ethical Committees of the universities. It is a requirement by ULAKBIM TR DİZİN for the journals waiting for possible inclusion in the TR DİZİN. All qualitative or quantitative studies which included data collection from participants by questionnaire, interview, focus group study, observation, and experiment must have the Ethics Committee Approval document. Ethics Committee Approval is not required for review articles. Ethics Committee Approval information (the title of the ethics committee, date, and number) must be stated clearly in the method section as well as on the last page of the manuscript.

REFERENCES

Bao, Y., Shen, Y., Wang, S., & Bradshaw, L. (2021). Flexible computerized adaptive tests to detect misconceptions and estimate ability simultaneously. *Applied Psychological Measurement, 45*(1), 3-21. https://doi.org/10.1177/0146621620965730

Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches*. Thousand Oaks. Sage.

Dooley, K. (2002). Simulation research methods. In J. Baum (Ed.), *Companion to organizations* (pp. 829-848). Blackwell.

Eggen, T. J. H. M. (1999). Item selection in adaptive testing with the sequential probability ratio test. *Applied Psychological Measurement, 23*(3), 249-261. https://doi.org/10.1177/01466219922031365

Eggen, T. J. H. M., & Straetmans, G. J. J. M. (2000). Computerized adaptive testing for classifying examinees into three categories. *Educational and Psychological Measurement, 60*(5), 713-734. https://doi.org/10.1177/00131640021970862

Embretson, S. E., & Reise, S. P. (2000). *Item response theory for psychologist*. Lawrence Erlbaum Associates Publishers.

Fan, Z., Wang, C., Chang, H., & Douglas, J. (2012). Utilizing response time distributions for item selection in CAT. *Journal of Educational and Behavioral Statistics, 37*(5), 655-670. https://doi.org/10.3102/1076998611422912

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). McGraw-Hill.

Finkelman, M. (2008). On using stochastic curtailment to shorten the SPRT in sequential mastery testing. *Journal of Educational and Behavioral Statistics, 33*(4), 442-463. https://doi.org/10.3102/1076998607308573

Hambleton, R. K., & Swaminathan, H. (1985). I*tem response theory: Principles and applications*. Kluwer Nijhoff Publishing.

Huebner, A. (2012). Item overexposure in computerized classification tests using sequential item selection. *Practical Assessment, Research & Evaluation, 17*(12), 1-9. https://doi.org/10.7275/nr1c-yv82

Huebner, A., & Li, Z. (2012). A stochastic method for balancing item exposure rates in computerized classification tests. *Applied Psychological Measurement, 36*(3), 181-188. https://doi.org/10.1177/0146621612439932

Kingsbury, G. G., & Weiss, D. J. (1980). *A Comparison of adaptive, sequential and conventional testing strategies for mastery decisions* (Research Report 80-4). University of Minnesota, Minneapolis: MN. http://iacat.org/sites/default/files/biblio/ki80-04.pdf

Kingsbury, G. G., & Weiss, D.J. (1983). A comparison of IRT-based adaptive mastery testing and a sequential mastery testing procedure. In D. J. Weiss (Ed.), *New horizons in testing: Latent trait theory and computerized adaptive testing,* (pp. 237-254). Academic Press.

Kingsbury, G. G., & Zara, A.R. (1989). Procedures for selecting items for computerized adaptive tests. *Applied Measurement in Education, 2*(4), 359-375. https://doi.org/10.1207/s15324818ame0204_6

Lau, C. A., & Wang, T. (1999, April). *Computerized classification testing under practical constraints with a polytomous model*. Paper presented at the annual meeting of the American Educational Research Association (AERA), Montreal, Canada. http://iacat.org/sites/default/files/biblio/la99-01.pdf

Leroux, A. J., Waid-Ebbs, J. K., Wen, P-S., Helmer, D. A., Graham, D. P., O'Connor, M. K, & Ray, K. (2019). An investigation of exposure control methods with variable-length cat using the partial credit model. *Applied Psychological Measurement, 43*(8), 624-638. https://doi.org/10.1177/0146621618824856

Leung, C.-K., Chang, H. H., & Hau, K. T. (2002). Item selection in computerized adaptive testing: Improving the a-stratified design with the Sympson–Hetter algorithm. *Applied Psychological Measurement, 26*(4), 376-392. https://doi.org/10.1177/014662102237795

Lin, C. (2011). Item selection criteria with practical constraints for computerized classification testing. *Applied Psychological Measurement 71*(1), 20-36. https://doi.org/10.1177/0013164410387336

Lin, C. J., & Spray, J. (2000). *Effects of item-selection criteria on classification testing with the sequential probability ratio test*. ACT (Research Report 2000-8). Iowa city, IA: ACT Research Report Series. https://eric.ed.gov/?id=ED445066

Miller, I., & Miller, M. (2004). *John E. Freund's mathematical statistics with applications*. (7th ed.). Prentice Hall.

Nydick, S. W., Nozawa, Y., & Zhu, R. (2012, April). *Accuracy and efficiency in classifying examinees using computerized adaptive tests: An application to a large-scale test.* Paper presented at the annual meeting of the National Council on Measurement in Education (NCME), Vancouver, British Columbia, Canada. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.476.3381&rep=rep1&type=pdf

Reckase, M. D. (1983). A procedure for decision making using tailored testing. In D. J. Weiss (Ed.), *New horizons in testing: latent trait theory and computerized adaptive testing*, (pp. 237-254). Academic Press.

Spray, J. A., & Reckase, M. D. (1996). Comparison of SPRT and sequential bayes procedures for classifying examinees into two categories using a computerized test. *Journal of Educational and Behavioral Statistics, 21*(4), 405-414. https://doi.org/10.3102/10769986021004405

Sympson, J. B., & Hetter, R. D. (1985, October). Controlling item exposure rates in computerized adaptive testing. In *Proceedings of the 27th annual meeting of the Military Testing Association* (pp. 937-977). San Diego, CA: Navy Personnel Research and Development Center. http://www.iacat.org/content/controlling-item-exposure-rates-computerized-adaptive-testing

Thompson, N. A. (2007). A practitioner's guide for variable-length computerized classification testing. *Practical Assessment Research & Evaluation, 12*(1), 1-13. http://www.iacat.org/sites/default/files/biblio/th07-01.pdf

Thompson, N. A. (2009). Item selection in computerized classification testing. *Educational and Psychological Measurement, 69*(5), 778-793. https://doi.org/10.1177/0013164408324460

Thompson, N. A. (2011). Termination criteria for computerized classification testing. *Practical Assessment, Research & Evaluation, 16*(4), 1-7. https://pareonline.net/getvn.asp?v=16&n=4

Thompson, N. A., & Ro, S. (2007). Computerized classification testing with composite hypotheses. In D. J. Weiss (Ed.). *Proceedings of the 2007 GMAC conference on computerized adaptive testing*. http://www.iacat.org/sites/default/files/biblio/cat07nthompson.pdf

Van der Linden, W. J., & Hambleton, R. K. (1996). *Handbook of item response theory: Models, statistical tools, and applications*. CRC Press.

Van der Linden, W. J., & Veldkamp, B. P. (2004). Constraining item exposure in computerized adaptive testing with shadow tests. *Journal of Educational and Behavioral Statistics*, *29*(3), 273-291. https://doi.org/10.3102/10769986029003273

Wainer, H., & Thissen, D. (1987). Estimating ability with the wrong model. *Journal of Educational Statistics, 12*(4), 339–368. https://doi.org/10.2307/1165054

Wald, A. (1947). *Sequential analysis*. John Wiley.

Wang, T., & Vispoel, W. P. (1998). Properties of ability estimation methods in computerized adaptive testing. *Journal of Educational Measurement, 35*(2), 109-135. https://www.jstor.org/stable/1435235

Wang, T., Hanson, B. A. & Lau, C. A. (1999). Reducing bias in CAT trait estimation: A comparison of approaches. *Applied Psychological Measurement, 23*(3), 263-278. https://doi.org/10.1177/01466219922031383

Wang, S., & Wang, T. (2001). Precision of warm's weighted likelihood estimates for a polytomous model in computerized adaptive testing. *Applied Psychological Measurement, 25*(4), 317–331. https://doi.org/10.1177/01466210122032163

Warm, T. A. (1989). Weighted likelihood estimation of ability in item response theory. *Psychometrika, 54*(3), 427-450. https://doi.org/10.1007/BF02294627

Weiss, D. J., & Kingsbury, G. G. (1984). Application of computerized adaptive testing to educational problems. *Journal of Educational Measurement, 21*(4), 361-375. https://doi.org/10.1111/j.1745-3984.1984.tb01040.x

Yang, X., Poggio, J. C., & Glasnapp, D. R. (2006). Effects of estimation bias on multiple category classification with an IRT-based adaptive classification procedure. *Educational and Psychological Measurement, 66*(4), 545-564. https://doi.org/10.1177/0013164405284031

Yi, Q., Wang, T., & Ban, J. (2001). Effects of scale transformation and test-termination rule on the precision of ability estimation in computerized adaptive testing. *Journal of Educational Measurement, 38*(3), 267-292. https://doi.org/10.1111/j.1745-3984.2001.tb01127.x/full

Investigation of the Perceptions of University Students Taking Vocational Music Education About Class Assessment Environment According to Different Variables

Research Article

Emin Erdem KAYA[1]

[1]*Nevsehir Hacı Bektas Veli University, Faculty of Education, Department of Music Education,* 0000-0003-0548-9864

ARTICLE INFO	ABSTRACT
	In this study, it is aimed to examine the perceptions of university students who receive professional music education about the classroom assessment environment through different variables. For this purpose, data were collected by applying the Classroom Assessment Environment Scale (CAES) developed by İlhan and Çetin (2014) to the students participating in the research from two different units of the same university. In the study, students' perceptions of the classroom assessment environment, the unit they study in, the type of high school they graduated from, their relationship with age, gender and class variables were analysed using SPSS 22 software according to the overall scale and its sub-dimensions. As a result of this research, in which the relationship between the perceptions of the classroom assessment environment of university students receiving vocational music education and various variables was scanned, a significant difference was found in the variables of the academic unit and class studied. On the other hand, it was determined that the variables of age, gender and type of high school graduated did not affect the classroom environment perceptions of the participants. In addition, it can be said that the students' perceptions of the classroom assessment environment are at a good level both in the overall scale and in the Learning-Oriented Environment (LOAE) and Performance-Oriented Assessment Environment (POAE) sub-dimensions. © 2022 IOJES. All rights reserved **Keywords:** Music, Music Education, Classroom Assessment Environment

Introduction

Music education can be most commonly defined as the process of acquiring, changing or developing certain musical behaviors as desired by the individual through his/her own experience. It is possible to divide music education into three as general, amateur and vocational music education. We can define vocational music education as the education given to people who choose the whole or a branch of music education as a profession (Uçan, 1997). In our country, vocational music education is given formally in conservatories, music and performing arts faculties, fine arts high schools, music education departments of education faculties or music-related units of fine arts faculties. Music education is carried out in an environment where theoretical and applied learning are carried out together, field-specific methods and techniques are used intensively, and there are unique classrooms or classrooms. Classroom and evaluation processes are also important in the music education process, where individual differences sometimes come to the fore.

It is known by everyone that the concept of class is one of the most important elements of education. In the last 50 years, the thoughts of many researchers and educators on the concepts of classroom environment, classroom climate or classroom atmosphere have been the subject of many studies (Hearn and Moos 1978; Fraser, 1987, 1998; Banks, 2012), especially in the field of education, various studies examining the classroom learning environment studies have been done (Fouts and Myers 1992; Dorman, 2002; Gazelle, 2006). Although the concept of classroom environment is sometimes seen as the physical space in which all learning activities take place, it can be said that it is actually a multidimensional concept that embodies the social, pedagogical and psychological perception of the learner. Elements such as student-teacher interaction and communication, classroom management, teaching methods and strategies can be added to these dimensions. In this context, the classroom atmosphere can be defined as the sum of all students' perceptions regarding the communication and interaction of teachers and students with each other and the quality of the learning environment (Urdan & Schoenfelder, 2006; Dorman, 2002).

The classroom atmosphere may vary at different times. These changes can occur during the day or during the year. De Feo (2015) describes classroom environments where there are no negative emotions and behaviors, students are happy, and relationships are warm and friendly, and classroom environments where students are restless and bored, and teachers and students are tense and reluctant are bad classroom environments. This can naturally affect the quality of learning. As a matter of fact, in some studies, the classroom atmosphere affects students' academic success (Roelofs, Visser, & Terwel, 2003; Küçükoğlu & Köse; 2008), attitudes and motivations (Köse & Küçükoğlu, 2009; Can & Baksi, 2014; Walker & Graham, 2021; Ertem et al. 2021) and self-esteem (Jia et al., 2009; Harbaugh & Cavanagh, 2012). In this context, considering the multidimensional structure of the classroom atmosphere mentioned above, the importance of how it is evaluated by the students is seen. As a matter of fact, this atmosphere of evaluation in the classroom is thought to be one of the most important components of the educational processes (Brookhart & DeVoge,1999; Banks,2012).

Classroom Assessment Environment

The concept of classroom assessment atmosphere was first mentioned by Stiggins and Conklin (1992), and it was generally defined as a practice in which teachers are evaluated over eight different components. Brookhart (1997), who thinks that these assessment practices, which are largely under the control of the teacher, are not very interested in how students perceive the process, redefined the classroom assessment atmosphere as the perceptions created by students (Brookhart & DeVoge, 1999) by all assessment practices carried out in the classroom by the teacher. Thus, it can be said that the environment of classroom assessment gains weight towards the perception of the student rather than the control of the teacher. The classroom assessment environment scale developed by Alkharusi (2009, 2011) in the following process was designed in two different dimensions as the learning-oriented assessment environment (LOAE) for student learning and

the performance-oriented assessment environment (POAE) for the student's performance. These dimensions determine students' perceptions of the overall scale and its sub-dimensions, and help the scale to establish a relationship with students' self-efficacy perceptions and academic achievements. For example, according to Alkharusi (2009), high LOAE perceptions of students indicate high self-efficacy beliefs, while high POAE perceptions may indicate low self-efficacy beliefs (İlhan & Çetin, 2014). As a result, it can be said that the classroom assessment environment has an important function in a discipline such as music education, which includes cognitive, affective and performance-oriented processes.

Aim

In this study, answers to the following questions were sought in order to examine the perceptions of university students receiving professional music education about the classroom assessment environment over different variables:

1. What are the perceptions of university students receiving professional music education about the classroom assessment environment scale?

2. What are the perceptions of university students receiving professional music education regarding the classroom assessment environment according to the academic unit of education variable?

3. What are the perceptions of university students who receive professional music education about the classroom assessment environment according to the variable of the type of high school they graduated from?

4. What are the perceptions of university students receiving professional music education regarding the age variable and the classroom assessment environment?

5. What are the perceptions of university students receiving professional music education regarding the gender variable and the classroom assessment environment?

6. What are the perceptions of university students receiving professional music education regarding the classroom assessment environment according to the grade variable?

Methodology

Research Design

This research is a research designed in relational model, using the descriptive scanning method in terms of evaluating the results of the collected findings. Descriptive studies are studies that aim to describe any event or phenomenon in its current form (Karasar, 2005). On the other hand, we can say that relational surveys are studies based on examining the relationship between two and/or more variables and trying to analyze the differences between them (Gürbüz & Şahin, 2017). In this study, the various demographic characteristics of the participants and their perceptions of the classroom assessment atmosphere were evaluated through statistical analyzes based on the quantitative findings obtained. The ethics committee approval of the article was obtained by Nevşehir Hacı Bektaş Veli University Scientific Research and Publication Ethics Committee with the decision dated 25.10.2021 and numbered 2021.09.345.

Sample

Among the students who received professional music education at Nevşehir Hacı Bektaş Veli University; A total of 139 university students studying at the Faculty of Education, Department of Music Education (29) and the Faculty of Fine Arts, Department of Music (110) participated voluntarily. The study group of this research was formed by using purposive sampling method. The distribution of the students according to the academic unit they study, the type of high school they graduated from, their age, gender and class is given in Table 1.

Table 1. Distribution of participants by academic unit, age, gender, type of high school graduated and classes

Demographic Information	Group	*n*	*%*
Academic Unit	Faculty of Fine Arts Music Department	110	79,13
	Faculty of Education Department of Music	29	20,87
Type of high school graduated	Fine Arts High School	23	16,55
	Others	116	83,45
Grade	1	62	44,60
	2	29	20,86
	3	25	17,99
	4	23	16,55
Gender	Female	62	44,60
	Male	77	55,40
Age	17-22	107	76,98
	23 and above	32	23,02
Total		139	100

In Table 1, we see that 110 participants were educated in the faculty of fine arts, in the department of music, and 29 in the department of music teaching in the faculty of education. It is understood that 23 of these students graduated from fine arts high schools, while 116 of them graduated from other high schools. In addition, it is seen that almost half of the participants are studying in the 1st grade, 77 of them are female and 107 participants are between the ages of 17-22.

Instruments

Classroom Assessment Environment Scale (CAES)

The Classroom Assessment Environment Scale (CAES), which was used as a data collection tool in this research, was developed by İlhan and Çetin (2014) with data collected from four different study groups consisting of 800 students in 2013-2014 Academic Year Spring Term. The construct validity of the scale was tested by the researchers with EFA (Exploratory Factor Analysis) and CFA (Confirmatory Factor Analysis). The scale consists of 18 items and two dimensions: Learning-Oriented Assessment Environment (LOAE) and Performance-Oriented Assessment Environment (POAE). The scale was applied to 110 students who received music education in 2016-2017 and verified with CFA (Kaya & Erginer, 2022).

Analysis

The data in this research were analyzed in computer environment using SPSS 22.0 package program. Frequency, percentage, arithmetic mean and standard deviation, which are descriptive statistics techniques, were used in the analysis of the data obtained from the 5-point Likert type scale. The score ranges based on the scoring of the scale items are shown in Table 2.

Table 2. Scoring the items in the data collection tool

Levels of Agreement	Score Range	Item Values
Strongly Disagree	1.00-1.80	1
Disagree	1.81-2.60	2
Unsure	2.61-3.40	3
Agree	3.41-4.20	4
Strongly Agree	4.21-5.00	5

According to Table 2., in the interpretation of the averages of the overall CAES and the sub-dimensions of LOAE/POAE; Average values between 1.00-1.80 were accepted as "I Strongly Disagree", between 1.81-2.60

as "Disagree", between 2.61-3.40 as "Unsure", between 3.41-4.20 as "Agree" and between 4.21-5.00 as "Strongly Agree".

Table 3. Findings on normality of the distribution

n	$\bar{X}$	sd	Kolmogorov-Smirnov	*p*
139	3.49	.55	.072	.077

p<.05

Since p>.05 according to Table 3, it can be said that the scale data show a normal distribution. Therefore, Independent Sample T-Test and One-Way ANOVA parametric tests were used in the analysis of the data obtained from the scale. The level of significance was determined as p<.05 in all analyzes.

In order to ensure the validity and reliability of the research, a detailed literature review was conducted regarding the problem and sub-problems of the research and the theoretical framework of the research before and during the research. In addition, the results obtained from the research findings were discussed with the results of similar studies and it was assumed that the research had external validity. The reliability analysis of the overall scale and its sub-dimensions used in the study was performed, and the internal consistency coefficients of the factors are shown in Table 4.

Table 4. Internal consistency coefficients of subscales

Subscales	Cronbach's Alpha	Number of Items
LOAE	.745	9
POAE	.744	9
The overall scale	**.804**	**18**

According to Table 4, it can be said that the Cronbach's Alpha reliability values of the factors constituting the measurement tool are between .744 and .745, and the Cronbach's Alpha value is .804 in terms of the overall scale, and this value is reliable in terms of the internal consistency of the scale (Kayış, 2008).

Findings

In this section, the findings obtained as a result of the analysis of the data collected in order to seek answers to the questions in the purpose of the research are given. As the main problem statement of this research, "How are the perceptions of university students receiving vocational music education about the classroom assessment environment according to different variables?" In this context, it was tried to compare the perceptions of the students according to their age, gender, class, type of high school they graduated from and the academic unit they studied.

Table 5. The descriptive statistics related the CAES and its subscales

Subscales	n	$\bar{X}$	s	Minimum	Maksimum
LOAE		3.66	.618	1.67	5.00
POAE	139	3.32	.703	1.67	4.89
CAES		3,49	.555	1.72	4.94

According to Table 5, when the mean scores of the classroom assessment environment scale and its subscales of the university students receiving vocational music education were examined, the students agreed with the items in the LOAE factor ($\bar{X}$ = 3.66); It can be said that the items in the POAE factor ($\bar{X}$ = 3.32) seem unstable. In addition, the average score of the students from the overall scale is $\bar{X}$ = 3.49, and it can be said that the students generally agree with the views on the classroom assessment environment scale.

Table 6. Independent sample t-test results of average scores of CAES and its subscales by academic unit attended

Subscales	Academic Unit	n	X̄	sd	df	t	p
LOAE	Faculty of Fine Arts Music Department	110	3.54	.55	137	-4.23	.000*
	Faculty of Education Department of Music	29	4.06	.68			
POAE	Faculty of Fine Arts Music Department	110	3.18	.66	137	-4.82	.000*
	Faculty of Education Department of Music	29	3.84	.62			
CAES	Faculty of Fine Arts Music Department	110	3.36	.47	137	-5.59	.000*
	Faculty of Education Department of Music	29	3.95	.59			

* p<.05

When Table 6 is examined, according to the mean scores of the data obtained from the CAES, the subscales of the scale, LOAE (X̄=4.06) and POAE (X̄=3.84), and the overall scale (X̄=3.95) are statistically in favor of the students of the Faculty of Education Music Education Department as (p<.05) significance was determined. In this context, it can be said that the perceptions of the Faculty of Education Music Education Department students towards the classroom assessment environment are at a better level than the Faculty of Finer Arts Music Department students, both in general and in its subscales, according to the score ranges determined for CAES.

Table 7. Independent sample t-test results of average scores of CAES and its subscales by type of high school graduated

Subscales	Type of high school graduated	n	X̄	sd	df	t	p
LOAE	Fine Arts High School	23	3.73	.68	137	.696	.488
	Others	116	3.64	.60			
POAE	Fine Arts High School	23	3.19	.77	137	-.968	.335
	Others	116	3.34	.68			
CAES	Fine Arts High School	23	3.46	.64	137	-.225	.823
	Others	116	3.49	.53			

* p<.05

According to the data obtained from the CAES in Table 7, no statistically significant (p<.05) difference was found between the subscales of the scale, LOAE and POEA, and the overall scale, according to the type of high school from which the participants graduated. According to these results, it can be stated that the perceptions of the participants towards the classroom assessment environment do not differ according to the type of high school they graduated from.

Table 8. Independent sample t-test results of average scores of CAES and its subscales by age of participants

Subscales	Age	n	X̄	sd	df	t	p
LOAE	17-22	107	3.66	.62	137	.153	.879
	23 and above	32	3.64	.60			
POAE	17-22	107	3.31	.70	137	-.158	.874

	23 and above	32	3.34	.69			
CAES	17-22	107	3.48	.56	137	-.015	.988
	23 and above	32	3.49	.53			

* *p<.05*

According to the data obtained from the CAES in Table 8, no statistically significant (p<.05) difference was found between the subscales of the scale, LOAE and POAE, and the overall scale, according to the age of the participants. According to these results, it can be said that the perceptions of the participants towards the classroom assessment environment do not differ according to their age.

Table 9. Independent sample t-test results of average scores of CAES and its subscales by gender of participants

Subscales	Gender	n	$\overline{X}$	sd	df	t	p
LOAE	Female	62	3.71	.68	137	1.054	.294
	Male	77	3.60	.55			
POAE	Female	62	3.33	.73	137	.183	.855
	Male	77	3.31	.68			
CAES	Female	62	3.52	.60	137	.702	.484
	Male	77	3.46	.51			

* *p<.05*

When Table 9 is examined, no statistically significant (p<.05) difference was found between the subscales of the scale, LOAE and POAE, and the overall scale, according to the data obtained from the CAES, according to the gender of the participants. According to these findings, it can be stated that the perceptions of the participants towards the classroom assessment environment do not differ according to their gender.

Table 10. Independent sample t-test results of average scores of CAES and its subscales by grade level of participants

Subscales	Grade Level	n	$\overline{X}$	sd	F	p	Significant Difference
LOAE	1	62	3.74	.73	.872	.457	
	2	29	3.60	.54			
	3	25	3.64	.51			
	4	23	3.51	.44			
POAE	1	62	3.61	.69	13.84	**.000***	1 – 3 ve 4
	2	29	3.37	.52			2 – 4
	3	25	3.16	.65			3 – 4
	4	23	2.65	.47			
CAES	1	62	3.67	.62	7.53	**.000***	1 – 4
	2	29	3.48	.42			2 – 4
	3	25	3.40	.46			3 - 4
	4	23	3.08	.32			

* *p<.05*

According to the findings in Table 10, there was no statistically significant difference between the students' mean CAES scores according to the class variable and the LOAE (p<.05), while significant differences were found between the POAE and the overall scale. Post hoc analysis was performed to find out between which groups the significant difference was. According to POAE mean score data, there was a significant difference between 1st grade and 3rd and 4th grades in favor of 1st grade, between 2nd grade and 4th grade in favor of 2nd grade, and between 3rd grade and 4th grade in favor of 3rd grade. can be said to be. According to the data of the general scale, when the 1st, 2nd and 3rd grades are compared with the 4th grade, it can be stated that there are significant differences in favor of the 1st, 2nd and 3rd grades according to the average scores. According to these findings, it can be said that the classroom atmosphere environment perceptions of the 1st, 2nd and 3rd grade students are higher than the 4th grade students in the POAE and CAES.

Discussions, Conclusions and Recommendations

This research aims to examine the perceptions of university students who receive professional music education about the classroom assessment environment through different variables. Therefore, in this section, the results of the research are discussed by comparing them with the results of various studies in the direction of sub-problems. First of all, when the mean scores of the CAES and its sub-factors of the university students receiving vocational music education were examined, it was found that the students agreed with the items in the LOAE factor; The items in the POAE factor, on the other hand, seem to be unstable. In addition, according to the results obtained, it can be said that the students' perceptions of the scale in general are at a good level. In the study conducted by Açıkgöz, Özkal, and Güngör-Kılıç (2003) with pre-service teachers, it was concluded that the perceptions of the participants regarding the classroom environment were negative.

The CAES and its sub-factors of university students receiving vocational music education were examined according to the academic unit, and according to the findings, significance was determined both in the overall scale and in the LOAE and POAE. This significance can be explained by the numerical difference between the two groups, as well as the fact that the students of the music education department, who train music teachers due to its mission, have the ability to look at the event differently due to the formation education they receive. In addition, the fact that the quality of the teacher-student relationship of the students of the music education department, which has fewer students, may also be a factor. As a matter of fact, Alderman and Green (2011) stated that the quality of the teacher-student relationship, which is one of the important elements of the classroom environment, affects classroom success. On the other hand, Parlak and Küçükoğlu (2008) did not detect a significant difference in the perceptions of the classroom environment of the students studying in two different schools that train nurses, but they associated this situation with similar institutional culture and similar programs. In his study, Kısakürek (1985) emphasized that the factors affecting the classroom environment differ according to schools.

CAES and sub-factors of university students receiving professional music education were examined according to the type of high school they graduated from, but no statistically significant difference was found in the CAES and its subscales. As a matter of fact, Gülbahar and Ekici (2018) reached conclusions in their study that, in parallel with the results of this research, the type of school graduated from has no effect on the perception of the classroom environment. In this context, it is possible to say that students who come to university after receiving music education in high school have a similar classroom environment perception with students who graduated from other schools.

In the study, it was concluded that there is no significant relationship between the ages of university students receiving professional music education and the CAES and its sub-factors. While a similar result was found among the instructors working in Turkish teaching centers in Gülbahar and Ekici (2018), in the same study, significant differences were found in certain age ranges of the students studying Turkish, and this situation was compared to the instructors in the younger or older age groups of the students in a certain age range. This is explained by having more positive relationships, high motivation, and a more positive outlook on life.

In line with the findings of the study, no significant relationship was found between the gender of university students receiving vocational music education and their perceptions of the classroom assessment environment. As a result of their research, Byrne, Hattie, and Fraser (1986) found that female students' perceptions of classroom environment were higher than male students. Durdu (2015) found that female teachers have higher perceptions of classroom environment than male teachers. Gülbahar and Ekici (2018) also concluded in their research that female students have a higher perception of classroom environment than male students. On the other hand, according to the findings of Açıkgöz, Özkal, and Güngör-Kılıç (2003); A significant difference was found in favor of male students with various dimensions according to the gender of

the teacher candidates. A similar result was found that Köse and Küçükoğlu (2009)'s perception of classroom environment differed in favor of male students. Contrary to this research, as seen in many studies, it can be said that gender affects the perception of the classroom environment.

The findings of the university students receiving professional music education regarding the CAES and its sub-factors were examined, and it was concluded that the lower grades' perceptions of classroom assessment environment were higher than the upper grades in the overall scale and in the POAE. Mumcu (2008) found a significant relationship between the classroom atmosphere perceptions and the grade they study in, in a study conducted by university students receiving professional music education with secondary school students, and similarly to this study, as the grade level increases, the classroom environment is negatively affected. When the literature is examined, we see that Dorman (2001) and Nair and Fisher (1999) also concluded in their studies that the classroom environment is negatively affected as the grade level rises. On the other hand, Şeker (2000) did not find a significant relationship between students' classrooms and their perceptions of classroom environment in his study. Köse and Küçükoğlu (2009) also did not find a significant difference between the class level and the perception of the classroom environment.

As a result, in this study, in which the relationship between the perceptions of the classroom assessment environment of university students receiving vocational music education and various variables was found, a significant difference was found in the academic unit and class variables, but it was not found that the variables of age, gender and the type of high school graduated did not affect the perceptions of the classroom environment of the participant's conclusion has been reached.

Ethics Committee Approval

The ethics committee approval of the article was obtained by Nevşehir Hacı Bektaş Veli University Scientific Research and Publication Ethics Committee with the decision dated 25.10.2021 and numbered 2021.09.345.

REFERENCES

Açıkgöz, K. Ü., Özkal, N., & Güngör-Kılıç, A. (2003). Pre-service teachers' perceptions of the classroom atmosphere. *Journal of Hacettepe University Faculty of Education, 25, 1-7.*

Alderman, Gary L., & Green, Susan K. (2011). Social powers and effective classroom management: Enhancing teacher-student relationships. *Intervention in School and Clinic, 47(1), 39-44.*

Alkharusi, H. (2009). Classroom assessment environment, self-efficacy, and mastery goal orientation: A causal model. *Paper Presented at the 2nd International Conference of Teaching and Learning (ICTL 2009), INTI University College, Malaysia.*

Alkharusi, H. (2010). Teachers' Assessment Practices and Students' Perceptions of the Classroom Assessment Environment. *World Journal on Educational Technology, 2(1), 27-41.*

Alkharusi, H. (2011). Development and data metric properties of a scale measuring students' perceptions of the classroom assessment environment. *International Journal of Instruction, 4(1), 105-120.*

Banks, S. R. (2012). *Classroom assessment: Issues and practices. IL: Waveland Press Inc.*

Brookhart, S.M. (1997). A theoretical framework for the role of classroom assessment in motivating student effort and achievement. *Applied Measurement in Education, 10(2), 161-180.*

Brookhart, S.M., & DeVoge, J.G. (1999). Testing a Theory About the Role of Classroom Assessment in Student Motivation and Achievement. *Applied Measurement in Education. 12(4), 409-425.*

Byrne, D.B., Hattie, J.A., & Fraser, B.J. (1986). Student perceptions of preferred classroom environment. *Journal of Educational Research, 81, 10-18*

Can, E & Baksi, O. (2014). The Effect of Classroom Attitudes and Behaviours of Students on Teachers' Classroom Management Success. *Asia Teaching Journal, 2, (1) 86-101*

De Feo, M.M. (2015) Teachers' perspectives on classroom climate and teacher outcomes. *ETD Collection for Fordham University.*

Dorman, J. P. (2001). Associations between classroom environment and academic efficacy. *Learning Environments Research, 4(3), 243-257.*

Dorman J. (2002). Classroom environment research: Progress and possibilities. *Queensland Journal of Educational Research, 18(2), 112–140.*

Durdu, İ. (2015). *The relationship between emotional intelligence and classroom climate.* Unpublished master thesis, Dokuz Eylül University, institute of educational sciences.

Ertem, H.Y., Arslan, A., Aksoy Akbaş, S., Ecer, E., & Eryiğit, L. (2021). The relationship between class climate and middle school students' attitudes towards school. *International Journal of Leadership Training (IJOLT), 1- (1).*

Fouts, J. T. & Myers, R. E. (1992). Classroom environments and middle school students' views of science. *Journal of Educational Research, 85(6), 356-361.*

Fraser, B. J. (1987). Use of classroom environment assessments in school psychology. *School Psychology International, 8, 205-219.*

Fraser, B. (1998). Classroom environment instruments: development, validity and application. *Learning environments research, 1, 7-33.*

Gazelle, H. (2006). Class climate moderates peer relations and emotional adjustment in children with an early history of anxious solitude: A child environment model. *Developmental Psychology, 42(6), 1179-1192.*

Gülbahar, B & Ekici, E. (2018). Examining the positive classroom atmosphere providing competences of instructors working at Turkish teaching centers, *The Journal of Social Science, Volume: 2, Number :3*

Gürbüz, S.& Şahin, F. (2017). *Research methods in social sciences*. Seçkin Publishing. Ankara

Harbaugh, A. G. & Cavanagh, R. F. (2012). Associations Between the Classroom Learning Environment and Student Engagement in Learning 2: A Structural Equation Modelling Approach. *Paper Presented at the AARE-APERA 2012, Sydney.*

Hearn, J. C. & Moos, R. H. (1978). Subject matter and classroom climate: A test of Holland's Environmental Propositions. *American Educational Research Journal, 15(1), 111-124.*

İlhan, M. & Çetin, B. (2014). Development of Classroom Assessment Environment Scale (CAES): Validity and Reliability Stud. *Education and Science, Volume 39, Number 176, 31-50*

Jia, Y., Way, N., Ling, G., Yoshikawa, H., Chen, X., Hughes, D., et al. (2009). The influence of student perceptions of school climate on socioemotional and academic adjustment: A comparison of Chinese and American Adolescents. *Child Development, 80(5), 1514-1530.*

Karasar, N. (2005). *Scientific research methods*. Nobel Publishing

Kaya, E. E. & Erginer, E. (2022). Perceptions of university students taking vocational music education on their classroom assessment environment: a validity study. *International Journal of Eurasia Social Sciences (IJOESS), 13(47), 60-71.*

Kayış, A. (2008). Reliability analysis. In Ş. Kalaycı (Ed.), *SPSS applied multivariate statistical techniques] (3th ed., pp. 403-419).* Asil Publishing Distribution.

Kısakürek, M. A. (1985). The effect of classroom atmosphere on student achievement. *AU Faculty of Educational Sciences Publications.*

Köse, E. & Küçükoğlu, A. (2009). Evaluation of Class Learning Environment in Faculties of Education In Terms Of Some Variables. *Journal of Ahi Evran University Faculty of Education, Vol 10, No 3, 61-73*

Küçükoğlu, A. & Köse, E. (2008). The effect of classroom atmosphere on student achievement at higher education level. *Current Perspectives in Social Sciences, Vol:12, Issue:2*

Mumcu, M. (2008). *The investigation of the perceptions of actual and preferred classroom atmospheres of secondary school students and teachers according to some variables*. Unpublished master's thesis. İnönü University, Institute of Social Sciences, Department of Educational Sciences.

Nair, C.S., Fisher, D.L. (1999). Classroom Environments and Students' Attitudes to Science at the Senior Secondary and Tertiary Levels. *Paper presented at the Annual Meeting of the Australian Science Teachers Association. July 4/9.*

Parlak, A & Küçükoğlu, A. (2008). The Perceptions of Nursing Students Oriented to the Success of Classroom Climate. *Journal of Kazım Karabekir Education Faculty, Issue 18*

Roelofs, E., Visser, J. & Terwel, J. (2003). Preferences for various learning environments: Teachers' and parents' perceptions. *Learning Environments Research, 6, 77-110.*

Stiggins, R. J. & Conklin, N. F. (1992). *In teachers' hands: Investigating the practices of classroom assessment.* Albany, NY: State University of New York Press.

Şeker, A. (2000). *The Relation between the communicative skills of the teachers lecturing and the classroom atmosphere*. Unpublished Master's Thesis, Selçuk University Institute of Social Sciences

Uçan, A. (1997). *Music Education*. Music Encyclopedia Publishing, Ankara

Urdan, T. & Schoenfelder, E. M. (2006). Classroom effects on student motivation: Goal structures, social relationships and competence beliefs. *Journal of School Psychology, 44, 331-349.*

Walker, S. & Graham, L. (2021). At risk students and teacher-student relationships: student characteristics, attitudes to school and classroom climate. *International Journal of Inclusive Education, 25:8, 896-913*

Technology Acceptance and Sense of Community in Remote Teaching: A Study on Sports Science Students

Research Article

Hikmet TURKAY[1]

[1]*Osmaniye Korkut Ata University, Faculty of Education, Department of High School Physical Education and Sport, Osmaniye, Turkey,* 0000-0002-7851-2757

ARTICLE INFO	ABSTRACT
	With its design, implementation, and evaluation processes, online and remote teaching is crucial in learning environments, from primary schools to higher education institutions. The current study examines the sports science students' technology acceptance and sense of community levels in remote teaching by various variables. The study group determined by a simple random sampling method comprised 486 students (288 males and 198 females) studying sports sciences. Students' technology acceptance and sense of community levels were measured with the Online Learning Systems Acceptance Scale and the Sense of Community Scale. The study has determined significant differences between the students according to the variables of gender, department, personal computer ownership, internet access, and computer usage time. As a result, there can be said to be a positive relationship between students' technology acceptance and their sense of community in remote teaching.

Introduction

Today, instructors use interactive technology to involve students more in the learning process (Gonçalves, Sousa & Pereira, 2020). Following the technological developments that affect many areas of human life and using information and communication technology in education transforms learning and teaching practices significantly. For example, integrating computer-mediated communication with multimedia courseware, electronic libraries, and databases has led to the emergence of an entirely new type of educational experience, such as e-learning or networked learning (Naidu, 2003; Steeples and Jones, 2002; Rosenberg, 2001).

Distant and open learning, flexible learning, e-learning, and remote teaching refer to the same type of education (Clarke, 2004). Moore defined remote teaching as intentional and scheduled teaching, directed or facilitated by an instructor in a structured way (James & Gardner, 1995). Remote teaching, once considered non-traditional education, has recently become mainstream, and this new status has also brought about several issues for all participants and stakeholders (Banas & Emory, 1998). However, as technology develops, remote teaching is being exploited more. Lecturers in courses where teaching and learning once were traditionally face-to-face are today increasingly encouraged to use internet-based software to teach their students in a vast variety of courses, and this trend seems likely to continue (Becker, 2004). Remote teaching requires much more than specializing in the subject of the course. It also requires developing miscellaneous study and management skills, such as time management, variable learning techniques, and the ability to structure and present your thoughts logically and authoritatively (Cottrell, 2015).

Remote teaching has various disadvantages, and the most apparent one is distance. The difference between face-to-face education and remote teaching is clear, but it is necessary to assume that some online courses include more than face-to-face courses (Van Emden & Becker, 2016). Bauman (2005) reports some disadvantages of a remote teaching in students as follows: facing diverse difficulties in creating online communities, being undecided about whether to write their questions, having difficulty in both problem analysis and asking critical questions that will reveal the answers they seek, and an inability to read and take notes to use later. Bauman similarly reports the difficulties faced by instructors as follows: lack of verbal and visual implications, inexperience in online narration, writing, answering, and communication. Akdemir (2011) states that each system used in remote teaching has advantages and disadvantages in terms of cost, design originality, and richness of transferable content.

Addressing distance learners' need for social interaction, Bauman sees online learning communities as places where students can test assumptions, try new ideas, and ask questions to fellow students. Bauman states that students need, of course, skills but also dispositions and mental exercises that will enable them to be creative, flexible learners throughout their lives, not only during their school years. Hanson (1997) also tried to present a set of definitions and various challenges of remote teaching. Wolf and Johnstone (1999) have attempted to create a coherent language for the different terms that people often use to describe the virtual learning environment.

The current study examines the technology acceptance and sense of community levels of sports science students in remote teaching by various variables. It is hoped that the lack of literature studies on the subject will reveal the importance of the research and that the article will pave the way for a better understanding of the nature of online educated sports science students in an ever-expanding virtual environment.

Method

Participants

The research study group selected by a simple random sampling method consisted of 288 male and 198 female students studying in Sports Sciences (Physical Education and Sports Teaching, Sports Management and Coaching Education departments) at Gümüşhane University.

Measuring Tools

Online Learning Systems Acceptance Scale

The Online Learning Systems Acceptance Scale developed by Ilgaz (2008) based on the scale invented by Dawis (1989) was used in the study. The scale was a 6-item, 7-point Likert-type, two-dimensional scale: perceived ease of use and perceived usefulness. Cronbach's alpha coefficient was calculated to estimate the internal consistency of the Online Learning Systems Acceptance Scale, which did not contain reversed items.

The Cronbach's alpha coefficient for the "perceived ease of use" sub-dimension of the scale was 0.90 and for the "perceived usefulness" sub-dimension 0.93.

Sense of Community Scale

The scale developed by Rovai, Wighting, and Lucking (2004) and adapted into Turkish determines the sense of community in remote teaching students. The original scale contains two forms: school and classroom. Ilgaz (2008) adapted the school form for remote teaching. The scale was a 6-items, 7-point Likert type, and 2-sub-dimensional: affective, actional. In the affective sub-dimension of the scale, alpha was 0.79, and in the actional sub-dimension, alpha was 0.73.

Data Collection

Due to the remote teaching was continuing during the ongoing pandemic period, and this situation was already the basic theme of the research subject, the study data were collected from the sports sciences students selected by a simple random sampling method through online questionnaire forms. The students filled out the Personal Information form, the Online Learning Systems Acceptance Scale, and the Sense of Community Scale. The sampling method provided convenience to participants and researchers because of the unique conditions of the quarantine and the urgency of obtaining information. A sum of 486 students answered the questionnaires.

Data Analysis

The sample size of this study, which, using various variables, examined the acceptance of technology and sense of community levels of sports science students in remote teaching, was calculated by taking the Power of at least 80% and Type 1 error of 5% for each variable. The normal distribution of the continuous measures in the study was checked with Kolmogorov-Smirnov (n>50) and Skewness-Kurtosis tests; since a normal distribution is fully defined, parametric tests were applied. Descriptive statistics for the variables were expressed as mean, standard deviation, minimum, maximum, number (n), and percentage (%). The reliability of the scale questions was calculated with Cronbach alpha coefficients. Statistical calculations were made by considering the average scores of the scale answers. "Independent T-test" and "One-Way Analysis of Variance (ANOVA)" were used to compare scale scores according to categorical groups. Following the variance analysis, the "Tukey test" was employed to identify different groups, and Pearson correlation coefficients were calculated to determine the relationship between scales. The statistical significance level (◎) was taken as 5% in the calculations. The SPSS (IBM SPSS for Windows, ver.26) statistical package program was utilized in the analysis.

Results

Table 1. Correlation analysis between scale scores

		Affective sub-dimension	Actional sub-dimension	Sense of Community Scale
Perceived Ease of Use sub-dimension	r	,458	,500	,498
	p.	,001	,001	,001
Perceived Usefulness sub-dimension	r	,775	,662	,775
	p.	,001	,001	,001
Online Learning System Acceptance Scale	r	,742	,675	,757
	p.	,001	,001	,001

r: Pearson correlation coefficients

Table 1 shows a correlation analysis between the results of the scale scores. As seen in the table, there was a statistically significant positive (45.8%) relationship between the "Perceived ease of use sub-dimension

scale" and "Affective sub-dimension scale" scores of the participants (p<0.05). As the "Perceived ease of use sub-dimension scale" score increased, the "Affective sub-dimension" scale also increased. Similarly, statistically significant positive (50% and 49.8%) relationships existed between the "Perceived ease of use sub-dimension" and "Actional sub-scale and Sense of Community scale" scores (p<0.05). As the "Perceived ease of use sub-dimension scale" score increased, the "Actional sub-scale and Sense of Community scale" scores also increased. Furthermore, all other binary scales and sub-dimensions had a significant positive relationship with each other (p<0.05). Accordingly, all scores were influenced by each other.

Table 2. Comparison results according to the "Gender" variable

	Male		Female		t	*p.
	Mean	Std. Dev.	Mean	Std. Dev.		
Perceived Ease of Use sub-dimension	4,09	1,81	3,40	1,60	4,334	,001
Perceived Usefulness sub-dimension	3,55	1,83	3,18	1,64	2,257	,024
Online Learning Systems Acceptance Scale	3,73	1,63	3,26	1,47	3,267	,001
Affective sub-dimension	3,25	1,69	2,96	1,56	1,909	,049
Actional sub-dimension	3,22	1,66	2,88	1,85	2,120	,034
Sense of Community Scale	3,24	1,59	2,93	1,58	2,088	,037

*Significance levels according to Independent t-test results.

There was a statistically significant difference in the "Online Learning Systems Acceptance Scale" scores of the participants according to the "Gender" variable (p<0.05). Accordingly, the "Online learning systems acceptance scale" score varied according to the "Gender" variable and was higher for males. There was a statistically significant difference in the "Sense of Community scale" of the participants according to the "Gender" variable (p<0.05) Accordingly, the "Sense of Community scale" score changed according to the "Gender" variable and was higher for males.

Table 3. Comparison results according to the "Department" variable

	Physical Education and Sports Teaching		Coaching Training		Sports Management		F	*p.
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Perceived Ease of Use sub-dimension	4,35a	1,56	3,48b	1,72	3,58b	1,84	12,054	,001
Perceived Usefulness sub-dimension	3,87a	1,69	3,27b	1,71	3,09b	1,77	9,438	,001
Online Learning Systems Acceptance Scale	4,03a	1,41	3,34b	1,59	3,26b	1,63	12,471	,001
Affective sub-dimension	3,57a	1,68	3,13b	1,54	2,77b	1,60	11,080	,001
Actional sub-dimension	3,24a	1,65	3,08b	1,80	2,94b	1,78	1,306	,049
Sense of Community scale	3,46a	1,58	3,11b	1,57	2,83b	1,57	7,267	,001

*Significance levels according to one-way ANOVA test results; a,b,c show differences between groups (Tukey post hoc test)

Table 3 shows the comparison results of the scale scores according to the "Department" variable. In the "Perceived ease of use" sub-dimension, there was a statistically significant difference among the participants according to the "Department" variable (p<0.05). The departments showing different values were written in lowercase letters. "Perceived ease of use" sub-dimension score of Physical Education and Sports Teaching Department students was different and higher than the students in the other two departments. Similarly, in the "Perceived usefulness" sub-dimension, there was a statistically significant difference among the participants according to the "Department" variable (p<0.05). The "Perceived usefulness" sub-dimension score

of the Physical Education and Sports Teaching department students was different and higher than the students in the other two departments. Besides the scales listed above, there was a statistically significant difference in all other scales and scale sub-dimensions according to the "Department" variable (p<0.05). All scale and scale sub-dimension scores of the Physical Education and Sports Teaching Department students were different and higher than those in the other two departments.

Table 4. Comparison results according to the "Personal computer ownership" variable

	Personal Computer Ownership					
	Yes		No		t	*p.
	Mean	Std. Dev.	Mean	Std. Dev.		
Perceived Ease of Use sub-dimension	4,32	1,65	3,47	1,75	5,321	,001
Perceived Usefulness sub-dimension	3,93	1,70	3,05	1,71	5,561	,001
Online Learning Systems Acceptance Scale	4,06	1,53	3,19	1,53	6,123	,001
Affective sub-dimension	3,66	1,68	2,78	1,53	5,995	,001
Actional sub-dimension	3,60	1,60	2,73	1,75	5,525	,001
Sense of Community scale	3,64	1,53	2,76	1,54	6,164	,001

*Significance levels according to Independent T-test results

In the "Online learning systems acceptance scale," there was a statistically significant difference between the participants according to their "Personal computer ownership" status (p<0.05). "Online learning systems acceptance scale" score varied according to "Personal computer ownership"; it was higher for those with personal computers. In the "Sense of Community" scale, there was a statistically significant difference between participants according to "Personal computer ownership" status (p< 0.05). The "Sense of Community" scale score varied according to "Personal computer ownership"; it was higher in persons with a personal computer.

Table 5. Comparison results according to the "Internet access" variable

	Internet Access							
	Regular		Partially Regular		Irregular		F	*p.
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Perceived Ease of Use sub-dimension	4,69a	1,77	3,79b	1,60	3,06c	1,58	35,056	,001
Perceived Usefulness sub-dimension	3,72a	1,85	3,55a	1,74	2,92b	1,60	8,967	,001
Online Learning Systems Acceptance Scale	4,04a	1,62	3,63b	1,55	2,97c	1,43	18,346	,001
Affective sub-dimension	3,59a	1,78	3,32a	1,54	2,49b	1,46	19,410	,001
Actional sub-dimension	3,48a	1,92	3,19a	1,64	2,59b	1,59	10,410	,001
Sense of Community Scale	3,55a	1,71	3,28a	1,47	2,53b	1,48	17,743	,001

*Significance levels according to one-way ANOVA test results; a,b,c show differences between groups (Tukey post hoc test)

Table 5 shows the comparison results of the scale scores according to the "Internet access" variable. In the "Perceived ease of use" sub-dimension, there was a statistically significant difference between the participants according to the "Internet access" variable (p<0.05). The "Perceived ease of use" sub-dimension score of students with "regular internet access" was different and higher than those with "irregular internet access." Similarly, statistically significant differences were observed in the "Perceived usefulness" sub-dimension and "Online learning systems acceptance scale" according to the "Internet access" variable (p<0.05). The scores of the "Perceived ease of use" sub-dimension of students with "irregular internet access" were different and lower than the others. Furthermore, there was a statistically significant difference in the "Sense of Community" scale and its sub-dimensions according to the "Internet access" variable (p<0.05). The "Sense of Community" scale and sub-dimension scores of students with "irregular internet access" were different and lower than the others.

Table 6. Comparison results according to the "Computer use experience" variable

| | Computer use experience | | | | | | | | F | *p. |
| | 1-Year | | 2-Year | | 3-Year | | 4-Year+ | | | |
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.		
Perceived Ease of Use sub-dimension	2,92c	1,40	3,80b	1,27	3,64b	1,31	4,68a	1,74	46,173	,001
Perceived Usefulness sub-dimension	2,86c	1,58	3,76ab	1,98	3,10bc	1,49	3,88a	1,76	13,709	,001
Online Learning Systems Acceptance Scale	2,88c	1,36	3,77ab	1,62	3,28bc	1,31	4,15a	1,56	27,015	,001
Affective sub-dimension	2,64b	1,41	3,72a	2,00	3,11ab	1,11	3,50a	1,71	12,120	,001
Actional sub-dimension	2,60b	1,66	2,88ab	1,62	3,19ab	1,76	3,56a	1,72	11,656	,001
Sense of Community Scale	2,63b	1,42	3,44a	1,73	3,13ab	1,25	3,52a	1,64	12,495	,001

*Significance levels according to one-way ANOVA test results; a,b,c show differences between groups (Tukey post hoc test)

Table 6 shows the comparison results of the scale scores according to "Computer use experience." In the "Perceived ease of use" and "Perceived usefulness" sub-dimensions, there were statistically significant differences between the participants, according to the "Computer use experience" variable ($p < 0.05$). As "Computer use experience" increased, "Perceived ease of use" and "Perceived usefulness" sub-dimension scores also increased. Furthermore, there were statistically significant differences ($p < 0.05$) in the "Sense of Community" scale and its sub-dimensions, according to the "Computer use experience" variable ($p < 0.05$). As the "Computer use experience" increased, the "Sense of Community" scale score also increased.

Discussion

The current study has examined, using various variables, the "Technology Acceptance" and "Sense of Community" levels of sports science students in remote teaching. The studies in the literature have often stated the following disadvantages of online learning: Lack of measurement and evaluation, loss of motivation, lack of internet and computer, inequality of opportunity, lack of interaction, lack of socialization, and technical problems (Özdoğan and Berkant, 2020). However, besides these disadvantages, the ease of mobile learning anywhere using e-technology makes remote teaching advantageous for students (Vázquez-Cano, 2014; Ally, 2009).

The current study has revealed that male students' "Technology Acceptance" and "Sense of Community" scale scores are higher than female students according to the "Gender" variable. Supporting this finding, Fidan (2016) has stated that male students have higher attitudes towards remote teaching than females do. However, in their research, Yenilmez, Turgut, and Balbağ (2017) have found no significant difference in students' perceptions of remote teaching and their readiness for mobile learning according to the "Gender" variable.

This study has found that students with "Personal Computer" and "Internet access" have higher "Technology Acceptance" and "Sense of Community" scale scores than those who do not. In their research, Kürtüncü and Kurt (2020) have stated that students have difficulty in following the lessons due to limited opportunities in "internet and computer," and some students living in rural areas have limited "internet access," which causes problems in remote teaching. Serçemeli and Kurnaz (2020) have determined that the most common problem related to remote teaching is "accessing the internet." Another study conducted by Yılmaz-İnce, Kabul, and Diler (2020) has determined that students' opportunities to have "computer and internet" affect their views on remote teaching. Karakuş et al. (2020) have stated that "based on these results, it is possible to say that there is an inequality of opportunity among students in this process."

Andoh et al. (2020), in their study on the evaluation of remote teaching on university students, have stated that the preference of students towards remote education is to use technological opportunities more effectively. Similarly, in their research, Serçemeli and Kurnaz (2020) have declared that although students have difficulty understanding the technology and applications used in remote teaching at first, they could use the

system with no technical problems after becoming familiar with it. Vázquez-Cano (2014) has suggested that more opportunities for access to information should be provided, and interaction among students should be encouraged. In Yiğit (2019) research, stated "that individuals should use resources and take action in order to achieve the learning or success they want". The general opinion of these studies is that the remote teaching process negatively affects the students' social skills, causes students to exhibit more individual behaviors, and limits their in-group behaviors.

Conclusion

This research is expected to serve as a starting point for a more comprehensive study of assessing appropriate technology use, technology acceptance, sense of community, and online performance of sports science students in remote teaching. In the study, although the usability of remote teaching anywhere and its low cost is seen as an advantage, limited interaction and a weak sense of community are its disadvantages. Students seek a fast and convenient way to learn new skills and knowledge. This article addresses some main benefits of distance learning for sports science students and some emerging differences between them in terms of various variables. These benefits are thought to help educational institutions determine whether to use remote teaching and help students decide on the most appropriate learning method.

Acknowledgements or Notes

REFERENCES

Akdemir, Ö. (2011). Yükseköğretimimizde uzaktan eğitim. Yükseköğretim ve Bilim Dergisi, (2), 69-71.

Ally, M. (Ed.) (2009). Mobile learning: Transforming the delivery of education and training. Edmonton, Canada: Athabasca University Press.

Andoh, R. P. K., Appiah, R., & Agyei, P. M. (2020). Postgraduate distance education in University of Cape Coast, Ghana: Students' perspectives. International Review of Research in Open and Distributed Learning, 21(2), 118-135.

Banas, E. J., & Emory, W. F. (1998). History and issues of distance learning. Public Administration Quarterly,2(3), 365-383.

Bauman, G. L. (2005). Promoting organizational learning inhigher education to achieve equity in educational outcomes. New Directions for Higher Education, 2005(131), 23-35.

Becker, L. (2004). How to manage your distance and open learning course. New York: Palgrave Macmillan.

Clarke, A. (2004). E-learning skills. New York: Palgrave Macmillan.

Cottrell, S. (2015). Skills for success: Personal development and employability. New York: Palgrave Macmillan.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 318-340.

Fidan, M. (2016). Uzaktan eğitim öğrencilerinin uzaktan eğitime yönelik tutumları ve epistemolojik inançları. Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 31(3): 536-550.

Gonçalves, S. P., Sousa, M. J., & Pereira, F. S. (2020). Distance learning perceptions from higher education students—the case of Portugal. Education Sciences, 10(12), 374.

Hanson, M. (1997). Educational decentralization: Issues and challenges. Santiago, Chile: Program to Promote Educational Reform.

Ilgaz, H. (2008). Uzaktan eğitimde teknoloji kabulünün ve topluluk hissinin öğrenen memnuniyetine katkısı. Yüksek Lisans Tezi. Hacettepe Üniversitesi Bilgisayar ve Öğretim Teknolojileri Eğitimi Anabilim Dalı, Ankara.

James, W. B., & Gardner, D. L. (1995). Learning styles: Implications for distance learning. New directions for adult and continuing education, 1995(67), 19-31.

Karakuş, N., Ucuzsatar, N., Karacaoğlu, M. Ö., Esendemir, N., & Bayraktar, D. (2020). Türkçe öğretmeni adaylarının uzaktan eğitime yönelik görüşleri. RumeliDE Dil ve Edebiyat Araştırmaları Dergisi, (19), 220-241.

Kürtüncü, M., & Kurt, A. (2020). COVID-19 pandemisi döneminde hemşirelik öğrencilerinin uzaktan eğitim konusunda yaşadıkları sorunlar. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi, 7(5), 66-77.

Naidu, S. (Ed.). (2003). Learning & teaching with technology: Principles and practices. London: Psychology Press.

Özdoğan, A. Ç., & Berkant, H. G. (2020). Covid-19 pandemi dönemindeki uzaktan eğitime ilişkin paydaş görüşlerinin incelenmesi. Milli Eğitim Dergisi, 49(1), 13-43.

Rosenberg, M J (2001) E-Learning: Strategies for delivering knowledge in the digital age, McGraw-Hill, New York.

Rovai, A. P., Wighting, M. J., & Lucking, R. (2004). The classroom and school community inventory: Development, refinement, and validation of a self-report measure for educational research. The Internet and Higher Education, 7(4), 263-280.

Serçemeli, M., & Kurnaz, E. (2020). Covid-19 pandemi döneminde öğrencilerin uzaktan eğitim ve uzaktan muhasebe eğitimine yönelik bakış açıları üzerine bir araştırma. Uluslararası Sosyal Bilimler Akademik Araştırmalar Dergisi, 4(1), 40-53.

Steeples, C and Jones, J (2002) Networked Learning: Perspectives and issues, SpringerVerlag, London.

Van Emden, J., & Becker, L. (2016). Presentation skills for students. Macmillan International Higher Education.

Vázquez-Cano, E. (2014). Mobile distance learning with smartphones and apps in higher education. Educational Sciences: Theory and Practice, 14(4), 1505-1520.

Wolf, D. B., & Johnstone, S. M. (1999). Cleaning up the language: Establishing a consistent vocabulary for electronically delivered academic programs. Change: The Magazine of Higher Learning, 31(4), 34-39.

Yenilmez, K., Turgut, M. ve Balbağ, M. Z. (2017). Öğretmen adaylarının uzaktan eğitime yönelik tutumlarının bazı değişkenler açısından incelenmesi. Erzincan Üniversitesi Eğitim Fakültesi Dergisi, 19(2), 91-107.

Yılmaz-İnce, E., Kabul, A., & Diler, İ. (2020). Distance education in higher education in the COVID-19 pandemic process: A case of Isparta Applied Sciences University. International Journal of Technology in Education and Science (IJTES), 4(4), 343-351.

Yiğit, Ş. (2019). Öğrencilerin spora özgü başarı ve motivasyon düzeylerinin incelenmesi. Researcher, 7(1), 249-258.

The Relationship Between Teachers' Self-Efficacy Towards Technology Integration and School Happiness

Research Article

Eyup YUNKUL¹, Ahmet Melih GUNES²

¹Balıkesir University, Faculty of Education, Department of Educational Sciences, Balıkesir, Turkey 0000-0002-6177-3766

²Balıkesir University, Faculty of Education, Department of Elementary School Education, Balıkesir, Turkey 0000-0002-7484-5685

ARTICLE INFO	ABSTRACT
Article History: Received: 14.02.2022 Available online: 26.07.2022	The aim of this research is to determine the relationship between teachers' self-efficacy towards technology integration and their school happiness. Relational screening model was used in this research. The sample of the study consists of 267 teachers working in Balıkesir. In this research, "Self-Efficacy Perception Scale for Technology Integration" developed by Wang, Ertmer and Newby (2004) and adapted to Turkish by Ünal (2013) and "School Happiness Scale" developed by Sezer and Can (2019) were used as data collection tools. Data were analyzed by T-test, One-way Analysis of Variance (ANOVA), and Pearson Moments two-way correlation analysis. According to the research findings, it was concluded that the levels of teachers' self-efficacy beliefs towards technology integration and their perceptions of school happiness were high. It deduced that there was no significant difference between the variables of gender, educational status and professional seniority, and their self-efficacy towards technology integration. While it was concluded that there was a significant difference in favor of male teachers between teachers' perceptions of school happiness and gender; it was observed that there was no significant difference between the variables of education status and professional seniority. As a final result, it was revealed that there is a positive, reasonable and significant relationship between teachers' self-efficacy towards technology integration and their perceptions of school happiness.
	Keywords: Technology integration, self-efficacy, school happiness

Introduction

Information and communication technologies are developing more and more each passing day and as a natural result of these developments, they reach more importance and place in human life. Thanks to developing technologies and communication tools, people can access information faster, share information

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easily, as well as increase information resources and produce information easily (Akgün, Yılmaz, & Seferoğlu, 2011). In this process, digital culture, which occurs as a result of the use of digital tools, mobile information technologies, internet, social media, portals, etc., made available in line with the developing technologies has an important place in today's information society (Türkoğlu, 2010). Educational institutions, which can see the fact that new technologies are affecting and will affect our lives, update their programs and learning environments accordingly. The emergency distance education carried out due to the impact of the covid-19 epidemic we are in has also shown how important technology integration is.

Technology integration is defined as the usage properly of technology or setting it to work in teaching programs in order to strengthen students' learning in the learning-teaching process (Ünal, 2013) or the integration of technology into pedagogy and subject matter knowledge (Pierson, 1999). Undoubtedly, one of the most important stakeholders of technology integration is teachers (Bereczki & Kárpáti, 2021; Çalışkan, Nezih, & Gökçe, 2021). In this context, teachers have a great role in technology integration. This complex and multifaceted process, such as integrating new technologies into teaching processes, is related to the perception of technology self-efficacy (Harrell & Bynum, 2018; Kaymak & Titrek, 2021). Self-efficacy is the individual's personal belief that how successful a person will be by preparing the necessary processes to solve the problems that may arise (Bandura, 1994). Self-efficacy is the individual's judgment of being able to do something with his/her own skills in the face of a problem. In this context, in order to be successful in technology integration, the individual's self-efficacy perceptions should also be strong. In other words, individuals with high self-efficacy level are more participatory, willing and optimistic in their work, while individuals with low self-efficacy level have an unwilling and pessimistic approach (Bandura, 1997; Duran, 2016). Technology integration self-efficacy perception is preservice teachers' or teachers' self-confidence when using technology effectively (Nathan, 2009). Teachers' self-confidence in this regard may cause teachers to be less anxious about integrating technology into their education process (Compeau & Higgins, 1995). There are studies in the literature showing that there is a negative relationship between anxiety and happiness (Aydın, 2020; Namdar, 2018; Yıldırım, 2019). In other words, as the anxiety level decreases, the happiness level of the individual increases.

Digital technology is a factor that increases motivation in the working life of individuals (Watson, 2008). In addition to enriching learning strategies in educational institutions (Boonmoh, Jumpakate, & Karpklon, 2021; Vahedi, Zannella, & Want, 2021), it can positively affect school staff's work performance and satisfaction levels (Bangun et al., 2021). In addition, studies show that using technology effectively can affect happiness positively (O'Brien, 2016).

The concept of happiness is one of the most important elements that play a role for individuals to lead a positive life. (Golmakani, Rezaei, & Mazloum, 2018). In the literature, happiness is defined as satisfaction with life (Huebner, 1991; Seligman, Parks, & Steen, 2004), positive emotions (Veenhoven, 2008) and subjective well-being. Emotional well-being or experiencing positive emotions at school is defined as school happiness (Lyubomirsky, King, & Diener, 2005). Accordingly, school happiness can affect the performance, motivation and effort of the stakeholders in the school, each other and themselves. In other words, while the academic success, positive emotions and social skills of the students are positively affected in a happy school environment, the skills of teachers such as self-efficacy, colleague support and establishing positive relationships with parents may also be positively affected (Özgenel & Bozkurt, 2020). There are also studies showing that happiness positively affects success (Boehm & Lyubomirsky, 2008; Pan & Zhou, 2013; Walsh, Boehm, & Lyubomirsky, 2018).

Education is an investment for the future of society; schools are also an important and special environment where this investment process takes place. One of the most important elements that give this environment a special quality is teachers. For this reason, teachers are described as community architects

(Gündüz, 2012). The most important skill that teachers, who have such a great importance, should have is the ability to mobilize students and financial resources in their classrooms in line with the purposes of the classroom (Çetin, 2012). Technology use skills are among the skills that teachers should have. Especially in this process, which we call the digital age today, there is a greater need for the ability to use technology and integrate technology into the teaching process. In addition to these technologies, the happiness of teachers in their institutions also plays an important role in the success of the educational process. Therefore, it is thought that both self-efficacy for technology integration and school happiness are important factors for teachers and variables that can affect each other. When the literature is analyzed, there is not enough study to determine the relationship between teachers' self-efficacy for technology integration and school happiness. For this reason, the aim of this research is to determine the relationship between teachers' self-efficacy towards technology integration and their school happiness.

In order to achieve this aim, answers to the following questions were searched.

1. What is the level of teachers' self-efficacy beliefs towards technology integration?

2. What is the level of teachers' perception of school happiness?

3. Gender variable and teachers':

3.1. Is there a significant difference between the gender variable and teachers' self-efficacy beliefs about technology integration?

3.2. Is there a significant difference between the gender variable and teachers' self-efficacy beliefs and perceptions of school happiness?

4. With the education level variable, primary school teachers:

4.1. Is there a significant difference between the education level variable and classroom teachers' self-efficacy beliefs towards technology integration?

4.2. Is there a significant difference between the education level variable and the classroom teachers' perceptions of school happiness?

5. With the variable of professional seniority, class teachers:

5.1. Is there a significant difference between the variable of professional seniority and the self-efficacy beliefs of classroom teachers towards technology integration?

5.2. Is there a significant difference between the professional seniority variable and the classroom teachers' perceptions of school happiness?

6. What is the relationship between self-efficacy beliefs towards technology integration and perceptions of school happiness?.

Methodology

Research Model

This study, which aims to examine the relationship between teachers' self-efficacy for technology integration and their school happiness, was carried out in the screening model. Quantitative relational design was used in the research.

Universe and Sample

The universe of the research consists of teachers working in official secondary and high schools within the borders of Balıkesir city center in the 2020-2021 academic year. A total of 267 teachers selected by random

method among 15196 teachers in the provinces and districts of Balıkesir formed the sample of the research. When the demographic characteristics of the teachers in the sample group were examined, it was concluded that 57.7% of teachers are female, 42.3% are male, 6.7% are 21-30 years old, 46.4% are 31-40 years old, 33.7% are 41-50 years old, 13.1% are 51 years old and over, 92.1% of them had undergraduate education, 7.9% of them had postgraduate education, 17.6% of them had 1-10 years, 50.6% of them 1-20 years, 31.8% of them had 21 years and above seniority.

Data Collection Tools

"Self-Efficacy Perception Scale for Technology Integration" and "School Happiness Scale" were used in order to determine the relationship between the self-efficacy of teachers working in secondary schools towards technology integration and their school happiness. In order to determine teachers' self-efficacy towards technology integration, the "Self-Efficacy Perception Scale for Technology Integration" developed by Wang, Ertmer and Newby (2004) and adapted to Turkish by Ünal (2013) was used. The "School Happiness Scale", which is used to determine the school happiness of teachers, was developed by Sezer and Can (2019).

Self-Efficacy Perception Scale for Technology Integration

The "Self-Efficacy Perception Scale for Technology Integration", developed by Wang, Ertmer and Newby (2004) and adapted to Turkish by Ünal (2013), is a 19-item five-point Likert type and It consists of two dimensions: using computer technologies and enabling the use of computer technologies. It was arranged in likert type as strongly disagree (1), disagree (2), indecisive (3), agree (4), completely agree (5). It was found out that Cronbach Alpha reliability coefficient of the scale was .94, KMO value was .834, Bartlett test was 785,939, df was 171 and p was .000. The Cronbach Alpha reliability coefficients of the dimensions that form the scale were found to be .81 for using computer technologies and .93 for enabling the use of computer technologies.

After the reliability study, confirmatory factor analysis (CFA) was conducted to test the construct validity of the "Self-Efficacy Perception Scale for Technology Integration". Some of the fit values used in the structural equation modeling are presented in Table 1 and the results regarding the conformity of the model are presented in Table 2.

Table 1. Statistical values regarding the fit of the structural equation model

Fit Values	Good Fit	Acceptable Fit
c^2	Not meaningful	-
c^2/df	≤ 3	4 - 5
RMSEA	≤ .05	.06 - .08
RMR	≤ .05	.06 - .08
NFI	.95≤	.90 - .94
CFI	.95≤	.90 - .94
GFI	.90≤	.85 - .89
AGFI	.85≤	.80 - .84

Table 2. Fit values of confirmatory factor analysis of self-efficacy perception scale for technology integration

X^2	df	X^2/df	RMSEA	CFI	GFI	AGFI	RMR	NFI
358.934	138	2,61	0.07	0.95	0.88	0.83	0.04	0.91

When the CFA results in Table 2 are examined, it is seen that the Chi-square fit index ($X2 = 358.934$, df=138, X2/df = 2.61) is significant. The other fit index values were found to be [RMSEA=0.07; CFI=0.95; GFI=0.88; AGFI=0.83; RMR=0.04; NFI=0.91]. Since these fit index values of the model are close to the fit values

given in Table 2, it can be said that it has a sufficient fit. When the results of the model are evaluated in general, it is seen that the model has an acceptable fit.

School Happiness Scale

The "School Happiness Scale" developed by Sezer and Can (2019) is a five-point Likert type consisting of 26 items and consists of a total of five dimensions: Physical Equipment, Learning Environment, Cooperation, Activities and School Management. Cronbach Alpha reliability coefficient of the scale was .95, KMO value was .815; Bartlett test 1237.636; df: 325, and p= .000. The Cronbach Alpha reliability coefficients of the dimensions that form the scale were found as .86 for Physical Equipment, .94 for Learning Environment, .94 for Cooperation, .86 for Activities and .78 for School Management.

After the reliability study, confirmatory factor analysis (CFA) was conducted to test the construct validity of the "School Happiness Scale" and the results regarding the suitability of the model are presented in Table 3.

Table 3. Confirmatory factor analysis fit values of the school happiness scale

X^2	df	X^2/df	RMSEA	CFI	GFI	AGFI	RMR	NFI
638.599	283	2,26	0.06	0.93	0.84	0.81	0.04	0.87

Goodness of fit values obtained as a result of CFA in Table 3 were found to be [c2= 638,599; df= 283; c2/Sd = 2.26; RMSEA=0.06; CFI=0.93; GFI=0.84; AGFI=0.81; RMR=0.04; NFI=0.87]. When the results of the model are evaluated, it is seen that the model has a good fit.

Data Analysis

During the analysis of the data, whether the data showed normal distribution was tested with Kolmogorov-Smirnov and Shapiro-Wilk Tests. When the Skewness and Kurtosis values of the data obtained from the Self-Efficacy Perception Scale for Technology Integration and the School Happiness Scale were examined, it was observed that the data were normally distributed. In the study, descriptive statistics regarding the variables were analyzed using T-test, Single-factor Analysis of Variance (ANOVA), Pearson Moments two-way correlation analysis (r) and Multiple Regression Analysis statistical techniques.

Ethics Committee Approval:

Ethics committee permission was obtained for the research titled The Relationship Between Teachers' Self-Efficacy Towards Technology Integration and School Happiness, in accordance with the letter of the Social and Human Sciences Ethics Commission of Balıkesir University.

Findings

In the first sub-problem of the study, the answers given by the teachers to the items in the Self-Efficacy Perception Scale for Technology Integration were analyzed and the results obtained were presented in Table 4.

Table 4. Mean and standard deviations of teachers' responses to the self-efficacy perception scale for technology integration

Dimensions	n	$\overline{x}$	s
Using computer technologies	267	3.99	.74
Use of computer technologies	267	3.96	.64
Total	267	3.97	.65

When the analysis results showing the teachers' self-efficacy perceptions towards technology integration were examined, it was concluded that teachers' self-efficacy perceptions towards technology integration were at a high level (x̄=4.14, s=.63). When the teachers' answers to the dimensions that constitute their self-efficacy perceptions regarding technology integration are examined, it was concluded that they had a high level of using computer technologies (x̄=3.99, s=.74) and enabling the use of computer technologies (x̄=3.96, s=.64).

In the second sub-problem of the study, the mean and standard deviation values of the answers given by the teachers to the questions in the school happiness scale were calculated and the results were summarized in Table 5.

Table 5. Mean and standard deviations of teachers' responses to the school happiness scale

Dimensions	n	$\overline{x}$	s
Physical Hardware	267	3.65	.78
Learning Environment	267	3.80	.70
Cooperation	267	3.77	.69
Activities	267	3.78	.83
School Management	267	3.95	.72
Total	267	3.79	.59

When the answers given by the teachers to the school happiness scale were examined, it was concluded that the teachers' perceptions of school happiness were at a high level (x̄=3.79, s=.59). When the teachers' answers to the dimensions that form school happiness are examined, It has been concluded that they also have a high level of School Management (x̄=3.95, n=.72), Learning Environment (x̄=3.80, s=.70), Activities (x̄=3.78, n=.83), Cooperation (x̄=3.77, s=.69) and Physical Hardware (x̄=3.65, s=.78) dimensions.

In the third sub-problem of the study, whether the teachers' self-efficacy perceptions towards technology integration and their school happiness differ according to the gender variable were examined with the t-Test, and the results were presented in Table 6.

Table 6. T-test results to determine the difference between teachers' self-efficacy perceptions towards technology integration and school happiness according to gender variable

	Gender	n	x	Sd	*t*	df	*p*
Self-Efficacy Perceptions Towards Technology Integration	Female	154	3.90	.64	-1.792	265	.07
	Male	113	4.05	.64			
School Happiness	Female	154	3.71	.55	-2.465	265	.01
	Male	113	3.88	.62			

When the data obtained from Table 6 are examined, it is seen that there is no significant difference between teachers' self-efficacy perceptions towards technology integration (t= -1.792; p > .05) and their genders. It is seen that there is a significant difference between teachers' perceptions of school happiness (t=-2.465; p < .05) and gender, and this difference is in favor of male teachers.

In the fourth sub-problem of the study, whether the teachers' self-efficacy perceptions towards technology integration and their school happiness differ according to the variable of educational status was examined with the t-test and the results were presented in Table 7.

Table 7. T-test results to determine the difference between teachers' self-efficacy perceptions towards technology integration and school happiness according to the variable of educational status

	Educational Status	n	x	Sd	t	df	p
Self-Efficacy Perceptions Towards Technology Integration	Undergraduate	246	3.97	.65	.071	265	.94
	Graduate	21	3.95	.47			
School Happiness	Undergraduate	246	3.78	.59	.250	265	.80
	Graduate	21	3.75	.50			

When the data obtained from Table 7 are examined, It is seen that there is no significant difference between teachers' self-efficacy perceptions towards technology integration (t= .071; p > .05) and school happiness perceptions (t= .250; p > .05) and educational status.

In the fifth sub-problem of the study, whether the teachers' self-efficacy perceptions towards technology integration and their school happiness differ according to the variable of professional seniority was examined with the One-Way ANOVA test, and the results are presented in Table 8.

Table 8. One-Way ANOVA results to determine the difference of teachers' self-efficacy perceptions towards technology integration and school happiness according to professional seniority variable

	Professional Seniority	n	x	Ss	F	p	Significance
Self-Efficacy Perceptions Towards Technology Integration	1-10 years	47	4.08	.49			-
	11-20 years	135	3.96	.67	.987	.374	
	21 years and over	85	3.91	.67			
School Happiness	1-10 years	47	3.80	.52			-
	11-20 years	135	3.80	.62	.194	.823	
	21 years and over	85	3.75	.56			

When the data obtained from Table 8 are examined, it is seen that there is no significant difference between teachers' self-efficacy perceptions towards technology integration (F= .987; p > .05) and their perceptions of school happiness (F= .194; p > .05) and their professional seniority. .

In the last stage of the study, Pearson two-way correlation analysis was conducted to determine the relationship between teachers' self-efficacy perceptions towards technology integration and their perceptions of school happiness, and the results are presented in Table 9.

Table 9. Pearson bidirectional correlation analysis results to determine the relationship between teachers' self-efficacy perceptions of technology integration and school happiness perceptions

	1.	2.
1. Self-Efficacy Perceptions Towards Technology Integration	1.00	.307**
2. School Happiness	.307**	1.00

When the results in Table 9 are analyzed, it is seen that there is a positive, moderate and significant relationship between teachers' self-efficacy perceptions towards technology integration and school happiness (r= 0.307, p≤ .01).

Results, Discussions and Suggestions

In this study, teachers' self-efficacy levels for school happiness and technology integration were specified, their self-efficacy for school happiness and technology integration were compared according to various demographic characteristics, and the level of relationship between school happiness and technology integration self-efficacy was examined.

According to the research findings, the participants' school happiness and self-efficacy levels for technology integration were found to be high. These findings are similar to the studies of teachers' self-efficacy levels for school happiness (Arslan, 2018; Mertoglu, 2018; Özgenel & Bozkurt, 2020) and technology integration (Birişçi & Kul, 2018; Elkiran, 2019; Sezer, Şanlı, Pınar, & Kara, 2022). In the researches, it was found that the pre-service teachers' self-efficacy towards technology integration was also high (Keser, Yılmaz, & Yilmaz, 2015; Nathan, 2009). Accordingly, we can explain the emergence of technology self-efficacy of teachers and teacher candidates at an advanced level in general with the widespread use of developing technology in recent years.

There was no significant difference between the teachers' self-efficacy perceptions towards technology integration and their gender. There are many studies in this context in the literature (Baker, Al-Gahtani, & Hubona, 2007; Bangun et al., 2021; Birişçi & Kul, 2018; Elkiran, 2019; Gerçek, Köseoğlu, Yılmaz, & Soran, 2006; Gorder, 2008; Kocaoğlu & Akgün, 2015; Teo, Chai, Hung, & Lee, 2008). On the other hand, there are studies in which male teachers (Dikmen & Demirer, 2016; Ünal, 2013) and female teachers (Turgut & Başarmak, 2019) have higher self-efficacy perception levels towards technology integration. However, we can interpret that this variable does not differ according to gender in general, as teachers follow the developing technology and are open to innovations.

It has been observed that there is a significant difference in favor of males according to gender in teachers' perceptions of school happiness. There are studies in which the perceptions of school happiness do not change according to gender (Bulut, 2015; Demir & Murat, 2017; Mertoglu, 2018; Özgenel & Bozkurt, 2020). Contrary to the result reached in our study, there are also studies in which female teachers have a higher perception of school happiness (Atay, 2010). Considering that there are many factors affecting the happiness of the employees, it is normal that different research results emerge.

It was observed that there was no significant difference between teachers' self-efficacy perceptions regarding technology integration and their educational status. There are studies supporting this result (Birişçi & Kul, 2018) and not supporting it (Karasakaloğlu, Saracaloğlu, & Uça, 2011; Orhan & Tekin, 2019). It could be expected that the level of self-efficacy perceptions of graduate teachers towards technology integration would be high. However, the content and way of teaching the courses taken by the teachers in the graduate program may have affected this situation.

According to the results of the analysis conducted to specify whether the educational status affects the perceptions of teachers' school happiness, there was no significant difference. It is in the same line with this result (Kara, 2010). In the literature, there are studies showing that teachers' perceptions of school happiness are lower as graduation progresses (Argon & Cicioğlu, 2017; Özgenel & Bozkurt, 2020). It can be said that as the level of graduation increases, the decrease in the perception of school happiness is due to the increasing consciousness and awareness level of teachers.

It was determined that the teachers' self-efficacy perceptions towards technology integration do not change according to professional seniority. This result shows parallelism with the findings of some studies (Karasakaloğlu et al., 2011; Orhan & Tekin, 2019; Turgut & Başarmak, 2019). It can be said that teachers with more than 20 years of professional experience are also familiar with technology and use technology in learning

environments. In addition, Kocaoğlu (2015) stated in his study that teachers with a professional seniority of between 26-41 years have a higher level of self-efficacy perceptions towards technology integration.

It was concluded that the school happiness of the teachers do not differ according to their professional seniority. Other studies were found in the same line with this result (Düzgün, 2016; Kara, 2010; Mertoglu, 2018; Özgenel & Bozkurt, 2020). In addition, there are studies showing that the level of perception of school happiness decreases as seniority increases (Bulut, 2015). According to these findings, it is possible to say that the level of happiness of teachers is high regardless of their professional seniority.

Finally, in the analysis of the data on the relationship between teachers' self-efficacy perceptions towards technology integration and their perceptions of school happiness, it was concluded that there was a positive, moderate relationship between self-efficacy perceptions for technology integration and school happiness perceptions. In his study, Bangun et al. (2021) stated that his positive attitude towards technology has a positive effect on the happiness of the instructors. It is also known that employees who are happy at work are better motivated and productive (Aziz, Mustaffa, Samah, & Yusof, 2014). According to this result, it is normal that the increase in teachers' self-efficacy perceptions towards technology integration affects the increase in their perceptions of school happiness. In other words, it can be said that teachers with a high perception of school happiness are more comfortable and assertive when using technology in learning environments.

Suggestions

In line with the results of the study, the following suggestions can be made for future research.

•In order for the results and comments to be overarching, studies can be conducted with teachers working in different provinces and in different school grades.

• Studies can be carried out by collecting qualitative data in order to verify the quantitative data made in the research.

• Studies can be conducted to determine the relationship between technology integration self-efficacy and other variables.

• Trainings that will enable teachers to use technology more consciously and to integrate technology into learning environments should be included.

• In-service training can be given to teachers with low technology integration self-efficacy perception levels.

REFERENCES

Akgün, E., Yılmaz, E. O., & Seferoğlu, S. S. (2011). *Vizyon 2023 strateji belgesi ve fırsatları artırma ve teknolojiyi iyileştirme hareketi (FATİH) projesi: Karşılaştırmalı bir inceleme*. Akademik Bilişim 2011'de sunulan bildiri, İnönü Üniversitesi, Malatya, Türkiye.

Argon, T., & Cicioğlu, M. (2017). Meslek lisesi öğretmenlerinin eğitime inanma düzeyleri ile öğretme motivasyonları. *International Journal of Social Science, 57*(1), 1–23.

Arslan, Y. (2018). *Öğretmenlerin farklılıkların yönetimi yaklaşımlarına ilişkin algıları ile örgütsel mutluluk algıları arasındaki ilişki*. Yayımlanmamış Doktora Tezi. Kocaeli Üniversitesi Sosyal Bilimler Enstitüsü, Kocaeli.

Atay, S. (2010). Geliştirilebilir yönetim becerisi: Teorik ve ampirik yönleriyle "politik yeti". *Amme İdaresi Dergisi, 43*(2), 65–80.

Aydın, M. (2020). *Lise öğrencilerinin mutluluk ve sosyal görünüş kaygı düzeyleri ile sosyal medya tutumları arasındaki ilişkinin incelenmesi*. Yayınlanmamış Yüksek Lisans Tezi. Kırıkkale Üniversitesi Sosyal Bilimler Enstitüsü, Kırıkkale.

Aziz, R., Mustaffa, S., Samah, N. A., & Yusof, R. (2014). Personality and happiness among academicians in Malaysia. *Procedia-Social and Behavioral Sciences, 116*, 4209–4212.

Baker, E. W., Al-Gahtani, S. S., & Hubona, G. S. (2007). The effects of gender and age on new technology implementation in a developing country: Testing the theory of planned behavior (TPB). *Information Technology & People, 20*(4), 352–375.

Bandura, A. (1997). The anatomy of stages of change. *American Journal of Health Promotion: 12*, 8-10..

Bangun, Y. R., Pritasari, A., Widjaja, F. B., Wirawan, C., Wisesa, A., & Ginting, H. (2021). Role of Happiness: Mediating Digital Technology and Job Performance Among Lecturers. *Frontiers in Psychology, 12*, 1-10.

Bereczki, E. O., & Kárpáti, A. (2021). Technology-enhanced creativity: A multiple case study of digital technology-integration expert teachers' beliefs and practices. *Thinking Skills and Creativity, 39*, 1-27.

Birişçi, S., & Kul, Ü. (2018). Pedagojik formasyon eğitimi alan öğretmen adaylarının teknoloji entegrasyonu öz-yeterlik inanışlarının incelenmesi. *Fen Matematik Girişimcilik ve Teknoloji Eğitimi Dergisi, 1*(1), 1–18.

Boehm, J. K., & Lyubomirsky, S. (2008). Does happiness promote career success? *Journal of Career Assessment, 16*(1), 101–116.

Boonmoh, A., Jumpakate, T., & Karpklon, S. (2021). Teachers' perceptions and experience in using technology for the classroom. *Computer-Assisted Language Learning Electronic Journal, 22*(1), 1–24.

Bulut, A. (2015). *Ortaöğretim öğretmenlerinin örgütsel mutluluk algılarının incelenmesi*: Bir norm çalışması. Yayımlanmış Doktora Tezi, Gaziantep Üniversitesi Eğitim Bilimleri Enstitüsü, Gaziantep.

Çalışkan, E., Nezih, Ö., & Gökçe, S. (2021). Yükseköğretimde teknoloji entegrasyonu: Öğretim elemanlarının durumları. *Yükseköğretim Dergisi, 11*(3), 717–733.

Compeau, D. R., & Higgins, C. A. (1995). Computer self-efficacy: Development of a measure and initial test. *MIS Quarterly, 19*, 189-211.

Demir, R., & Murat, M. (2017). Öğretmen adaylarının mutluluk, iyimserlik, yaşam anlamı ve yaşam doyumlarının incelenmesi. *OPUS Uluslararası Toplum Araştırmaları Dergisi, 7*(13), 347–378.

Dikmen, C., & Demirer, V. (2016). Türkiye'de teknolojik pedagojik alan bilgisi üzerine 2009-2013 yılları arasında yapılan çalışmalardaki eğilimler. *Turkish Journal of Education, 5*(1), 33–46.

Duran, A. (2016). Okul yöneticilerinin mutluluk düzeylerinin öz-yeterlikleriyle ilişkisi (Amasya ili örneği). Yayınlanmamış Yüksek Lisans Tezi. Gaziosmanpaşa Üniversitesi Eğitim Bilimleri Enstitüsü, Tokat.

Düzgün, O. (2016). Ortaokulda görev yapmakta olan öğretmenlerin mutluluk düzeyleri ile sınıf yönetimi becerileri arasındaki ilişki. Yayınlanmamış Yüksek Lisans Tezi. Gaziosmanpaşa Üniversitesi Eğitim Bilimleri Enstitüsü, Tokat.

Elkiran, Y. M. (2019). *Türkçe öğretmeni adaylarının teknoloji entegrasyonu yeterlikleri ile öğretmenlik özyeterlikleri arasındaki ilişki*. Yayınlanmamış Yüksek Lisans Tezi. Çanakkale Onsekiz Mart Üniversitesi, Eğitim Bilimleri Enstitüsü, Çanakkale.

Gerçek, C., Köseoğlu, P., Yılmaz, M., & Soran, H. (2006). Öğretmen adaylarının bilgisayar kullanımına yönelik tutumlarının çeşitli değişkenler açısından incelenmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 30*(30), 130–139.

Golmakani, N., Rezaei, F., & Mazloum, S. R. (2018). The Relationship of Spiritual Intelligence and Religious activities with happiness of midwives working in hospitals and health centers. *Journal of Midwifery and Reproductive Health, 6*(2), 1264–1272.

Gorder, L. M. (2008). A study of teacher perceptions of instructional technology integration in the classroom. *Delta Pi Epsilon Journal, 50*(2), 63-76.

Harrell, S., & Bynum, Y. (2018). Factors affecting technology integration in the classroom. *Alabama Journal of Educational Leadership, 5*, 12–18.

Huebner, E. S. (1991). Correlates of life satisfaction in children. *School Psychology Quarterly, 6*(2), 103-111.

Kara, M. M. (2010). *The relation of job satisfaction with happiness and success level*. Marmara Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

Karasakaloğlu, N., Saracaloğlu, S., & Uça, S. (2011). Investigation of Turkish teachers' attitudes towards technology and levels of using information technologies. *Mersin University Journal of Education, 7*(2), 26–36.

Kaymak, E., & Titrek, O. (2021). Öğretmenlerin teknolojiye uyumuna yönelik öz-yeterlilik düzeyinin incelenmesi. *Sakarya Üniversitesi Eğitim Fakültesi Dergisi, 21*(2), 104–134.

Keser, H., Yılmaz, F. G. K., & Yilmaz, R. (2015). TPACK competencies and technology integration self-efficacy perceptions of pre-service teachers. *İlköğretim Online, 14*(4), 1193–1207.

Kocaoğlu, B. Ü., & Akgün, Ö. E. (2015). Lise öğretmenlerinin fatih projesi teknolojilerini kullanmaya yönelik öz-yeterlik inançları. *Uluslararası Eğitim Bilimleri Dergisi, 4*, 259–276.

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? *Psychological Bulletin, 131*(6), 803-855.

Mertoglu, M. (2018). Happiness level of teachers and analyzing its relation with some variables. *Asian Journal of Education and Training, 4*(4), 396-402.

Namdar, A. (2018). *Bir grup öğrencide umut, kaygı ve mutluluk arasındaki ilişki*. Yayınlanmamış Yüksek Lisans Tezi. Üsküdar Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

Nathan, E. J. (2009). *An examination of the relationship between preservice teachers' level of technology integration self-efficacy (TISE) and level of technological pedagogical content knowledge (TPACK)*. University of Houston.

O'Brien, C. (2016). *Education for sustainable happiness and well-being*. New York, NY: Routledge.

Orhan, A., & Tekin, İ. (2019). İngilizce okutmanlarının teknoloji yeterliliklerinin ve derste teknoloji kullanımına ilişkin tutumlarının incelenmesi. *Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, 49*, 81–101.

Özgenel, M., & Bozkurt, B. N. (2020). Okul mutluluğunu yordayan bir faktör: Öğretmenlerin politik becerileri. *Turkish Journal of Educational Studies, 7*(2), 130–149.

Pan, J., & Zhou, W. (2013). Can success lead to happiness? The moderators between career success and happiness. *Asia Pacific Journal of Human Resources, 51*(1), 63–80.

Pierson, M. (1999). *Technology practice as a function of pedegogical expertise*. Doctoral thesis. Arizona State University, Arizona.

Seligman, M. E. P., Parks, A. C., & Steen, T. (2004). A balanced psychology and a full life. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 359*(1449), 1379–1381.

Sezer, Şanlı, C., Pınar, A., & Kara, H. (2022). Teknoloji entegrasyonu eğitiminin coğrafya öğretmenlerinin teknoloji kabul ve teknoloji entegrasyonu öz-yeterlik algılarına etkisi. *International Journal of Geography and Geography Education, 45*, 67–75.

Teo, T., Chai, C. S., Hung, D., & Lee, C. B. (2008). Beliefs about teaching and uses of technology among pre-service teachers. *Asia-Pacific Journal of Teacher Education, 36*(2), 163–174.

Turgut, G., & Başarmak, U. (2019). Ortaokul öğretmenlerinin teknoloji entegrasyonu yeterliklerinin farklı değişkenlere göre incelenmesi. *Türk Akademik Yayınlar Dergisi (TAY Journal), 3*(2), 51–66.

Ünal, E. (2013). *Öğretmen adaylarının teknoloji entegrasyonu öz-yeterlik algıları ve teknolojik pedagojik içerik bilgisi yeterlikleri arasındaki ilişkinin incelenmesi*. Yayımlanmamış yüksek lisans tezi. Ankara Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

Vahedi, Z., Zannella, L., & Want, S. C. (2021). Students' use of information and communication technologies in the classroom: Uses, restriction, and integration. *Active Learning in Higher Education, 22*(3), 215–228.

Veenhoven, R. (2008). Healthy happiness: Effects of happiness on physical health and the consequences for preventive health care. *Journal of Happiness Studies, 9*(3), 449–469.

Walsh, L. C., Boehm, J. K., & Lyubomirsky, S. (2018). Does happiness promote career success? Revisiting the evidence. *Journal of Career Assessment, 26*(2), 199–219.

Yıldırım, O. (2019). *Ergenlerde akıllı telefondan yoksun kalma korkusu (nomofobi) ile sosyodemografik değişkenler, temel psikolojik ihtiyaçlar, sürekli kaygı ve mutluluk arasındaki ilişkinin incelenmesi*. Yayımlanmamış yüksek lisans tezi. İnönü Üniversitesi Eğitim Bilimleri Enstitüsü, Malatya.

Adaptation of Metacognition in Mathematics Scale to Turkish: A Validity and Reliability Study

Research Article

Mehmet BARS[1]

[1]*Dicle University, Faculty of Education, Department of Basic Education, Diyarbakır, Turkey* 0000-0002-8695-2648

ARTICLE INFO	ABSTRACT
Article History: Received: 20.02.2022 Available online: 24.07.2022	In this study, the Metacognition in Mathematics (MIM) Scale developed by Fung and Leung (2017) was adapted to Turkish. The study was conducted in a working group of 355 secondary school students. In the confirmatory factor analysis (CFA) performed as a part of structure validity, the four-factor structure in the original MIM form was found to be confirmed in the Turkish culture. The fit indices obtained in the CFA performed on the four-factor structure were found to be within the limits of excellent or acceptable. In the reliability analysis, Cronbach alpha internal consistency coefficients were found to be .84 for the prediction dimension, .83 for the planning dimension, .84 for the monitoring dimension, and .84 for the evaluation dimension. The Cronbach alpha coefficient for the entire scale was found to be .91. In the item analysis, it was concluded that item correlations for all scale items exceeded the value criterion of 0.30. The results show the validity and reliability of the measurements obtained by the Turkish version of MIM. **Keywords:** Metacognition in mathematics, metacognition, scale adaptation, validity, reliability

Introduction

Metacognition is a concept that has been studied since the 1970s. John Flavell is widely accepted to be the researcher who brought metacognition into the field of developmental psychology. John Flavell proposed the term metacognition in the early 1970s, basing it on the term he previously coined, which is metamemory. Flavell used the term metacognition officially for the first time in his 1976 article where he noted that metacognition consisted of both monitoring and regulation. Flavell made use of the term metacognition to account for the difference between the learning strategies used by students of different ages. Metacognition is the combination of the words meta and cognition and refers to thinking about thinking (Akın & Abacı, 2011).

Flavell defined metacognition as "knowledge and cognition about cognitive phenomena" and conceptualized this term as being the form of students' knowledge about their own cognition (1979). Metacognition is considered to be a high level learning skill, as it develops in line with the individual's self-knowledge and ability to learn how to learn. Metacognition is important in terms of influencing the acquisition, comprehension, storing, and recalling of learned material, as well as learning efficiency, critical thinking, and problem-solving (Hartman, 1998).

Metacognition affects the awareness of the learner's way of thinking, focusing not only on learning the material but also distinguishing one's cognitive strengths and weaknesses (Çeliköz, Gören, & Şahin, 2012). Metacognition encompasses two types of knowledge that are interrelated with each other. The first one is one's knowledge about what skills, resources, and tactics a task requires. The second one is one's knowledge about when and how these skills, resources, and tactics will be put to use to complete the task successfully (Schunk, 2009).

Nowadays, more emphasis is placed on how individuals acquire what they know rather than what they know. The paradigm of the new century is no longer what individuals learn, but whether they know the ways of "learning to learn" (Çakıroğlu, 2007). Metacognition is the awareness of an individual's own thinking and learning processes and the ability to control these processes. Senemoğlu (2010) defines metacognition as the knowledge of an individual about his/her own cognition system, structure and how it operates and notes that metacognitive knowledge requires one to question the purpose and expected product to be achieved when learning a subject, what is known about the subject, and the path to take to learn the subject in the most efficient way possible. Such questioning is aimed at skills to effectively monitor learning.

According to Brown (1978, 1987), metacognitive skills are divided into four categories, namely prediction, planning, monitoring, and evaluation, as shown in Figure 1. In prediction, one predicts how difficult a task will be. In planning, one knows what to do to perform the task. In monitoring, one focuses on what he/she knows to achieve the goal. In evaluation, one questions whether he/she fully understands the answer.
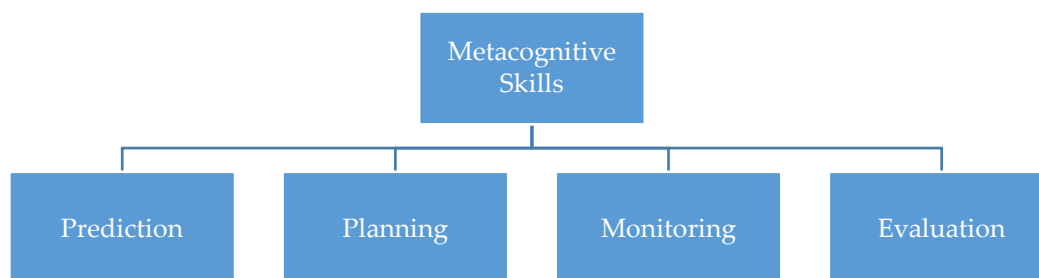
Figure 1. The classification of metacognitive skills

According to the nature of metacognitive skills, some researchers classify forecasting and evaluation as offline metacognitive skills as they are measured before or after solving the exercises. In contrast, planning and monitoring are classified as online metacognitive skills (Desoete & Roeyers, 2002).

In their study, Paris and Jacobs (1984) states that improving metacognition results in progress in learning. An important area in which improved metacognition leads to progress in learning is considered to be mathematics. In their study, Mevarech and Fridkin (2006) determined that the groups that received metacognitive instruction showed higher performance in both mathematical knowledge and mathematical reasoning. Öztürk, Akkan, and Kaplan (2018), in their study, determined that gifted students at different education levels exhibit metacognitive skills in all of the problem solving steps, and the number of

metacognitive skills displayed in problem solving processes increases as the students' education level increases.

Educational psychologists have long supported the importance of metacognition for regulating and supporting students' learning (Lai, 2011; Sperling, Howard, Miller & Murphy, 2002). Research shows a significant correlation between metacognitive skills and mathematical competence in children (Decoete & Roeyers, 2002). In his research, Yıldırım (2010) found a significant correlation between students' level of metacognitive awareness and their ability to decode mathematical problems. Panaoura and Philippou (2007) concluded that there is a positive correlation between students' metacognitive skills and their level of solving math problems. Zakaria, Yazid, and Ahmad (2009) found a significant correlation between metacognitive awareness and mathematics performance. All these findings show that there is a significant correlation between mathematics and metacognition. Therefore, it is also important to measure mathematical metacognition.

In literature, there is a large number of scales on metacognition (Altındağ & Senemoğlu, 2013; Çögenli & Güven, 2014; Mokhtari & Reichard, 2002; Namlu, 2004; O'Neil & Abedi, 1996; Schraw & Dennison, 1994). Similarly, there are also studies where metacognition scales were adapted (Aktamış & Uça, 2010; Aydın & Ubuz, 2010; Karakelle & Saraç, 2007). However, the results obtained from scales that measure metacognition may not reflect the metacognitive skills of a particular field. Metacognition is difficult to measure because it is a part of an individual's mental processes (Favieri, 2013). Another aspect that makes the measurement of metacognition difficult is that it has a complex structure that includes a different set of knowledge and skills and cannot be observed directly (Lai, 2011). In this regard, tools are needed to measure metacognition specific to certain fields.

In particular, it was emphasized that in the last renewed secondary school mathematics curriculum, a total of teaching programs was created that guides the use of metacognitive skills, provides meaningful and permanent learning, is associated with solid and previous learning, and integrated with other disciplines and daily life around values, skills and competencies (Ministry of National Education [MoNE], 2018). Based on the emphasis on metacognition here, it was found worthy of research to what extent the acquisitions in the program improve metacognitive skills.

In literature, there only a few tools designed to measure mathematical metacognition, which have validity and reliability. Especially when the Turkish literature is reviewed for measurement tools for mathematical metacognition, no study was found other than Kaplan and Duran's (2016) validity and reliability study on a mathematical metacognition awareness scale for middle school students. Therefore, in this study, it is aimed to adapt the Metacognition in Mathematics (MIM) Scale developed by Fung and Leung (2017) to Turkish. Given that the scale developed by Kaplan and Duran (2016) only targets middle school students and there are no measurement tools in Turkish literature that will measure metacognition in mathematics of high school students, the adaptation of the MIM scale into Turkish is expected to contribute to the literature.

Methodology

Study Group

The study was conducted with 335 students studying in secondary education institutions affiliated to the Diyarbakır Provincial Directorate of National Education and selected by simple random sampling. Factor analysis is used for construct validity in scale adaptation and development, to test and verify the factor structure, to determine subscales or to reveal the factor structure of the measurement tool. In the literature, it is stated that the sample size between 100 and 200 is sufficient when the number of variables is not too large and the factors are strong and prominent (Büyüköztürk, 2002). According to a general rule, it is stated that the sample size of the study group should be five times the number of items or the number of observed variables

for the use of factor analysis technique (Child, 2006). Considering that the number of items in the scale is 16 in this study, it can be said that the sample size of 335 people is sufficient to obtain good results. Information about the sex and grades of the students in the study is provided in Table 1.

Table 1. Participants by sex and grade

Demographic Variable		Frequency	Percentage
Gender	Male	176	52.5
	Female	159	47.5
	Total	335	100
Grade	9th Grade	43	12.8
	10th Grade	75	22.4
	11th Grade	79	23.6
	12th Grade	138	41.2
	Total	335	100

Table 1 shows that 176 of the study participants were male and 159 were female. The highest number of participants were those attending 12th grade, who are 138 students.

Data Collection Tool

The study data were collected using a form containing MIM Scale's items and sex, grade, and demographic variables. The MIM scale was developed by Fung and Leung (2017). Fung and Leung (2017) mentioned the domain-specific feature of metacognition and stated that the tools with high validity designed to measure metacognition in mathematics are limited, and therefore they need to develop a quantitative tool to measure metacognition in mathematics. There are 16 items in the scale, which is a 7-point Likert. The original version of the scale has a four-factor structure that expresses 62.7% of the total variance, and the factor loads of the items in this four-factor range between .304 and .842. In the original form of the scale, calculations were made using split-half reliability (Cronbach's alpha=.825) to test the reliability, and the Cronbach's alpha reliability coefficient for the entire scale was found to be 0.91.

The Scale's Translation into Turkish

Before kicking off the translation process of the scale, the researcher sent e-mails to the authors of the scale requesting the necessary approval for the adaptation, and the co-author of the scale, Chak Him FUNG, gave the necessary approval for the adaptation. After receiving the necessary permission for adaptation, scale items were translated into Turkish by four experts, each of whom has studies in mathematics education, measurement and evaluation, English language education, and metacognition. The translations by experts were examined by the researcher and the most appropriate Turkish expressions were identified for each item. The Turkish version of the form, along with its original version, was presented to an expert in the field of mathematics education with an advanced level of English. The expert was asked to evaluate the equivalence of the two forms. The expert expressed his opinion that linguistic equivalence was achieved between the English and Turkish versions and the translation was appropriate. Thus, the Turkish version of the scale became was ready for application. In the Turkish version of the MIM scale, each item received a value ranging from 1 to 7, as in the original version. "1" represents the lowest rate while "7" represents the highest.

Data Collection and Analysis

Prior to data collection, a permission petition was filed to the Social and Humanities Ethics Committee of Dicle University on January 31, 2022 in order to obtain approval. The Legal Consultancy Department of Dicle University Rectorate responded to the petition with letter no. 23.63.95 dated February 21, 2022, stating that the research was in accordance with scientific ethics. Then, in order to collect the data, a permission

petition was filed on March 23, 2022 to the Diyarbakir Provincial Directorate of National Education, and the said research permit was obtained by the letter no. 46632834 of March 28, 2022. The researcher obtained all the data by collecting it himself.

The confirmatory factor analysis method was adopted for the validity study of the Metacognition in Mathematics Scale. Although exploratory factor analysis is often opted for in scale adaptation to be followed by confirmatory factor analysis, exploratory factor analysis was particularly not chosen in this study. Because, exploratory factor analysis is a method that a researcher uses to examine the structure of the scale he developed or adapted when he does not have any idea about the factor structures and scientific evidence to support his claim during the development or adaptation of a scale (Finch & West, 1997). The fitness of the scale, whose theoretical structure was determined in its original form, to the sample group to which it was applied during adaptation is determined by using confirmatory factor analysis (Şeker & Gençdoğan, 2014). Since the theoretical structure of the adapted scale was based on Brown's (1978, 1987) four categories of metacognitive skills, namely prediction, planning, monitoring, and evaluation and due to the fact that the sample selected in the study in which the scale was first developed was similar to the sample selected in the adaptation, the confirmatory factor analysis was opted for to ensure validity. The reliability of the scale was calculated using the Cronbach Alpha internal consistency coefficient method. In addition, the item-total correlation was also calculated in order to determine the properties of the items. Study reliability and item analyses were performed in the SPSS package software, while the AMOS package software was used for CFA.

Findings

Findings on the Validity of the Metacognition in Mathematics Scale

Examination of Assumptions

According to Tabachnick and Fidell (2007), before performing statistical analyzes on a data set, the data set should be examined for missing data, univariate and multivariate normality, linearity, outlier observations, multicollinearity problem, and residual value. As a result of the analyses performed on the data obtained in this study, no missing data were found in the data set. In one study, Kline (2011) stated that there should be at least 200 participants in order to achieve an adequate sample size. Since the number of participants in this study was 335, this condition was provided. In addition, kurtosis and skewness values were calculated for each item and a single-variable normality assumption was provided. In addition, it was determined that the linearity assumption was provided using the scatter diagram method. According to the Mardia (1970) test performed to test the multivariate normality assumption, the relative multivariate kurtosis of items (1.133) was found to be significant. In addition, the Variance Increase Factor (VIF), Tolerance (T) and Condition Index (CI) were examined to see whether there was multicollinearity in the data set. VIF values were found to be less than 10, T values different from zero, and CI values less than 30, which provided the assumption of multicollinearity (Hair et al., 1998). Following the assumption analyses, confirmatory factor analyses were performed on all the data obtained (335).

Findings of Confirmatory Factor Analysis

The confirmatory factor analysis was performed using the AMOS v22 statistical package software. Multiple fit indices, which indicate the fitness of the model, were checked during analysis. The fit indices that were checked were X2/sd, RMSEA, SRMR, GFI, and CFI. The perfect and acceptable fitness criteria related to these values are provided in Table 2 and the values related to the fitness criteria obtained from this study are provided in Table 3.

**Table 2.** Perfect and Acceptable Fitness Criteria for the Fitness of the Structural Equation Modeling

Fitness Criteria	Perfect Fitness Criterion	Acceptable Fitness Criterion
[1]X²/sd	$0 \leq \chi 2 /sd \leq 2$	$2 \leq \chi 2 /sd \leq 3$
[2]RMSEA	$.00 \leq RMSEA \leq .05$	$.05 \leq RMSEA \leq .08$
[2]SRMR	$.00 \leq SRMR \leq .05$	$.05 \leq SRMR \leq .10$
[3]GFI	$.95 \leq GFI \leq 1.00$	$.90 \leq GFI \leq 95$
[3]CFI	$.95 \leq CFI \leq 1.00$	$.90 \leq CFI \leq .95$

[1] (Kline, 2011), [2] (Browne & Cudeck, 1993), [3](Baumgartner & Homburg, 1996; Bentler, 1980; Bentler & Bonett, 1980; Marsh, Hau, Artelt, Baumert & Peschar, 2006).

Table 3. Fitness Values of the Metacognition in Mathematics Scale

	Primary Level CFA (4-Dimensional)
X²/sd	1.78
RMSEA	.048
SRMR	.046
GFI	.938
CFI	.970

The fitness statistics of the model developed for the Metacognition in Mathematics Scale were calculated without any limitations. The $\chi2$ was 174.737 and sd=98. It was found that the $\chi2$/sd ratio was 1.78 (p = .000) and the fit indices were RMSEA= .048, SRMR= .046, GFI= .938, CFI= .970. When the adaptation statistics obtained from the adaptation are examined by taking into account the criteria provided in Table 2, it was found that the tested factor structure fitted at a perfect level in X2/sd, RMSEA, SRMR, and CFI fitness criteria while at an acceptable level in the GFI fitness criterion. Therefore, the confirmatory factor analysis obtained without the need for any modifications and adjustments was accepted and the corresponding diagram is shown in Figure 2.
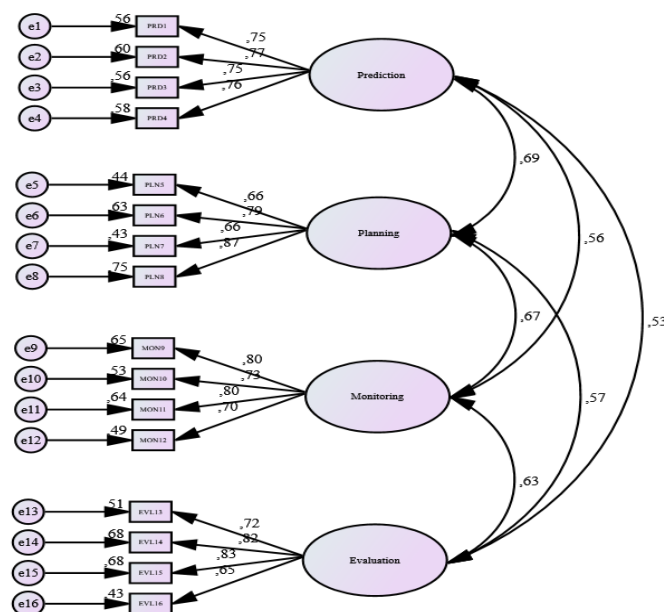
Chi sguared=174,737 df=98 p=,000
Standardized estimates
RMSEA= .048, SRMR= .046
GFI= .938, CFI= .970

Figure 2. Values Obtained from the Primary Level CFA (4-Dimensional) Analysis

The factor loads of scale items was found to be between .75 and .77 in the prediction dimension, .66 and .87 in the planning dimension, .70 and .80 in the monitoring dimension, and .65 and .83 in the evaluation dimension.

Findings on the Reliability of the Metacognition in Mathematics Scale

The reliability of the Metacognition in Mathematics Scale was calculated using the internal consistency (Cronbach Alpha) reliability coefficient. The results of the reliability studies related to the entire scale and its sub-dimensions are provided in Table 4.

Table 4. Reliability Coefficients of the Metacognition in Mathematics Scale Calculated Using the Internal Consistency (Cronbach Alpha) Method

Subscales	*Internal Consistency (Cronbach Alpha)*
Prediction	.84
Planning	.83
Monitoring	.84
Evaluation	.84
For the Entire Scale	.91

In general, scales with a reliability coefficient of .70 and above are considered reliable (Leech Barlett and Morgan, 2005; Domino and Domino, 2006; Fraenkel, Wallend and Hyun, 2012). As shown in Table 4, since the reliability values obtained for both the sub-dimensions of the scale and the entire scale is over .70, it is safe to say that the adapted scale is reliable. In addition, the total item correlations obtained by item analysis were found to range between .518 and .699 (Table 5). The values indicate that the correlation coefficients are sufficient to indicate the distinctiveness of items.

Table 5. Total Item Correlations of the Metacognition in Mathematics Scale

Items	Item Total Correlation
Item 1	.588
Item 2	.591
Item 3	.546
Item 4	.615
Item 5	.601
Item 6	.625
Item 7	.553
Item 8	.699
Item 9	.691
Item 10	.529
Item 11	.648
Item 12	.566
Item 13	.610
Item 14	.593
Item 15	.593
Item 16	.518

Discussion and Conclusion

In this study, the MIM scale developed by Fung and Leung (2017) was adapted to Turkish. At the first stage of the adaptation, a Turkish form that is linguistically equivalent to the original form of the scale was developed. Experts were consulted to achieve this. At the second stage, it was tested whether the four-factor structure in the original form of the scale is valid in Turkish culture. The compliance indices reported in the

CFA showed that the four-factor construct was confirmed. Factor loads obtained from CFA showed that values ranged from 0.65 to 0.87. According to Tabachnick and Fidell (2007), for an item to remain on the scale, it must have a factor load of more than 0.32. Given this criterion, it is safe to say that there is no item in the Turkish form of the MIM scale that will negatively affect the construct validity of the scale. Accordingly, the CFA results support that the MIM scale has a four-dimensional construct and that all the items in the scale have sufficient factor load. All things considered, the construct validity of the Turkish version of the scale was achieved and the four-factor construct of the original version of the scale was also achieved in the Turkish version. In the reliability analysis, Cronbach alpha internal consistency coefficients were found to be 0.84 for the prediction dimension, 0.83 for the planning dimension, 0.84 for the monitoring dimension, and 0.84 for the evaluation dimension. The Cronbach alpha coefficient for the overall scale was found to be 0.91. In general, values of 0.70 and above are considered sufficient for the reliability coefficient (Pallant, 2005). Therefore, it is safe to say that the measurements obtained by the Turkish version of the scale are reliable. The item analysis showed that item correlations ranged from 0.518 to 0.699. An item correlation of 0.30 or higher indicates the distinctiveness of the item (Erkuş, 2012). Accordingly, it is safe to that all the item in the scale have sufficient distinctiveness. In this study, the process applied to test the validity of the scale was limited to the CFA. In order to provide additional evidence of the validity of the scale, further research can include cross-validation, convergent and divergent validity, and criterion validity analyses. In addition, in this study, only the internal consistency coefficient was calculated when analyzing the reliability of the scale. Therefore, further studies can reveal the stability of the scale by looking at its test retest reliability.

Appendix–1. The Items in the Original Form of the Metacognition in Mathematics Scale

Prediction	1. I understand the degree of difficulty behind the mathematical questions.
	2. I can estimate the time required in solving the questions.
	3. I understand how much effort I have to put into in order to get the mathematical questions done.
	4. I can see the objectives of the questions and what it wants to test about me.
Planning	5. I understand which information or data is useful and which is not.
	6. I can apply correct equations or techniques to the questions.
	7. I always think of the possibilities of solving the questions in different ways.
	8. I know clearly about the steps in order to reach the answers.
Monitoring	9. I check my strategy regularly during my mathematical calculation.
	10. I check my time regularly during my mathematical calculation.
	11. I check whether I stick to my plan regularly during my calculation.
	12. I always try to check my answer by an alternative method after my calculation.
Evaluation	13. I understand the meaning of my answer.
	14. I think about what I have learned after my work.
	15. I evaluate the efficiency of my work.
	16. I think about how this topic link with the other topics after I learned it.

Appendix–2. The Items in the Turkish Form of the Metacognition in Mathematics Scale (Matematiksel Üstbiliş Ölçeği)

Tahmin	1. Matematiksel soruların altında yatan zorluğu anlıyorum.
	2. Soruları çözmek için gereken süreyi tahmin edebilirim.
	3. Matematik sorularını yapabilmek için ne kadar çaba sarf etmem gerektiğini biliyorum.
	4. Soruların amaçlarını ve neyi test etmek istediğini görebiliyorum.
Planlama	5. Hangi bilgi veya veri yararlı hangisi değil anlıyorum.
	6. Sorulara doğru denklem veya teknikleri uygulayabiliyorum.
	7. Soruları farklı yollardan çözmenin olanaklarını her zaman düşünürüm.
	8. Cevaplara ulaşmak için gereken adımları net bir şekilde biliyorum.
İzleme	9. Matematiksel hesaplamalarda düzenli olarak stratejimi kontrol ederim.
	10. Matematiksel hesaplamalarda düzenli olarak zamanımı(süremi) kontrol ederim.
	11. Hesaplamalarda planıma sadık kalıp kalmadığımı düzenli olarak kontrol ederim.
	12. Hesaplamalarımdan sonra cevabımı her zaman alternatif bir yöntemle kontrol etmeye çalışırım.
Değerlendirme	13. Cevabımın ne anlama geldiğini bilirim.
	14. Çalışmalarımdan sonra öğrendiklerim üzerine düşünürüm.
	15. Çalışmalarımın etkililiğini değerlendiririm.
	16. Öğrendikten sonra bu konunun diğer konularla nasıl ilişkili olduğunu düşünürüm.

REFERENCES

Akın, A. & Abacı, R. (2011). *Biliş Ötesi.* Ankara: Nobel Yay.

Altındağ, M., & Senemoğlu, N. (2013). Metacognitive skills scale. *Hacettepe University Journal of Education, 28*(1), 15-26.

Aktamış, H., & Uça, S. (2010). Motivasyonel, bilişsel ve bilişüstü yeterlilikler ölçeği'nin Türkçeye uyarlanması. *İlköğretim Online, 9*(3), 980-989.

Aydın, U., & Ubuz, B. (2010). Turkish version of the junior metacognitive awareness inventory: The validation study. *Education and Science, 35*(157), 30-45.

Baumgartner, H., & Homburg, C. (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing, 13*(2), 139-161.

Bentler, P.M. (1980). Multivariate analysis with latent variables: Causal modeling. *Annual Review of Psychology, 31*, 419-456.

Bentler, P.M., & Bonett, D.G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588-606.

Brown, A. L. (1978). Knowing when, where, and how to remember. A problem of metacognition. In R. Glaser (Ed.), *Advances in instructional psychology:* volume 1 (pp.77-165). Hillsdale, NJ: Erlbaum.

Brown, A. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F.Weinert & R. Kluwe, (Eds.), *Metacognition, Motivation, and Understanding* (pp. 65–116). Hillsdale, NJ: Erlbaum.

Browne, M.W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In: Bollen, K.A., & Long, J.S. (Eds.), *Testing structural equation models* (pp. 136-162). Beverly Hills, CA: Sage.

Büyüköztürk, Ş. (2002). Faktör Analizi: Temel Kavramlar ve Ölçek Geliştirmede Kullanımı. *Kuram ve Uygulamalarda Eğitim Yönetimi, 32*(32), 470-483.

Child, D. (2006). *The essentials of factor analysis.* London: Continuum.

Çakıroğlu, A. (2007). Üstbiliş. *Türkiye Sosyal Araştırmalar Dergisi, 11*(2), 21-27.

Çeliköz, N., Erişen,Y., & Şahin, M. (2012). Bilişsel Öğrenme Kuramları. Kaya, Z. (Ed.), *Öğrenme ve Öğretme Kuramlar, Yaklaşımlar, Modeller* içinde (s.49-74). Ankara: Pegem Akademi Yay.

Çögenli, A., & Güven, M. (2014). Bilişüstü öğrenme stratejileri belirleme ölçeğinin geçerlik ve güvenirlik çalışması. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi, 22*, 283-297.

Desoete, A., & Roeyers, H. (2002). Off-line metacognition - a domain-specific retardation in young children with learning disabilities?.*Learning Disability Quarterly,25*(2), 123-139.

Domino, G., & Domino, M. L. (2006). *Psychological testing: An introduction. Cambridge:* Cambridge University Press.

Erkuş, A. (2012). *Psikolojide ölçme ve ölçek geliştirme*. Ankara: Pegem Akademi.

Favieri, A. G. (2013). General metacognitive strategies inventory (GMSI) and the metacognitive integrals strategies inventory (MISI). *Electronic Journal of Research in Educational Psychology,11*(3), 831-850.

Finch, J. F., & West, S. G. (1997). The investigation of personality structure: Statistical models. *Journal of Research in Personality*, *31*(4), 439–485.

Flavell, J. H. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), *The nature of intelligence* (pp. 231-236). Hillsdale, NJ: Erlbaum.

Flavell, J.H. (1979). Metacognition and Cognitive Monitoring: A New Area of Cognitive - Developmental Inquiry. *American Psychologist, 34*(10), 906-911.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education.* New York: McGraw Hill.

Fung, C., H., & Leung, C., K. (2017). Pilot Study on the Validity and Reliability of MIM: An Alternative Assessment for Measuring Metacognition in Mathematics among College Students. *American International Journal of Contemporary Research, 7*(4). 11-22

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E. & Tatham, R. L. (1998). *Multivariate data analysis* (Vol. 5, No. 3, pp. 207-219). Upper Saddle River, NJ: Prentice hall.

Hartman, J. H. (1998). Metacognition in teaching and learning: An introduction. *Instructional Science. 26*, 1–3.

Kaplan, A., & Duran, M. (2016). Ortaokul Öğrencilerine Yönelik Matematiksel Üstbiliş Farkındalık Ölçeği: Geçerlik ve Güvenirlik Çalışması. *Atatürk Üniversitesi Kazım Karabekir Eğitim Fakültesi Dergisi, 32*, 1-17.

Karakelle, S., & Saraç, S. (2007). Çocuklar için üst bilişsel farkındalık ölçeği (ÜBFO-Ç) A ve B formları: Geçerlik ve güvenirlik çalışması. *Türk Psikoloji Yazıları, 10*(20), 87-103.

Kline, R.B. (2011). *Principles and practice of structural equation modeling.* New York: The Guilford Press.

Lai, E. R. (2011). Metacognition: A Literature Review. Pearson Research Report. Retrieved from https://psychcorp.pearsonassessments.com/hai/images/tmrs/Metacognition_Literature_Review_Final.pdf.

Leech, N.L., Barlett, K.C., & Morgan, G.A. (2005). *SPSS for intermediate statistics; use and interpretation.* Mahwah, NJ: Lawrence Erlbaum Associates.

Mardıa, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika, 57*(3), 519-530.

Marsh, H.W., Hau, K.T., Artelt, C., Baumert, J., & Peschar, J.L. (2006). OECD's brief self-report measure of educational psychology's most useful affective constructs: Cross-cultural, psychometric comparisons across 25 countries. *International Journal of Testing, 6*(4), 311-360.

Ministry of National Education. (2018). Ortaöğretim Matematik Dersi (9,10,11 ve 12. Sınıflar) Öğretim Programı. Retrieved from http://mufredat.meb.gov.tr/ProgramDetay.aspx?PID=343

Mevarech, Z. R., & Fridkin, S. (2006). The effects of IMPROVE on mathematical knowledge, mathematical reasoning and metacognition. *Metacognition and learning, 1*(1), 85-97.

Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology, 94*(2), 249-25

Namlu, A. G. (2004). Bilişötesi öğrenme stratejileri ölçme aracının geliştirilmesi: Geçerlik ve güvenirlik çalışması. *Anadolu Üniversitesi Sosyal Bilimler Dergisi, 2,* 123-136.

O'Neil, H. F., & Abedi, J. (1996). Reliability and validity of a state metacognitive inventory: Potential for alternative assessment. *The Journal of Educational Research*, *89*(4), 234-245.

Öztürk, M., Akkan, Y. & Kaplan, A. (2018). 6-8. Sınıf Üstün Yetenekli Öğrencilerin Problem Çözerken Sergiledikleri Üst Bilişsel Beceriler: Gümüşhane Örneği. *Ege Eğitim Dergisi, 19*(2), 446-469.

Paris, S.G., & Jacobs, J. E. (1984). The benefits of informed instruction for children's reading awareness and comprehension skills. *Child development, 55,* 2083-2093

Schunk, H.D. (2009). *Öğrenme Teorileri.* (M. Şahin, Çev.). Ankara: Nobel Yay.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology,* 19, 460-475

Senemoğlu, N. (2010). *Gelişim Öğrenme ve Öğretim* (16.Baskı). Ankara: Pegem Akademi Yay.

Yıldırım, S. (2010). Üniversite öğrencilerinin biliş ötesi farkındalıkları ile benzer matematiksel problemleri çözmeleri arasındaki ilişki. (Unpublished master's thesis). Gaziosmanpaşa Üniversitesi, Tokat, Türkiye.

Pallant, J. (2005). *SPSS survival manual: A step by step guide to data analysis using SPSS for windows.* Australian Copyright, Australia.

Panaoura A., & Philippou G., (2007). The Developmental Change of Young Pupils' Metacognitive Ability in Mathematics in Relation to Their Cognitive Abilities. *Cognitive Development 22,* 149–164.

Sperling, R. A., Howard, B. C., Miller, L. A., & Murphy, C. (2002). Measures of children's knowledge and regulation of cognition. *Contemporary Educational Psychology, 27*(1), 51-79.

Şeker, H., & Gençdogan, B. (2014). *Psikolojide ve Eğitimde Ölçme Aracı Geliştirme*. Ankara: Nobel Yayıncılık.

Tabachnick, B. G., Fidell, L. S. & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5). Boston, MA: Pearson.

Zakaria, E., Yazid, Z., & Ahmad, S. (2009), Exploring Matriculation Students' Metacognitive Awareness and Achievement in a Mathematics Course. *The International Journal of Learning. 16,*(2), 333-348.

Opinions of Teachers on the Role of Teachers, Students, and Parents in the Education of the Future

Research Article

Abdullah UGUR¹, Fatih OZDEMIR², Yunus Emre OMUR³

¹PhD Candidate, Sakarya University, Institute of Educational Sciences, Sakarya, Turkey [ID] 0000-0002-1383-8713

²Yildiz Technical University, Faculty of Education, Department of Social Sciences and Turkish Language Education, Istanbul, Turkey [ID] 0000-0001-5759-643X

³ Istanbul 29 Mayis University, Faculty of Education, Department of Educational Sciences, Istanbul, Turkey [ID] 0000-0002-1535-3461

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ARTICLE INFO	ABSTRACT
Article History: Received: 08.03.2022 Available online: 18.08.2022	In the traditional approach to education, the roles of active teacher, passive student, and passive parents are dominant. As a result of philosophical changes, and scientific and technological developments, the traditional understanding of education went through changes. This change has continued to accelerate after the Covid-19 pandemic. To adapt to this change in education and to reduce conflict, it may be useful to predict the future from today. In this context, the purpose of this research is to analyze the opinions of teachers about the role of teachers, students, and families in the education of the future. In the direction of this purpose, the study was conducted with a phenomenological design. The study group of the research consisted of 12 teachers working in secondary schools affiliated with the Ministry of National Education in the fall semester of 2021-2022. The data was collected with a semi-structured interview form prepared by the researchers. The obtained data was analyzed by the descriptive analysis method. In the research findings, the future role of the teacher was explained by three different codes counselor personality, motivator, and loss of status. The student's role was explained as an active student, socializing student, and a student who lacks practice. The role of the parents in the education of the future was explained with two codes as the main element of education and counseling. Based on the study results, it can be suggested that teacher training programs should be organized and updated in a way that will raise the human type of the future in the best way, and in-service training should be organized for teachers. For students, it can be suggested to focus on activities that will provide socialization opportunities due to the increase in the ease of accessing information for students and the intensity of distance education. For parents, it can be recommended to provide education at various levels so that they can be included in the education without any problems and fulfill their increasing responsibilities.

Introduction

Change has always continued in a perpetual structure in the world and universe we live in. However, the speed of change may vary over time. When we look at the history of the world, besides long-term change processes such as geological periods, it is seen that the speed of change has increased a lot in our era in which technology has made a breakthrough. This rapid process that emerged has made some changes compulsory in society and has led to the emergence of new needs in many areas from education to social life.

In the 21st century, humanity has faced serious difficulties economically and personally, especially social changes (Bialik & Fadel, 2015). Arising from change can be resolved by raising future-oriented generations (Gül, 2004). The importance of education in raising future-oriented new generations is undeniable (Masini, 2002). Because, among the goals of education is raising generations that will ensure that the future is safe (Serter, 1982; Sarıbaş & Babadağ, 2015). At this point, the future of education, which builds the societies of the future, has gained importance.

When considering the future of education, it is also necessary to consider the roles of the elements that form it. The elements such as teachers, students, and programs create the framework of formal education, while parents and the environment constitute the main elements of education in informal education (Sarı,2016). The role of the teacher, who is one of the most important actors of formal education, in education is important. The answer to the question "what kind of education" is directly related to the answer to the question "what kind of teacher" (Üzümcü & Bay, 2018). The question of how education and teaching will become concerns the future as well as the present. Many researchers have made definitions of future teacher roles and characteristics.

In short, Tutkun and Aksoyalp (2010) state that teachers should adapt the educational environment and its elements to newly emerged situations and use them in the best way and be able to gain this feature to the students. According to Yeşilyurt (2006), the teacher should be a guide on the way to the knowledge, not in the role of source and distributor of the knowledge. According to Balay (2004), teachers should not make students memorize the knowledge after obtaining it from a single source. They should have them think according to their knowledge and skills and encourage them to research. On the other hand, Ocak and Gündüz (2006) state that a teacher should be someone who has a command of information technologies and constantly improves and updates himself/herself. According to Altunay and Yalçınkaya (2011), a teacher should strengthen the universal and national values and raise individuals who can adapt to the changing world values. In the future, digital teachers should have the qualifications to train their students in a virtual environment by using the developing digital technologies (Campbell & Cameron, 2016). Based on these definitions, if we briefly define the role of the future teacher, it is to adapt to the changes happening in the world.

The role of the student, which is one of the basic elements of education, has always kept its place in the process of education. Therefore, the whole educational process is built on the current role of the student. Individuality, which comes to the forefront with the information society, has also brought to the fore roles of students such as self-awareness, learning speed, capacity, and the ability to use the obtained information in the appropriate place and time (Çötük, 2006). Developing technology and changing education processes give different roles to the students of the future. Educational institutions are expected to train the learners of the new century, who are often defined as "digital natives" (Prensky, 2001, p. 1) and "new millennium students" (Pedró, 2006, s. 2) in the literature, as individuals who have gained "the 21st century skills" such as critical thinking, problem-solving, communication, and cooperation (Yalçın, 2018). Oblinger and Oblinger (2005, pp.

2.1-2.6) define the 21st century generation as the 'Net Generation.' This generation, between the ages of 18 and 22, who are intensely introduced to digital technology, can design, and customize the technology for their personal needs. With the changing world conditions and the changing required skills, the skills demanded from education in the 21st century are as follows; flexibility, adaptability, innovation, creativity, critical thinking, non-routine problem solving, complex communication, cooperation, self-direction, productivity, and accountability skills (Geisinger, 2016, p. 247). The students of the future will transform their roles from passive into active in education.

As students, the parents had a passive role in education in the past centuries, however, they have gained an increasingly active role in education today. The necessity of strong cooperation between school, parents, and students for success in education is undeniably accepted (Baş & Beyhan, 2017; Çepni, Ayvacı & Bakırcı, 2012; Griffin & Steen, 2010; Akbaşlı & Kavak, 2008). Parents are more aware of the characteristics and needs of children than anyone else. Therefore, parents need to share the information they have about their children with the school and their teachers so that their children can benefit from school better and grow up as qualified individuals (Genç, 2016). The interaction to be established between student, teacher and parents facilitate learning and contributes positively to the academic and social development of the student, and problems in this communication can cause negativity in student behaviors (Christensone & Reschly, 2010; Griffin & Galassi, 2018; Park & Holloway, 2017). To summarize the role of the parents in education today, the parents affect all cognitive, affective, and social behaviors of all elements in the education process. Parents have become increasingly important in education from the past to the present and will also have more important roles in future education. As the studies conducted in recent years on this subject have revealed, the school success of children whose parents participate and cooperate with the school increases proportionally with this relationship (Binicioğlu, 2010; Bordalba & Bochaca, 2019; Çanakçı & Özdemir, 2015; Çelebi & Çopur, 2019; Çiftçi & Bal, 2015; Daniel, 2016; Griffin & Steen, 2010; Jeynes, 2015;).

Education is a power that has the mission of reducing social and individual conflicts by raising the next generations of societies. It is important to create the essential environment for education, which has this mission, to adapt to possible changes by predicting the future from today. Social change in the world and changes in education also cause changes in the roles of teachers, students, and parents, which are among the main elements of education. It is important to predict these roles, which will change, from the perspective of experienced educators today. There are some studies in the literature on this subject (Cerit, 2008; Çelik & Aslan-Çelik, 2017; Çermik & Turan, 1997; Çötük, 2006; Eren & Tekinarslan, 2012; Mahlios & Makson, 1998; Özgan & Aydın, 2010). This study also has an important place in the education of the future, especially in terms of revealing the views of educators after the Covid-19 pandemic, which deeply affected the whole world. The research focuses on how the roles of teachers, students, and parents can change in the education of the future. In this context, the purpose of this research is to analyze the opinions of teachers about the role of teachers, students, and families in the education of the future.

Method

Study Design

The phenomenological design, one of the qualitative research designs, was used in this research, which aims to examine the roles of teachers, students, and parents in the education of the future from the perspective of teachers. Phenomenology is used in social sciences to reveal concepts, events, situations, and experiences (Patton, 2015; Sönmez & Alacapınar, 2016). Phenomenological studies are defined as the common opinions of a certain group about a concept or phenomenon (Creswell, 2016). In this study, the phenomenological design was preferred because the opinions of teachers on the roles of teachers, students, and parents in the education of the future were sought.

Study Group

The study group of the research was determined by the purposeful sampling method, which is one of the non-random sampling types, and it consisted of 12 teachers working in different branches of secondary schools affiliated with the Ministry of National Education. In purposeful sampling, participants selected by the judgments and criteria previously determined by the researcher are included in the sampling (Balcı, 2015). In this type of sampling, which is also called purposive sampling or judgmental sampling, the sample is determined not randomly but according to certain characteristics (Böke, 2014). In this study, by the purposive sampling, teachers who have at least 5 years of career seniority in the basic courses and information technologies branches at the secondary school level and who continued to work during the Covid-19 pandemic were preferred. Detailed data regarding the study group of the research are explained in Table 1.

Table 1. Demographics of the participants

Participant	Age	Gender	Graduation	Branch	Years of Service
T-1	40	Male	Turkish Teaching	Turkish	17
T-2	29	Male	Mathematics Teaching	Mathematics	5
T-3	30	Male	Information Technologies	Information	7
T-4	34	Female	English Language and	English	5
T-5	28	Female	Information Technologies	Information	6
T-6	40	Male	Social Sciences Teaching	Social Sciences	19
T-7	37	Male	Mathematics Teaching	Mathematics	14
T-8	42	Female	Turkish Teaching	Turkish	19
T-9	36	Male	English Language	English	10
T-10	31	Male	Science Teaching	Science	8
T-11	46	Female	History Teaching	Social Sciences	22
T-12	41	Female	Science Teaching	Science	19

In Table 1, demographic information about the participants of the research (age, gender, department graduated, field of duty, and career seniority) is given. "T1: Teacher 1" represents the first participant, and "T8: Teacher 8" represents the eighth participant.

Data Collection Tool

In the study, to reveal the views of teachers on the roles of teachers, students, and parents in the education of the future, a semi-structured interview form prepared by the researchers was used. In a semi-structured interview, the researcher prepares an interview form that includes the questions that s/he has planned to ask beforehand, but s/he can also ensure that new questions can be asked and answered according to the process of the interview (Türnüklü, 2000; Sönmez & Alacapınar, 2016). In this type of interview, questions are asked to the participants to get answers about the details, to ask them to clarify the discussed topic or to provide examples (Merriam, 2009). In this research, the interviews with the participants were conducted through video conferencing, as there were Covid-19 restrictions and curfews. The interviews were recorded after receiving the permission of the participants. The researchers conducted the interviews themselves and third parties were not included.

Data Analysis

Qualitative data analysis includes the descriptive process that reveals the relationship between phenomena by defining and classifying them (Corbin & Strauss, 2008). In this study, descriptive analysis was used in the data analysis process. In the descriptive analysis, questions, topics, or themes in data collection tools such as observations, interviews, and documents used in the research are analyzed (Ekiz, 2009). The data are classified, summarized, and interpreted within the framework of previously determined themes (Yıldırım & Şimşek, 2008). In this study, the interviews with the teachers were recorded as a written document in the

computer environment, and then the teachers were coded as "T1" which represents the first teacher, and "T8" which represents the eighth teacher. While the data were presented under the themes, they were supported by direct quotations from the teachers' opinions at appropriate places.

Validity and Reliability

Guba and Lincoln (1982) stated that in qualitative research, there is credibility instead of validity and reliability, and the way to ensure this is credibility, dependability, confirmability, and transferability (Başkale, 2016). Before the interview, the participants were informed about the purpose and scope of the research, how long the interview would take, and that the researcher would record a voice during the interview. Participants were also informed that participation in the research is voluntary, and in this context, they have the right to refuse to participate in the research, to leave any stage of the research, and not to answer any questions they want. Thus, it was tried to ensure that the data collection sessions were conducted only with people willing to contribute sincerely çalışılmıştır (Arastaman, Öztürk-Fidan & Fidan, 2018). To confirm the accuracy of the data obtained after the interview recordings were transcribed, a copy of the transcription was sent to the participants and the participant's confirmation was obtained (Doyle, 2007; Holloway ve Wheeler, 1996; Lincoln ve Guba, 1985). Expert opinion, one of the ways to increase credibility in the research, was taken during the preparation of the semi-structured interview form, long interviews were made with the participants, and confirmation was obtained from the participants (Holloway & Wheeler, 1996). Researcher triangulation, which is one of the diversification methods (Stake, 1995) used to increase the validity of the research, was conducted by coding the data at various times by different people during data analysis. Transferability refers to the extent to which the findings of a previous study can be adapted to similar contexts or situations while preserving their meaning (Arastaman, Öztürk-Fidan ve Fidan, 2018). According to Shenton (2004), to ensure transferability, detailed information about the period, the number and length of data collection sessions, the data collection method used, the number of participants, and the personal characteristics of the participants should be presented in qualitative research. To ensure that the research is transferable, the research process has been described as detailed and transparently as possible.

Findings

In this study, which aims to examine the opinions of teachers on the role of teachers, students, and parents in the education of the future, the findings are presented under three different themes, according to the data obtained from the participant's views. These themes are teacher, student, and parents' roles in future education. The determined themes were supported by direct quotations from the teachers' opinions.

The role of the teacher in the future

When the teachers' opinions were examined, most of the teachers emphasized that even if the status of the teacher changes in the future, there will be no loss of status. The future role of the teacher is explained with three different codes: guiding personality, motivator, and loss of status.

Guiding Personality. When the data obtained from the interviews with the teachers are reviewed, it is seen that the code of guiding personality regarding the role of the teacher in the future was emphasized significantly. The opinions of teachers explaining this code are presented below;

T2: "Instead of giving the information directly to the student, teachers need to teach the student where he/she can find the information and where he/she can reach the correct information. Now, the teacher is coming towards a guiding position."

T3: "S/he will only be in a guiding role in the future. So s/he will be in the role of guide. I do not think they will teach students anything anymore. In the future, teachers will only guide and direct."

T6: "The role of the teacher has already changed. The teacher is a guide for the knowledge, I mean, we teach where you will get this knowledge, and how you will use it. I do not think this will change either. Someone's guidance is necessary."

T7: "Teachers will not only be the ones who convey information, but they will also be the shadow of the student, who organize the information, provide access to it, organize the measurement and evaluation tools. And as we always say, the teachers will be a guide."

T12: "Teacher is the one who guides. I guess it will go this way. They can gain a role as a guide."

When the views of the teachers are examined, it is seen that teachers have started to act as a guide even today and this role will continue to be strengthened in the future. It is seen that this view of the teachers about the teachers of the future is since technology has developed and has made it easier to access information.

Motivator. When the data obtained from the teachers' opinions are examined, the other highlighted code regarding the role of the teacher in the future is the code of motivator. At this point, the role of the teacher in providing motivation and increasing the courage of the students with the physical environment and contact has been pointed out:

T1: "We see that the children, who cannot make eye contact, and who are not physically in the same environment with the teacher, progress at low levels in terms of motivation."

T10: "I think that the role of the teacher will be in a way that encourages and motivates the student."

The example of T1 emphasized the low student motivation experienced during the Covid-19 pandemic. This can be perceived as a simulation of the future.

Loss of Status. When the data obtained from the teachers' opinions were examined, one of the teachers stated that the teaching profession would lose its status in the future.

T4: "I am in favor of the idea that teachers will lose their professional status. There is no physical environment in the school, the teacher is now behind the screen. I am sure there will be a change in the teacher model." When T4's opinion was examined, it was stated that the teacher would be less visible in education and therefore, her/his status would be lost.

The Role of the Student in the Future

When the views of the teachers are examined, the role of the student in the education of the future is explained under the three codes: active student, socializing student, and a student who lacks practice.

Active Student. When the data obtained from the interviews with the teachers are examined, the active student code regarding the future role of the student is emphasized significantly. The opinions of teachers explaining this code are presented below;

T3: "The role of the students will be an active role because they will play the role of a more active student as they will make an effort and learn on their own."

T5: "We will give basic information about the subject and wait for the student to complete the rest."

T10: "I think that the role of the students will be as questioning, studying, conflicting, giving importance to group work, and not giving up anything."

T11: "My student asks me: Teacher, can you make me the host? I make her/him, then s/he explains the subject like a teacher. I think the children will be very active students."

When teachers' opinions were examined, they stated that in the future, students will have the role of students who can design their learning, programs, and processes. In this development, the effect of developing technology in providing information has been emphasized.

Studentship for Socialization. When the data obtained from the interviews with the teachers are examined, the other code regarding the role of the student in the future is studentship for socialization. T2, one of the teachers stated that the school would provide a more socialization environment than the function of knowledge transfer.

T2: "While very few of the children come to school for education, many of them will continue to come to school just to socialize or to get away from their home environment."

In one sense, what T2 expressed about being a student for socialization can be interpreted as a result of active learning and the ease of access to information.

Lack of Practice. When the teacher's views are examined, the other code related to the role of the student in the future is the code of a student who lacks practice. For example:

T6: "Everything is under the children's hands right now. In the future, a student who has been educated by a good guide will be able to use the information but will be content with only reaching the information. If you can't use that information, that information has no meaning."

In the given example, it is emphasized that students can access information because of the ease to access information, but they will not be able to use the information in practice. In this sense, T6's opinion differs from other teachers' opinions. Other teachers state that students will have an active student profile.

The Role of the Parents in the Future

When the views of the teachers are examined, the role of the parents in the education of the future is expressed with two codes: the main element of education and the guide.

The Main Element of Education. When the data obtained from the interviews with the teachers were examined, the teachers mostly stated that the parents would be the main element of education. The examples emphasizing that parent is one of the three pillars of this code, as a natural process of education, explain this.

T1: "Parents always exist in education. There should be more in the future because I think this is a complementary process where the teacher supports the parents and the parents support the student."

T12 "I guess that the parents will be with the child as long as the concept of family continues, so I think the parents will continue to complete these three pillars."

Another factor regarding the role of the parents emphasized in the teachers' opinions is that the moral support and follow-up of the parents are important. Examples regarding this are presented below;

T2: "Parents expect success in their children by making a financial investment in them, but this should not be the case. So I think parents should be involved in education, too."

T6: "If the parents take care of their children and follow their school courses, success comes. Other than that, if the parents do not follow them, then children will not be good. In other words, there was such a trivet before: teacher, student, and parents."

T10: "One of the points we come across in this process is as follows; If the parents are well-educated, regardless of the process, the child can always adapt to this process, but as long as the parents are not well-educated, whatever we do is useless. I think that parents will do what is necessary when any support is needed."

In the teachers' views, there are opinions that the parents will be more actively involved in education than its current role in the future and that it will be one of the main elements of education. An example of T9 that the parents will take part in education more than today can be given:

T9: "Their role in this educational process for the future will be greater than it has been up to now."

One of the teachers, T11, stated that the parents would be active in solving the problems that occur in the student's socialization and social areas.

T11: "As I said, in this system, we only transfer information. Recognition, meeting, perception, and sharing problems with the student do not exist. The biggest burden falls on the parents here. So if this system continues, it seems like the load of the teacher will be relieved."

Parents as a Guide. When the data obtained from the interviews with the teachers were examined, the teachers stated that parents would be a guide in the education process in the future. The following example can be given regarding the parent's role based on today's parents' roles:

T7: "I think that parents will take the role of guiding in the future as a basis in the process. If they just give direction, I think their children will be responsible students."

Examples of the role of parents which is expressed as an educational element that provides guidance and supervision to students are presented below.

T3: "There should be control in the future as well. By control, I mean that the individual should direct the student. In other words, parents should be a guide like a teacher. If the parents cannot be the guide, the student will have more difficulties in learning."

T4: "Yes, homeschooling can be seen as if it is something that has little control and efficiency, but I think it is the opposite. Children need much greater supervision after they switch to distance education. By supervision, I mean the children should be observed constantly what they learn and how they learn behind the screen– not in the sense of watching. – I think parents will be more aware of this situation."

When teachers' opinions are examined, it is stated that parents will have the role of a guide based on the supervision provided by the teachers in the physical environment of the school and the homework control provided by the parents in the home environment.

Discussion and Conclusion

In the research, first of all, teachers' opinions on the role of the teacher in the education of the future were discussed. The opinions of teachers who were currently on duty and had at least five years of professional experience and who were teaching courses under the conditions of the Covid-19 pandemic and adapted to this process as much as possible were taken. According to the results, the most important role that teachers will play in the future is the role of the teacher as a "guiding personality." It has been concluded that teachers will be in the role of facilitators in the future, they will guide the students in reaching their goals, and they will be in the position of a guide in the stage of how to use the advanced opportunities in the best way. This opinion of the teachers involved in the research process about how the roles of teachers will be in the future is similar to the results of other studies (Afacan, 2011; Arslan & Karataş, 2015; Çelik & Aslan-Çelik, 2017; Cerit, 2008; Dağhan, Nuhoğlu Kibar, Menzi Çetin, Telli & Akkoyunlu, 2017; Eren & Tekinarslan; Mahlios & Maxson, 1998; Martínez-de-la-Hidalga & Villardon-Gallego, 2017; Numanoğlu, 1999; Ocak & Gündüz, 2006; Oxford, Tomlinson, Barcelos, Harrington, Lavine, Saleh & Longhini, 1998; Pektaş & Kıldan, 2012; Poom-Valickis, Oder & Leping, 2012; Saban, Koçbeker & Saban, 2006; Ünal & Ünal, 2010; Yılmaz, Göçen & Yılmaz, 2013).

In the research process, "motivating teacher" emerged as the second role related to future teacher roles. Regarding this result, it is an important factor that teachers can prepare original learning activities for their

students at the point of creating the most suitable environments for learning by the objectives and teach the course with the students efficiently in a way that keeps their motivation at a high level to achieve the learning objectives. This result of the research has been supported by similar research results (Koç, 2014; Woolfolk, 2015).

In the research process, the third role was revealed as "teacher who has lost status" regarding the future teacher roles. Accordingly, the teachers stated that the teaching profession was not respected enough and that it was losing its prestige more and more every day, so they did not see the future of their profession as promising. Based on this, it is concluded that some of the teachers have a pessimistic and hopeless attitude about the future of the teaching profession. This situation can be considered a risk that will decrease the motivation of teachers while performing their professions. And as a result, they will not be able to develop a sense of belonging to their profession. This result has also been supported by similar research results (Birmingham, 2009; Karataş, Ardıç & Oral, 2017).

Secondly, teachers' opinions on the role of students in the education of the future were discussed in the study. The role that students will play in the future will be "active students." Students are expected to be able to use the learning skills of the future comfortably, to reach the information they need on their own, know the ways to obtain information, criticize when necessary, solve the problems they encounter, and cooperate with others by communicating effectively. This result obtained as a result of the research is supported by other research results (Aydede & Kesercioğlu, 2012; Bennett, Maton & Kervin, 2008; Bozkurt & Çakır, 2016; Chu, Reynolds, Tavares, Notari & Lee, 2017; Dede, 2005; Dede, 2010; Eryılmaz & Uluyol, 2015; Gelen, 2017; Günüç, Odabaşı & Kuzu, 2013; Kaymakcı, 2009; Kemp, Goodman & Tenenbaum, 2010; Koltay, 2011; Malter, 2011; Otuz, Görkaş-Kayabaşı & Ekici, 2018; Suto,2013; Pacino & Noftle, 2011; Potts, Schlichting, Pridgen, & Hatch, 2010; Prensky, 2001; Yağız, 2008).

The second important result about the student roles in the education of the future emerged as "studentship for socialization." Fun learning environments, flexible school hours, opportunities to access information from almost everywhere, efficient use of the opportunities of technology, and maintaining their lives in peace with themselves and their environment by being in effective communication with their social environment can be evaluated as important indicators. This result obtained in the study is also similar to the results of similar studies (Kostenius, 2011; Lei, 2009).

The third important result related to the student roles in the education of the future emerged as "the implementation part is deficient." Some teachers who took part in the research process stated that it would be very easy for future students to access information, but some students would have only accessed information. Unless the students use that knowledge and produce something with it, it will have no meaning.

Thirdly, teachers' views on the role of the parents in the education of the future were discussed in the study. The most important conclusion here is that the most important role that parents will play in the future will be "the main element of education." A child starts life in the family; therefore, the first step of learning also starts in the family and so, the attitude of the parents affects the student's attitude towards school. Since one of the main elements that the school should cooperate within education is the parents, schools provide school-parent cooperation and parents' support while making changes in the system for revealing the needs and expectations for education. As the studies conducted in the field of educational sciences on this subject reveal, the school success of children who are in cooperation with the school and whose family participates increases in proportion to this relationship (Binicioğlu, 2010; Bordalba & Bochaca, 2019; Çanakçı & Özdemir, 2015; Çelebi & Çopur, 2019; Çepni, Ayvacı & Bakırcı, 2012; Çiftçi & Bal, 2015; Daniel, 2016; Griffin & Steen, 2010; Jeynes, 2015; Şişman & Turan, 2004; Yıldırım & Dönmez, 2008).

The second important result about the role of the parents in the education of the future emerged as "parent as a guide." Parents' interest and participation in students' learning have an important place in revealing their talents completely. According to the opinions of the participating teachers, it was concluded that the communication to be established between the student-teacher-parent can contribute positively to the motivation of the students. The literature data indicating that positive communication increases student motivation also supports this opinion (Çınkır & Nayır, 2017; Daniel, 2016; Özgan & Aydın, 2010; Park & Holloway, 2017).

Within the framework of the findings and results obtained from the research, the following suggestions can be made. In the education of the future, the teachers will continue to keep their places, but they will come into prominence as counselors. In this context, teachers should be well trained both before starting their profession and while performing their profession. At this point, it is necessary to organize the education faculty curricula to raise the human type of the future in the best way and to be updated according to the changes required by the age. Additionally, in-service training programs can be efficiently organized for on-duty teachers so that they can be informed about the developments. To increase the technological literacy of teachers, investments should be made to create the necessary infrastructure and the relevant courses should be given at the Faculties of Education seriously and adequately. In the education of the future, it can be said that the rate of face-to-face education may decrease, and at this point, teachers will have a greater role in ensuring the motivation of the students. In this context, it can be ensured that the guidance course given to pre-service teachers in education faculties can be given more efficiently and the proficiency levels of the teachers within the system can be increased with various courses and seminars. According to the teachers' opinions, the most important quality of the future student is to have an active student role. In this context, students need to reach the level of how they can access information, how to distinguish reliable information, and how to use information technologies for their purpose. At this point, education systems must train individuals with these qualities for the future of the world. In terms of the socialization of students, schools fill an important gap in face-to-face education. When distance education starts to take up more place in the future, the need for student socialization should be compensated by using different methods. According to the opinions of teachers, the role of parents in the education of the future will come to the fore. Because in the future, education will be conducted more remotely and more from home. At this point, school-student-parent communication will have a special status. When school administrators communicate with parents effectively and have them participate in the process, their involvement in education can contribute to the increase in the quality of education. Another important result about parents is the parent's role as a guide. Parents can be trained through various activities by the schools or the Ministry of Education so that they can fulfill these roles efficiently.

REFERENCES

Afacan, Ö. (2011). Fen bilgisi öğretmen adaylarının "fen" ve "fen ve teknoloji öğretmeni" kavramlarına yönelik metafor durumları. *E-Journal of New World Sciences Academy*, *6*(1), 1242-1254.

Akbaşlı, S. & Kavak, Y. (2008). Ortaöğretim okullarındaki okul aile birliklerinin görevlerini gerçekleştirme düzeyi. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 19, 1-21.

Altunay, E., & Yalçınkaya, M. (2011). Öğretmen adaylarının bilgi toplumunda değerlere ilişkin görüşlerinin bazı değişkenler açısından incelenmesi. *Kuram ve Uygulamada Eğitim Yönetimi*, 17(1), 5-28.

Arastaman, G., Öztürk-Fidan, İ. & Fidan, T. (2018). Nitel araştırmada geçerlik ve güvenirlik: Kuramsal bir inceleme. *Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi, 15*(1), 37-75

Arslan, D. & Karataş, Z. (2015). Mirror of prospective teachers' mind: Metaphors. *Procedia-Social and Behavioral Sciences*, 197, 1464-1471.

Aydede, M. N., & Kesercioğlu, T. (2012). Aktif öğrenme uygulamalarının öğrencilerin kendi kendine öğrenme becerilerine etkisi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi*, 43, 37-49.

Balay, R. (2004). Küreselleşme, bilgi toplumu ve eğitim. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 37(2), 61-82.

Balcı, A. (2015). Sosyal bilimlerde araştırma yöntem, teknik ve ilkeler [Research methods, techniques and principles in social sciences]. *Ankara: Pegem Akademi*.

Başkale, H. (2016). Nitel araştırmalarda geçerlik, güvenirlik ve örneklem büyüklüğünün belirlenmesi. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*, 9(1), 23-28

Bennett, S., Maton, K. & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775-786.

Bialik, M. & Fadel, C. (2015). *Skills for the 21st century: What should students learn.* Boston: Center for Curriculum Redesign.

Binicioğlu, G. (2010). *İlköğretimde okul-aile iletişim etkinlikleri: Öğretmen ve veli görüşleri.* (Yayımlanmamış Yüksek Lisans Tezi). Anadolu Üniversitesi, Eğitim Bilimleri Enstitüsü, Eskişehir.

Birmingham, C. (2009). The disposition of hope in teaching. *Teacher Education Quarterly*, 36(4), 27-39.

Bordalba, M. M & Bochaca, J. G. (2019). Digital media for family-school communication? Parents' and teachers' beliefs. *Computers & Education*, 132, 44-62.

Bozkurt, Ş. G. & Çakır, H. (2016). Ortaokul öğrencilerinin 21. yüzyıl öğrenme beceri düzeylerinin cinsiyet ve sınıf seviyesine göre incelenmesi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, 39, 69-82.

Böke, K. (2014). *Sosyal bilimlerde araştırma yöntemleri. (*4. Baskı). *İstanbul: Alfa Yayınları*.

Campbell, C., & Cameron, L. (2016). Scaffolding learning through the use of virtual worlds. S. Gregory, M. J. W. Lee, B. Dalgarno, ve B. Tynan (Eds.), *Learning in Virtual Worlds: Research and Applications* (ss. 241-259). Edmonton, Canada: AU Press.

Cerit, Y. (2008). Öğretmen kavramı ile ilgili metaforlara ilişkin öğrenci, öğretmen ve yöneticilerin görüşleri. *Türk Eğitim Bilimleri Dergisi*, 6(4), 693-712.

Christensone, S. L. & Reschly, A. L. (2010). *Handbook of school-family partnerships.* New York and London: Routledge.

Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M. & Lee, C. W. Y. (2017). Twenty-first-century skills and global education roadmaps. *21st Century Skills Development Through Inquiry-Based Learning* (ss. 17-32). Singapore: Springer.

Corbin, J., & Strauss, A. (2008). *Basics of qualitative research techniques and procedures for developing grounded theory (third edition).* Los Angeles, USA: Sage.

Creswell, J. W., & Plano Clark, V. L. (2014). *Karma yöntem araştırmaları tasarımı ve yürütülmesi.* (Çev. Edt. Y. Dede, S. B. Demir). Anakra: Anı Yayıncılık. (Orijinal çalışmanın yayın tarihi 2011)

Çanakçı, O. & Özdemir, A. Ş. (2015). Matematik başarısı ve anne-baba eğitim düzeyi. *İstanbul Aydın Üniversitesi Dergisi, 25,* 19-36.

Çelebi, M. & Çopur K. D. (2019). Öğrencilerin okula yönelik tutumları ile ailenin sosyoekonomik yapısı arasındaki ilişkinin belirlenmesi: Niğde ili örneği. *Uluslararası Toplum Araştırmaları Dergisi,* 13(19), 786-814.

Çelik, Ö. & Aslan-Çelik, M. (2017). Sınıf öğretmenlerinin ve öğretmen adaylarının bir meslek olarak sınıf öğretmenliğine ilişkin metaforik algılarının karşılaştırılması. *Trakya University Journal Of Social Science,* 19(1), 75-91.

Çepni, S., Ayvacı, H. Ş. & Bakırcı, H. (2012). Veli rehber materyalinin yapılandırmacı yaklaşım içinde fen ve teknoloji öğretimine etkileri üzerine bir ön çalışma. *Milli Eğitim,* 41(195), 131-145.

Çermik, H., & Turan, E. (1997). Geleceğin öğretmeni: Filozof sosyal işçi. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi,* 2, 105-107.

Çınkır, Ş. & Nayır, F. (2017). Okul aile işbirliği standartlarına ilişkin veli görüşlerinin incelenmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi,* 32(1), 245-264.

Çiftçi, M. & Bal, P. N. (2015). Ortaokul öğrencilerinin anne-baba katılım düzeyi ile akademik başarıları arasındaki ilişkinin incelenmesi. *International Journal of Human Sciences,* 12(1), 363-384.

Çötük, N. A. (2006). *Sanayi toplumundan bilgi toplumuna geçiş sürecinde eğitim olgusu* (Yayımlanmamış Yüksek Lisans Tezi). Sakarya Üniversitesi Eğitim Bilimleri Enstitüsü, Sakarya.

Dağhan, G., Nuhoğlu Kibar, P., Menzi Çetin, N., Telli, E. & Akkoyunlu, B. (2017). Bilişim teknolojileri öğretmen adaylarının bakış açısından 21. yüzyıl öğrenen ve öğretmen özellikleri. *Eğitim Teknolojisi Kuram ve Uygulama,* 7(2), 215-235.

Daniel, G. R. (2016). Parents' experiences of teacher outreach in the early years of schooling. *Asia Pacific Journal of Education,* 36(4), 559-569.

Darling-Hammond, L., Wise, A. E. & Klein, S. P. (1999). *A license to teach.* San Francisco: CA Jossey-Bass.

Dede, C. (2005). Planning for neomillennial learning styles. *Educause Quarterly,* 28(1), 7-12.

Dede, C. (2010). Comparing frameworks for 21st century skills. J. Bellanca ve R. Brandt (Eds.). *21st Century Skills: Rethinking How Students Learn* (ss. 51-75). Bloomington, IN: Solution Tree Press.

Doyle, S. (2007). Member checking with older women: A framework for negotiating meaning. *Health Care for Women International, 8,* 888-908.

Eren, A. & Tekinarslan, E. (2012). Prospective teachers' metaphors: Teacher, teaching, learning, instructional material, and evaluation concepts. *International Journal of Social Sciences & Education,* 3(2), 435-445.

Eryılmaz, S. & Uluyol, Ç. (2015). 21. Yüzyıl becerileri ışığında FATİH Projesi değerlendirmesi. *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi,* 35(2), 209-229.

Geisinger, K. F. (2016). 21st Century Skills: What are they and how do we assess them?. *Applied Measurement in Education,* 29(4), 245-249.

Gelen, İ. (2017). P21-Program ve öğretimde 21. yüzyıl becerileri çerçeveleri (ABD uygulamaları). *Disiplinlerarası Eğitim Araştırmaları Dergisi,* 1(2),15-29.

Genç, S. Z. (2016). *Eğitim sürecinde aile okul ve toplum.* Ankara: Pegem Akademi.

Griffin, D. ve Galassi, J. P. (2018). Parent perceptions of barriers to academic success in a rural middle school, *Professional School Counseling,* 14(1), 87-100.

Griffin, D. & Steen, S. (2010). School-family-community partnerships: Applying Epstein's theory of the six types of involvement to school counselor practice. *Professional School Counseling,* 13(4).

Gül, G. (2004). Birey toplum eğitim ve öğretmen. *HAYEF Journal of Education,* 1(1).

Günüç, S., Odabaşı, H. F., & Kuzu, A. (2013). 21. yüzyıl öğrenci özelliklerinin öğretmen adayları tarafından tanımlanması: Bir Twitter uygulaması. *Eğitimde Kuram ve Uygulama,* 9(4), 436-455.

Holloway, I. & Wheeler, S. (1996). *Qualitative research for nurses.* Oxford: Blackwell Science Ltd.

Jeynes, W. (2015). A meta-analysis: The relationship between father involvement and student academic achievement, *Urban Education,* 50(4), 387-423.

Johnson, B., & Christensen, L. (2014). *Eğitim Araştırmaları Nicel, Nitel ve Karma Yaklaşımlar* [*Educational Research: Quantitative, Qualitative, and Mixed Approaches]* (4. Baskı). (Ed: S. B. Demir, Çev: H. Çatlıoğlu) Ankara: Eğiten Kitap. . (Orijinal kitabın yayın tarihi 2000)

Karataş, K., Ardıç, T. & Oral, B. (2017). Öğretmenlik mesleğinin yeterlikleri ve geleceği: Metaforik bir analiz. *Electronic Turkish Studies,* 12(33), 291-312.

Kaymakcı, S. (2009). Yeni sosyal bilgiler programı neler getirdi? *Gazi Üniversitesi Gazi Eğitim Fakültesi Dergisi,* 29(5), 1530-1545.

Kemp, C., Goodman, N. D. & Tenenbaum, J. B. (2010). Learning to learn causal models. *Cognitive Science,* 34, 1185-1243.

Koç, E. S. (2014). Sınıf öğretmeni adaylarının öğretmen ve öğretmenlik mesleği kavramlarına ilişkin metaforik algıları. *İnönü Üniversitesi Eğitim Fakültesi Dergisi,* 15(1), 51-72.

Koltay, T. (2011). The media and the literacies: Media literacy, information literacy, digital literacy. *Media, Culture & Society,* 33(2), 211-221.

Kostenius, C. (2011). Picture this-our dream school! Swedish schoolchildren sharing their visions of school, *Childhood,* 18(4), 509-525.

Lei, J. (2009). Digital natives as preservice teachers: What technology preparation is needed?. *Journal of Computing in Teacher Education,* 25(3), 87-97.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: SAGE.

Mahlios, M. & Maxson, M. (1998). Metaphors as structures for elementary and secondary preservice teachers' thinking. *International Journal of Educational Research,* 29(3), 227-240.

Malter, M. A. M. (2011). *The status of professional development in independent schools related to teaching 21st century skills.* (Unpublished Doctorate Thesis). Widener University School of Human Service Professions, USA.

Martínez-de-la-Hidalga, Z., & Villardón-Gallego, L. (2017). Using metaphors to know the conceptions about the teaching profession in initial teacher education. *International Journal of Educational Psychology*, 6(2), 183.

Masini, E. B. (2002). A vision of future studies. *Futures*, 34(3-4), 249-259.

Numanoğlu, G. (1999). Bilgi toplumu-eğitim-yeni kimlikler-II: Bilgi toplumu ve eğitimde yeni kimlikler. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 32(1-2), 341-350.

Oblinger, D. G. & Oblinger, J. L. (2005). Educating the Net Generation. EDUCAUSE: Transforming Education Through Information Technologies. Erişim adresi: https://www.educause.edu/ir/library/PDF/pub7101.PDF (Erişim Tarihi: 04.02.2022).

Ocak, G. & Gündüz, M. (2006). Eğitim fakültesini yeni kazanan öğretmen adaylarının öğretmenlik mesleğine giriş dersini almadan önce ve aldıktan sonra öğretmenlik mesleği hakkındaki metaforlarının karşılaştırılması. *Afyonkarahisar Üniversitesi Sosyal Bilimler Dergisi*, 8(2), 1-18.

Otuz, B., Görkaş-Kayabaşı, B. & Ekici, G. (2018). 2017 Sosyal bilgiler dersi öğretim programının beceri ve değerlerinin anahtar yetkinlikler açısından analizi. *Kuramsal Eğitimbilim Dergisi*, 11(4), 944-972.

Oxford, R. L., Tomlinson, S., Barcelos, A., Harrington, C., Lavine, R. Z., Saleh, A., & Longhini, A. (1998). Clashing metaphors about classroom teachers: Toward a systematic typology for the language teaching field. *System*, 26, 3-50.

Özgan, H. & Aydın, Z. (2010). Okul-Aile İşbirliğine İlişkin Yönetici, Öğretmen ve Veli Görüşleri", *9. Ulusal Sınıf Öğretmenliği Eğitimi Sempozyumu* (20 -22 Mayıs 2010), Elazığ, 2010, s. 802-811.

Pacino, M. A. & Noftle, J. T. (2011). New literacies for global, digital learners. *International Journal of Learning*, 18(1), 477-486.

Park, S. & Holloway S. D. (2017). The effects of school-based parental involvement on academic achievement at the child and elementary school level: A longitudinal study, *The Journal of Educational Research*, 110(1), 1-16.

Patton, M. Q. (2015). Nitel araştırma ve değerlendirme yöntemleri. (Çev. Ed. M. Bütün, ve S. B. Demir). Pegem Akademi.

Pedró, F. (2006). The New Millennium Learners: Challenging our Views on ICT and Learning. OECD-CERI.

Pektaş, M. & Kıldan, A. O. (2012). Farklı branşlardaki öğretmen adaylarının "öğretmen" kavramı ile ilgili geliştirdikleri metaforların karşılaştırılması. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi*, 11(2), 271-287.

Poom-Valickis, K., Oder, T. & Lepik, M. (2012). Teachers' beliefs regarding their professional role: A gardener, lighthouse or circus director?. *Procedia-Social and Behavioral Sciences*, 69, 233-241.

Potts, A., Schlichting, K., Pridgen, A., & Hatch, J. (2010). Understanding new literacies for new times: Pedagogy in action. *International Journal of Learning*, 17(8), 187-194.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-5.

Saban, A., Koçbeker, B. N. & Saban, A. (2006). Öğretmen adaylarının öğretmen kavramına ilişkin algılarının metafor analizi yoluyla incelenmesi. *Kuram ve Uygulamada Eğitim Bilimleri Dergisi*, 6(2), 509-522.

Sarı, M. H. (2016). Okul, öğretmen ve öğrenci. A. Uzunöz (Ed.), *Eğitim Bilimine Giriş*. Ankara: Pegem Akademi. , 341-380.

Sarıbaş, S. & Babadağ, G. (2015). Temel eğitimin temel sorunları. *AJELI-Anatolian Journal of Educational Leadership and Instruction*, 3(1), 18-34.

Serter, N. (1982). Bir devlet görevi olarak eğitim. *In Journal of Social Policy Conferences* (No. 31, ss. 381-394).

Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*(2), 63-75.

Sönmez, V. & Alacapınar, F. (2016). *Örneklendirilmiş bilimsel araştırma metotları.* Ankara: Anı yayıncılık.

Stake, R. E. (1995). *The art of case study research.* Thousand Oaks; Sage Publications

Suto, I. (2013). 21st-century skills: Ancient, ubiquitous, enigmatic? *Research Matters: A Cambridge Assessment Publication*, 15, 2-8.

Tutkun, Ö. F. ve Aksoyalp, Y. (2010). 21. yüzyılda öğretmen yetiştirme eğitim programının boyutları. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 24, 361-370.

Ünal, A., & Ünal, E. (2010). Öğretmen ve öğrencilerin rehber öğretmeni algılamalarına ilişkin bir durum çalışması. *Uluslararası İnsan Bilimleri Dergisi*, 7(2),1-27.

Üzümcü, Ö. & Bay, E. (2018). Eğitimde yeni 21. yüzyıl becerisi: Bilgi işlemsel düşünme. *Uluslararası Türk Kültür Coğrafyasında Sosyal Bilimler Dergisi,* 3(2), 1-16.

Woolfolk, A. (2015). *Eğitim psikolojisi* (Çev. D. Özen). İstanbul: Kaknüs Yayınları.

Yağız, E. (2008). *İlköğretim fen ve teknoloji programındaki düşünme becerileri açısından etkinliklerin incelenmesi* (Yayımlanmamış Yüksek Lisans Tezi). Selçuk Üniversitesi Sosyal bilimler Enstitüsü, Konya.

Yalçın, S. (2018). 21. yüzyıl becerileri ve bu becerilerin ölçülmesinde kullanılan araçlar ve yaklaşımlar. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi*, 51(1), 183-201.

Yeşilyurt, E. (2006). *Öğretmenlerin öğretim araç ve gereçlerini kullanma durumlarını etkileyen faktörler* (Yayımlanmamış Yüksek Lisans Tezi). Fırat Üniversitesi Sosyal Bilimler Enstitüsü, Elazığ.

Yıldırım, M. C. & Dönmez, B. (2008). Yapılandırmacı öğrenme yaklaşımı uygulamalarının sınıf yönetimine etkileri üzerine bir çalışma. *İlköğretim Online*, 7(3), 664-679.

Yılmaz, F., Göçen, S. & Yılmaz, F. (2013). Öğretmen adaylarının öğretmen kavramına ilişkin algıları: Bir metaforik çalışma. *Mersin Üniversitesi Eğitim Fakültesi Dergisi*, 9(1),151-164.

Yin, R. K. (2011). *Qualitative research from start to finish.* New York, NY: The Guilford Press.

Review of Primary School Student's Jurisdiction Regarding Value of Justice, Honesty, Responsibility and Helpfulness According to Kohlberg's Theory of Moral Development*

Research Article

Ismail YASARTURK[1], Ayse Guler KUCUKTURAN[2]

[1]Gazi University, Faculty of Education, Department of Basic Education, Ankara, Turkey ⬛ 0000-0001-5378-4150

[2] Baskent University, Faculty of Education, Department of Educational Science, Ankara, Turkey ⬛ 0000-0002-5716-0078

ARTICLE INFO	ABSTRACT
	Value, is a phenomenon that shows people what is right, good or beauty and ways of achieving these values, in other words it shows how people supposed to live. Moral, is the ability to judge to prefer right or wrong through value. The purpose of this study is to present whether primary school students' jurisdictions differ against dilemmas according to their sex, grade level and school variables. This study was carried out with total of 166 students attending to the 1st and 3 rd grade levels of primary school in Ferizli and Serdivan districts of city of Sakarya. The data were gathered through face-to-face interview method carried out with students. "Value oriented dilemma stories" written and approved by the researcher and the expert were used in the interviews. These stories were fictionalized in a way as to require students to decide against a certain situation. Students' reasoning's towards ethical dilemmas in the stories were categorized according to Kohlberg's Moral Development theory. Quantitative data were collected using students' moral development stages as scores. It was analyzed whether there is a relation between students' moral developments and their values regarding responsibility, justice, honesty and helpfulness according to their grade levels, sex and school variables. Mann Whitney-U and Chi Square tests were used in data processing. According to the results of the research, the social cultural differences of schools showed that values regarding fairness, honesty, responsibility and helpfulness affect the moral development stages and jurisdiction of students.
	Keywords: Kohlberg's Moral Development Theory, Moral Development. Values, Value Education

Introduction

People participate in a common humanity and this participation is generally expected to be broadened from specific people to society and the importance of it is emphasized (Youniss and Yates, 1999). This view is an indication that societies need people who have adopted moral values in order to develop and survive. This need caused the issue to be taken under consideration for years. This need made classic philosophers Aristotle and Confucius, to think deeply about these questions, which are in the core of morality and value, "How do we want our children to be?" and "How can we raise and give education to our children accordingly?" Answers to these questions may change substantially but at the exact center of each, at least in the social level, lays the need for moral members. For this reason, societies need their citizens to be educated from an early age for their positive development (Wolfgang and Berkowitz, 2006). The answers for these questions were sought in the practices included in the education systems. But John Dewey stated that value education is not neutral but is a hidden value education and even though he emphasized that the hidden value curriculum existed in symbols, discipline codes, hierarchy, ceremonies and rituals (Ura, 2009) that lift student's collective identity and value, the value education is existed in curriculum of the whole country under different names. Value concept is referred to as "nurture" in Japan, Korea and European countries, "character education" in USA, and "citizenship education" or "ethic education" in other countries. Although it's referred under different names, it is essentially the same. This difference is originated from the differences in moral psychology concepts like cognitive moral development psychology and conscience (Kochanska, 1991), empathy (Hoffman, 2000), values (Schwartz and Bilsky, 1987) and altruism (Eisenberg and Mussen, 1989). No matter what concept is used, the subject is evaluated within the framework of moral development and is based on theoretical basis. "Moral development" is a process of forming a value system that an individual can use effectively in society (Cam, Cavdar, et al.,2012 p.1211-1222). Theoretically moral development is based on cognitive development (Piaget and Lawrence Kohlberg). Piaget states that moral reasoning is changed gradually and meaningfully beginning from early childhood to adolescence (Gander and Gardiner, 2010). But Kohlberg, unlike Piaget tried to search for answers while asking questions to children on how they will be affected under situations involving moral dilemmas and how they will respond instead of observing children when they are playing. As a result, he states that moral development in individual occurs in a series of six stages and each stage has three levels (Senemoglu, 2001). He accepted that morality is about how well or badly individuals behave to each other (Graham, et al., 2011). Accordingly, morality is a cognitive process that includes making judgments related to good and bad or right and wrong, consciously and reflecting it to behavior accordingly. According to Kohlberg's cognitive-developmental paradigm, the most decisive factor related to morality is the ability of reasoning. Moral judgment is a significant indicator for moral behavior. According to Kohlberg, as people develop, they can reach more mature stages through their social experiences with active structures and meanings (Arnold, 2000, s.365-383). In the process of moral development, children are impressed by the dynamics of the society and the environment they live in. In other words, certainly people form their moral values, by taking reactions of other people towards certain events, as an example (William, 1988, p329). Scientists and operators, stated that Kohlberg's theory lost its influence as an important source of inspiration, is accepted constricted as philosophically, proved to be no explanatory power and rejected by Zeitgeist in education (Krettenauer, 2021). It is stated that, comprehensive unified theory is extremely advantageous for psychology and generally resources are required to be allocated to the development of unified sciences and it is important to think this (Staats, 1981). But, most of the data obtained from the "Defining Issues Test (DIT) "developed by REST, proved that Kohlberg's theory is valid (Cam, et al., 2012).

Kohlberg asserted that, moral development occurs after reasoning processes progress with the cognitive development in children, not with value transfer (Katilmis, 2010; Halstead, 1996).For this reason, Kohlberg, as in the conventions, in moral education instead of teaching certain values, he suggested a program that promotes moral judgment development and in case of a moral dilemma, it is much more important for

children to learn how to discover the truth on their own instead of teaching it to them. (Sahin, 2017). In other words, value education is related to discovery of common values that help build a positive future for all while setting how we apply it to our own personal and collective behavior (Halstead, 1996). In general terms, value education emerges a set of belief and attitude in order to affect people's beliefs, behavior and actions in a positive way as their character and personality develops. In this context, values take place in two forms, both in education theories and in the center of school activities. First, in general it has a great influence on societies' emerging values besides schools and teachers, family, media and peers, children and youngsters. Second, is that schools reflect and embody societies values (Halstead, 1996). In this study it is aimed to present primary school children's value judgment and moral development levels according to school, sex and grade level variables through their comments. The values studied in the research are chosen from root values listed in the primary school education program of Ministry of Education (MEB, 2018).

The Importance of Research

When primary school children's moral value development stages are considered, the planning of value education process will increase effectiveness of the education. Therefore, this study is carried out for determining the relationship between primary school children's moral development stages and values according to different variables. It is thought that data obtained from the study shall contribute to students, teachers, families and researcher who wants to study on this subject. Research findings are expected to be a source of inspiration for new subjects for those who are interested in fields such as values and moral value development stages. This study is valuable for revealing moral reasoning and high-level thinking skills of primary school students, in making critical decisions when exposed to dilemmas. Since this will contribute for researcher how to include value education to his in program. This study when considered in terms of administration, shows that value education is advantageous for school practices, teachers' observations, supervisions and their follow ups and the productivity.

Method

Research Problem

At what level are students' judgment attending to 1st and 3 rd grade primary school on values such as justice, honesty, helpfulness and responsibility.

Research Sub problem

The sub problems of the research are given as follows;

1. Do primary school students' moral development levels regarding value differ in terms of grade level variable?
2. Do primary school students' moral development levels regarding value differ in terms of sex variable?
3. Do primary school students' moral development levels regarding value differ in terms of school variable?

Research Model

In this study, exploratory sequential design of mixed method design was used to determine students' judgment on values according to their moral development levels. In exploratory sequential design used in this study, first qualitative data then quantitative data are collected and analyzed. Priority is on the qualitative data. Quantitative data is used to generalize qualitative findings on specific masses. (Creswell, 2008).

Study Group

In this study, convenience sampling of purposeful sampling method is used to determine if students' judgments differ with environment, grade level and sex variables. In the study, maximum participant is aimed

on a voluntary basis. For this reason, equal number of students are randomly selected among 1st and 3rd grade of primary school located in two different socio-cultural environments. Study group is composed of students attending to 1st and 3rd grade of a primary school. This is the result of the press release of Ministry of Education published on January 13, 2017, the value education is included in primary school program as of this date and for this reason 4th grade students fall outside of this education. The reason for including 1st and 3rd grade students in this study is to examine whether there is a difference between students who have been involved in the process for 2 years and those who have not.

Table 1. Descriptive Statistical Table of the Participants

		Type of School					
		Ferizli		Serdivan		Total	
		n	**%**	**n**	**%**	**n**	**%**
Grade Level	1st Grade	37	25.9	31	21.7	68	47.6
	3rd Grade	39	27.3	36	25.2	75	52.4
	Total	76	53.1	67	46.9	143	100.0
Sex	Girl	42	29.4	43	30.1	85	59.4
	Boy	34	23.8	24	16.8	58	40.6
	Total	76	53.1	67	46.9	143	100.0

When table 1 is analyzed, it is observed that 76 students (53.1%) of participants are from Ferizli district, 67 (46.09%) from Serdivan district; 37 students (25.9%) of the Ferizli district are 1st grade students, 39 (27.3%) of Ferizli district are 3rd grade students; 31 students (21.7%) of Serdivan district are 1st grade, 36 students (25.2 %) are 3rd grade students. Besides, a special attention was given to the number of girls and boys of the participants not to differ from each other. 42 girl (29.4%), 34 boy (238%) from Ferizli , 43 girl (30.1%) 24 boy (16.8%) from Serdivan district, total of 143 students are included in the study.

Data Collection Tool

In this study, in order to determine the moral value judgments of the 1st and 3rd grade students, responsibility, helpfulness, fairness and honesty values from root values included in the science lessons of primary school of Ministry of Education are selected with Random sampling method and the researcher prepared "Dilemma Stories concerning value". Short stories are used in qualitative research for supplying in depth information and applying easily to children of early age. The researcher prepared "Dilemma Stories concerning values" with 108 and 118 words taking children's age and development properties into account. Prepared stories examined by two-child development specialist and put into final form following necessary corrections. 4 stories are used in this study. Each story is prepared focusing on only one value. In each story there is two cases for children to decide. The data of the research were collected in Sakarya province of Turkey in the 2018-2019 academic year.

Data Collection

Data were collected by reading stories to children on one on one. Children are exposed to questions regarding the cause of their decisions related to the case in the story and their answers are recorded. The researcher listed the Transcript answers. 166 students are interviewed; answers are received from 160 students. But, answers to misunderstood questions are excluded from the data set. The study is completed with data acknowledged as valid. Collected data categorized according to the Kohlberg's Moral Development Theory levels and qualitative data are transformed into quantitative data. In the categorization of qualitative data, two independent field specialist's opinions are asked in order to ensure reliability among raters. In the study, Cohen's Kappa Coefficient is used to determine reliability among markers. Accordingly, Cohen's Kappa Coefficient of rater is set to be 0.80.

Data Analysis

The stories organized as a data collection tool should be read to students one on one and students are required to understand the dilemma in the story and state their decisions. Data triangulation is done by converting the collected numeric data through interview. Since the obtained data showed a heterogeneous distribution, non-parametric tests were applied. Therefore, Mann Whitneyy-U and Chi Square distribution tests are used for the distribution and analyze of quantitative data. Analyses are done pursuant to "Fisher's exact test is used when the expected value is found to be less then 5 in the Chi Square test used for qualitative data analyses" statement. In the case of two cells being less then 5, it may only mean it is done in percent and frequency. Level and stages determined according to students' answers are as follows;

"1st Level-1st Stage = 1 score, 1st Level-2nd Stage = 2 score, 2nd Level-1st Stage = 3 score, 2nd Level-2nd Stage = 4 score, 3rd Level-1st Stage = 5 score and 3rd Level-2nd Stage = 6 score"

These scores processed in SPSS 25.0 package software program and analyzed according to sex, grade level and school variables.

Findings

Mann-whitney U Table showing the difference in Students' Judgment scores of values according to school variable

	School	n	Row Mean	Row Total	U	p
Honesty	A Primary School / Ferizli	6	69.69	5296,50	2370,50	,410
	B Primary School / Serdivan	7	74.62	4999,50		
Helpfulness	A Primary School / Ferizli	6	68.84	5232,00	2306,00	,283
	B Primary School / Serdivan	7	75.58	5064,00		
Responsibility	A Primary School / Ferizli	6	61.10	4643,50	1717,50	,000*
	B Primary School / Serdivan	7	84.37	5652,50		
Fairness	A Primary School / Ferizli	6	65,59	4985,00	2059,00	,012*
	B Primary School / Serdivan	7	79.27	5311,00		
Value Total Scores	A Primary School / Ferizli	6	59.88	4550,50	1624,50	,000*
	B Primary School / Serdivan	7	85.75	5745,50		

*(p<0.05)

In table 2, Mann-Whitney U test is given that shows the results whether participant students' moral judgment scores towards dilemma cases in the stories differ according to the school level variable. As a result of the analysis, while there is no significant difference in judgment scores of honesties (p>0,05) and helpfulness (p>0.05) of two schools, the difference in responsibility (U=1717,50, p<0,05) and fairness (U=2059,00, p<.0,05) scores is found to be meaningful. This difference is due to B Primary School students' row mean of judgment scores for responsibility and honesty value is higher than A Primary School students' row mean. Besides, there found to be a meaningful difference between two schools as of total scores (U=1624,50, p<0,05). The reason for the difference is B primary school students' judgment scores of values is greater than the A primary school students' judgment scores.

Table 2. Mann-whitney U Table showing the difference in Students' Judgment scores of values according to sex variable

	Sex	n	Row Mean	Row Total	U	P
Honesty	Girl	85	75.60	6426.00	2159.00	.144
	Boy	58	66.72	3870.00		

Helpfulness	Girl	85	70.85	6022.50	2367.50	.658
	Boy	58	73.68	4273.50		
Responsibility	Girl	85	70.94	6030.00	2375.00	.681
	Boy	58	73.55	4266.00		
Fairness	Girl	85	75.82	6444.50	2140.50	.089
	Boy	58	66.41	3851.50		
Value Total Score	Girl	85	75.24	6395.50	2189.500	.247
	Boy	58	67.25	3900.50		

In table 3, Mann-Whitney U test is given that shows the results whether participant students' moral judgment scores towards dilemma cases in the stories differ according to sex variable. As a result of the analysis, there is no meaningful difference in judgment scores of honesty and fairness and total value judgment scores (p>0,05).

Table 3. Mann-Whitney U Table showing the difference in Students' Judgment scores of values according to Grade Level variable

	Grade Level	n	Row Mean	Row Total	U	p
Honesty	1. grade	68	70.63	4803.00	2457.00	.662
	3. grade	75	73.24	5493.00		
Helpfulness	1. grade	68	65.58	4459.50	2113.50	.051
	3. grade	75	77.82	5836.50		
Responsibility	1. grade	68	71.13	4837.00	2491.00	.791
	3. grade	75	72.79	5459.00		
Fairness	1. grade	68	72.61	4937.50	2508.50	.831
	3. grade	75	71.45	5358.50		
Value Total Score	1. grade	68	65.63	4462.50	2116.50	.073
	3. grade	75	77.78	5833.50		

In table 4, Mann-Whitney U test is given that is used to show the results whether participant students' moral judgment scores towards dilemma cases in the stories differ according to the grade variable. As a result of the analysis, there found to be no meaningful difference in judgment scores of honesty and fairness, responsibility and helpfulness and total judgment scores of values (p>0,05).

Table 4. Chi Square Test showing dilemma preferences in the Stories of honesty according to grade level

		Ebru, should tell her teacher that she didn't do her homework.	Burcu should give her homework as if she did it herself.	Total	Chi Square	p
		Honesty				
Grade Level	1. Grade	60	8	68		
		42.0%	5.6%	47.6%		
	3. Grade	73	2	75	4.539	047*
		51.0%	1.4%	52.4%		
	Total	133	10	143		
		93.0%	7.0%	100.0%		

In table 5, Chi Square test is conducted to determine the primary school 1st and 3 rd grade students of the value of honesty contained in the story. According to the results of the analysis, most of the students decided, as "Ebru should tell her teacher that she didn't do her homework. According to grade level variable,

differences between 1st and 3rd grade students' preferences of value of honesty is significant in favor of 3rd grade students' (X^2=4.539, p<0,05).

Table 5. Chi Square Test showing preferences in the dilemma Stories of helpfulness according to grade level

		Helpfulness				
		Ece, should help children with the Money she saved	Ece should buy the tablet she wanted to buy with the Money she saved.	Total	Chi Square	p
Grade Level	1. Grade	62 434%	6 4.2%	68 47.6%		
	3. Grade	71 49.7%	4 2.8%	75 52.4%	.518	414
Total		133	10	143		

In table 6, chi square test is conducted to determine primary school 1st and 3rd grade students' preferences of the value of helpfulness in the dilemma stories. According to the results of the analysis, most of the students decided as "Ece should help children with the money she saved." But there found to be no significant difference between their value preferences of helpfulness according to grade levels. (x^2=0.518, p>0,05)

Table 6. Chi Square test showing preferences in dilemma stories of responsibility according to grade level variable

		Responsibility		
		Fatih, should play with Tunahan.	Rush home and remit dad what his teacher told him.	Total
Grade Level	1. Grade	3 2.1%	65 45.5%	68 47.6%
	3. Grade	3 2.1%	72 50.3%	75 52.4%
Total		6 4.2%	137 95.8%	143 100.0%

When table 7 is examined, it is observed that chi square test is not performed because the expected value in two ranks according to grade level are less than 5, evaluation is performed with percent and frequency values. Accordingly, it is observed that participant 1st and 3rd grade students gained 45.5% and 50.3% responsibility value.

Table 7. Chi Square test showing preferences in dilemma stories of fairness according to grade level variable

		Fairness				
		Teacher should choose Ahmet, who is new to school	Teacher should choose the old member of the basket team	Total	Chi Square	p
Grade Level	1. grade	58 86.6%	9 13.4%	67 100.0%		
	3rd grade	63 86.3%	10 13.7%	73 100.0%	251	882
Total		121 86.4%	19 13.6%	140 100.0%		

When table 8 examined, it is observed that Chi Square test is performed to determine primary school 1st and 3rd grade student's preferences in dilemma stories of fairness according to grade level variable. Preferences of 3 children were not taken into consideration since they are outside the stated preferences. Therefore, this

analyze is done with data obtained from 140 students. According to the result of the analysis, most students preferred (84.6%) "Teacher should choose Ahmet, who is new to school". But there found to be no significant difference between their value preferences of fairness according to grade levels (x^2=0.251, p>0,05).

Table 8. Chi Square test showing preferences in dilemma stories of fairness according to sex variable

		Fairness				
		Ebru, should tell her teacher that she didn't do her homework	Burcu should give her homework as if she has done it.	Total	Chi Square	p
Sex	Girl	81	4	85		
		56.6%	2.8%	59.4%		
	Boy	52	6	58	1.685	.316
		36.4%	4.2%	40.6%		
Total		133	10	143		
		93.0%	7.0%	100.0%		

When table 9 examined, it is observed that Chi Square test is performed to determine primary school 1st and 3rd grade student's preferences in dilemma stories of fairness according to sex variable. According to the result of the analysis, most students preferred (93.0%) "Ebru should tell her teacher that she didn't do her homework". But there found to be no significant difference between their value preferences of fairness according to sex variable (x^2=1.685, p>0,05).

Table 9. Chi Square test showing preferences in dilemma stories of value of helpfulness according to sex variable

		Helpfulness				
		Ece should help children with the Money she saved	Ece should buy the tablet she most wanted.	Total	Chi Square	p
Sex	Girl	80	5	85		
		55.9%	3.5%	59.4%		
	Boy	53	5	58	.397	527
		37.1%	3.5%	40.6%		
Total		133	10	143		
		93.0%	7.0%	100.0%		

When table 10 examined, it is observed that Chi Square Test is performed to determine girls' and boys' preferences in dilemma stories of helpfulness according to sex variable. According to the results of the analysis, most students preferred (93%) "Ece should help children with the Money she saved". But there found to be no significant difference between their value preferences of helpfulness according to sex variable (x^2 = 0.397, p>0,05).

Table 10. Chi Square Test showing preferences in dilemma stories of value of responsibility according to sex variable

		Responsibility		
		Fatih, should play with Tunahan	Rush home and tell dad what his teacher told.	Total
Sex	Girl	3	82	85
		2.1%	57.3%	59.4%
	Boy	3	55	58
		2.1%	38.5%	40.6%
Total		6	137	143
		4.2%	95.8%	100.0%

When table 11 is examined, it is observed that chi square test is not performed because the expected values in two ranks according to sex variable are less then 5, evaluation is performed with percent and

frequency values. Accordingly, it is observed that participant girls and boys gained 57.3% and 38.5% responsibility value.

Table 11. Chi Square Test showing preferences in dilemma stories of Fairness value according to sex variable

		Teacher Should Choose Ahmet who is new to school	Teacher should choose the old member of the basket team.	Total	Chi Square	p
Fairness						
Sex	Girl	72 86.7%	11 13.3%	83 100.0%		
	Boy	49 86.0%	8 14.0%	57 100.0%	.084	959
Total		121 86.4%	19 13.6%	140 100.0%		

When table 12 examined, it is observed that Chi Square test is performed to determine girls' and boys' preferences in dilemma stories of fairness according to sex variable. Preferences of 3 children were not taken into consideration since they are outside the stated preferences. Therefore, this analyze is done with data obtained from 140 students. According to the result of the analysis, most students preferred (84.6%) "Teacher should choose Ahmet, who is new to school". But there found to be no significant difference between their value preferences of fairness according to sex variable (x^2=0.084, p>0,05).

Table 12. Chi Square Test showing preferences in dilemma stories of Fairness value according to school variable

		Ebru, should tell her teacher that she didn't do her homework	Burcu should give her homework as if she did it.	Total	Chi Square	p
Fairness						
School	Primary school A/ Ferizli	69 48.3%	7 4.9%	76 53.1%		
	Primary school B / Serdivan	64 44.8%	3 2.1%	67 46.9%	1.226	336
Total		133 93.0%	10 7.0%	143 100.0%		

When table 13 examined, it is observed that Chi Square Test is performed to determine primary school 1st and 3 rd grade students' preferences in dilemma stories of fairness according to school variable. According to the results of the analysis, most students preferred (93%) "Ebru should tell her teacher that she didn't do her homework.". But there found to be no significant difference between their value preferences of fairness according to school variable (x^2 = 1.226, p>0,05).

Table 13. Chi Square Test showing preferences in dilemma stories of Helpfulness value according to school variable

		Ece should help children with the Money she saved	Ece should buy the tablet she wanted to buy with the Money she saved.	Total	Chi Square	p
Helpfulness						
School	Primary School A / Ferizli	72 50.3%	4 2.8%	76 53.1%	.746	516
		61	6	67		

Primary School B / Serdivan	42.7%	4.2%	46.9%
Total	133	10	143
	93.0%	7.0%	100.0%

When table 14 examined, it is observed that Chi Square Test is performed to determine primary school 1st and 3 rd grade students' preferences in dilemma stories of helpfulness value according to school variable. According to the results of the analysis, most students preferred (93%) "Ece should help children with the Money she saved" But there found to be no significant difference between their value preferences of fairness according to school variable (x^2= 0.746, p>0,05).

Table 14. Chi Square Test showing preferences in dilemma stories of Responsibility value according to school variable

		Responsibility		Total	Chi Square	p
		Fatih,should play with Tunahan.	Rush home and tell dad what his teacher told him.			
School	Primary SchoolA / Ferizli	1	75	76		
		0.7%	52.4%	53.1%		
	Primary School B / Serdivan	5	62	67	3.347	.099
		3.5%	43.4%	46.9%		
	Total	6	137	143		
		4.2%	95.8%	100.0%		

When table 15 examined, it is observed that Chi Square Test is performed to determine primary school 1st and 3 rd grade students' preferences in dilemma stories of responsibility value according to school variable. According to the results of the analysis, most students preferred (93%) "Rush home and told dad what his teacher told him." But there found to be no significant difference between their value preferences of fairness according to school variable (x^2= 3.347, p>0,05).

Table 15. Chi Square Test showing preferences in dilemma stories of Fairness value according to school variable

		Fairness				
		Teacher should choose Ahmet who is new to school.	Teacher should choose old member of the basket team seçmeli.	Total	Chi Square	p
School	Primary School A / Ferizli	62	12	74		
		83.8%	16.2%	100.0%		
	Primary School B / Serdivan	59	7	66	936	333
		89.4%	10.6%	100.0%		
	Total	121	19	140		
		86.4%	13.6%	100.0%		

When table 16 examined, it is observed that Chi Square test is performed to determine primary school 1st and 3rd grade student's preferences in dilemma stories of fairness value according to grade level variable. Preferences of 3 children were not taken into consideration since they are outside the stated preferences. Therefore, this analyze is done with data obtained from 140 students. According to the result of the analysis, most students preferred (84.6%) "Teacher should choose Ahmet, who is new to school". But there found to be no significant difference between their value preferences of fairness according to grade levels (x^2=0.936, p>0,05).

Results and Discussions

According to Kohlberg, moral is a cognitive structure contains conscious judgment and decision making and acting in this way in certain situations like justice-injustice, right-wrong, good-bad. (Ciftci, 2003 s. 50). Kohlberg based his moral development theory on individual's, from different age groups and socio-cultural levels, to state their reasoning behind their judgments against series of moral dilemma stories that were presented to them. The important thing is not the answer being right or wrong but the reasoning behind individual's decision. Because Kohlberg tried to understand the dilemmas in human mind through stories. (Selcuk, 2008, s. 117) Similarly, in this study, students' judgments were analyzed against dilemmas in the stories involving fairness, honesty, responsibility and helpfulness values according to sex, grade and school variables. Students' judgment statements were scored according to the stages in Kohlberg's Moral Development Theory. As a result, difference between value score of fairness, responsibility and total value score found to be meaningful in the Mann-Whitney-U analyses, according o school variable at a significance level. This difference was in favor of the school B of Serdivan.

This result of the study showed that socio-cultural differences of schools' effect students' moral development levels and judgments, on the values of responsibility, fairness, honesty and helpfulness values. But Kabaday and Aladag (2010) in a study they carried compared private and public-school students and determined that students' moral developments did not differ at different socio-cultural levels. Similarly, Cileli (1981) carried a study with individuals aged between 14-18 in England and determined no difference as of school variable. It is believed that the difference between the results of the study is due to the fact that fairness and responsibility values are related to emotions. Because different family attitudes can lead to personality characteristics in students such as dependency, low sense of responsibility, insecurity, anti-socialization, stubbornness, overly authoritativeness, violation of individual's rights (Kandir ve Alpan, 2008, s. 36). It is believed that the differences emerged in some values at school level are related to socio emotional values effected by school environment and family even though values in the scope of the study listed in the primary school program and given through lessons in each school.

When participant students' reasoning behind their judgments for each value contained in concept of the study is examined; it is observed that there are 34 students in the 1 st level, 21 students in the second level, 13 students of the 3 rd level of the first-grade students; it is observed that there are 34 students in the 1 st level, 24 students in the second level, 17 students in the 3 rd level of the third-grade students. It is observed that students could not reach higher stages at this level (Table 21). Because, according to Kohlberg, there are total of 3 levels in different levels of morality and t 2 stages in each level making a total of 6 stages. First level focuses on materiality and actions based on how they serve needs; second level identification with interpersonal and social expectations is established, finally individuals develop their own moral principals. But the final level may show individual differences as well as cultural (Ciftci, 2003, s. 53). In the chi square tests that were performed to determine participant students' judgments towards dilemma stories concerning value of responsibility, fairness, honesty and helpfulness according to grade level, sex and school variable, there only found to be one difference in the value of honesty according to grade level variable. Similarly, Inci (2009) qualitative data obtained in a study carried out to determine value tendencies of early childhood students according to socio-economic level, age and sex variables through students' point of view, was valuated and over 6 years of age, at a socio-economic level male students honesty value found to be 20%, 8 year of age group students' honesty value at the same socio-economic level found to be 40%. Since the study is a qualitative study, it could not be determined whether the difference is significant. Individual values develop in a social platform. Therefore, it is a product of culture (Uyguc, 2003, p.93). Even though socio-cultural and socio-economic conditions are different, behavioral patterns related to gender roles are given through girls' and boys' socialization process (Dokmen, 2004). However, gender-specific behavior pattern not only determine

individual's chance of participation and forms in the society, it also help to form division of labor and determine responsibilities and affairs for different age levels (Evrim, 1972, p.102). Vatandas (2007), determined in his study titled "Perception of gender and gender roles" that values such as royalty 90%, compassion 89% are female specific, competitiveness 70%, is male specific 52% are male specific, but courage 52% is specific for both genders. These results show that there may be gender differences in value acquisition. Because values are acquired with the influence of parents, friends, important people and events in one's life, experiences, laws, traditions, religion, education and press through a lifespan (Uyguc, 2003, p.93). However according to the data of this study, students' dilemma preferences, total score of girls for the value of honesty is higher than boys, total score of boys for the value of helpfulness is higher than girls, total score of boys for the value of responsibility is higher than girls, total score for girls for the value of fairness is higher than boys. But these differences are not meaningful according to sex variable. When literature is examined, you can meet studies supporting this result. Studies according to sex variable are given below.

In a series of study carried out by Ozkaynak (1982) with children aged 6-11, in Ankara, by Ozgulec with children aged 7-11 again in Ankara, by Cileli(1981), with individuals aged 14-18 , by Tola (2003) with 5th grade students of 200 schools, by Capan (2005) with children aged 3-11, by Gumus (2015) with students of secondary school, by Kabaday and Aladag (2010), by Acuner (2004) determined that gender is not a concept that has an effect on moral development. Walker in a study determined that there is a little difference according to sex variable in moral development levels in adolescent and childhood and that this is not significant (Cagdas and Secer, 2202, p.122-123).

On the other hand, Koca (1987), in a study he carried to determine whether 120 first grade students' moral judgments change according to sex, mother's education level, attendance to a kindergarten or not and number of sibling variables, found that the sex variable showed a significant difference in moral development in favor of girls.

According to the results of this study, while scores of 3rd grade students are higher compared to 1st grade students' score for honesty, helpfulness and responsibility values, 1st grade students' scores are higher compared to 3rd grade students scores for fairness value. However, these are not significant differences according to grade level variable. This reverse difference of grade levels in terms of value is revealed in the critiques of Kohlberg's Model of moral development. Gerolds (1981, s.11) stated that Kohlberg neglect the effect of the concepts, individual beliefs and life experiences on value system. Because moral judgment cannot be done independent of concepts. On the other hand, Kohlberg neglects emotion and claimed cognition and emotion are different perspectives of the same mind and stated in his theory that features of cognitive structure forms the core of the moral development (Kohlberg, 1980, p.40 Akt: Cinemre, 2014). This shows that the reason for the difference between fairness value, responsibility value and total value scores according to school variable. Because fairness value and responsibility value are related to emotions. Gumus (2015) in his study carried with secondary school students, determined that moral development levels do not change in terms of grade level variable. In the literature there is no study on this variable other than this. The fact that 1st grade participant students ages are 6-8 and 3rd grade students' ages are 8-10, shows that grade level variable and age variable are interrelated. Therefore, the result of the study related to grade level is discussed with research done with age variable.

Capan (2005) in a study he compared children aged 3 and 7-11 in the sub level 'Dilemmas" of the "Moral Judgment Scale, determined a significant difference in favor of children aged 7-11. It is thought that the difference is due to the participant children's being in different development stages. However, Acuner (2004) and Cileli (1981) in a study carried with individuals aged between 14-18 determined that age variable does not make a significant difference in terms of moral development. In studies related to value, age variable can only Show significant differences in comparisons of different development levels. The fact that the values are

abstract concepts, contain emotions together with cognitive skills and cannot be considered independently of culture caused differences in obtained data.

REFERENCES

Acuner, H. Y. (2004). *The development of moral judgment and moral education of 14-18 year old youth.* (PhD Thesis). Ondokuz Mayıs University, Samsun.

Arnold, M. L. (2000). Stage, sequence, and sequels: Changing conceptions of morality, post-Kohlberg. *Educational Psychology Review*, *12*(4), 365-383.

Buyukozturk, S. (2002). *Data analysis handbook for social sciences: Statistics. Research Pattern, SPSS Applications and Interpretation*, PegemA Yayıncılık, Ankara.

Creswell, J. W. (2008). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (3rd ed.).* Upper Saddle River, NJ: Pearson Education, Inc.

Cagdas, A. and Secer, S. (2002). *Social and moral development of children and adolescents* (1nd ed.) (R. Arı, Ed.), Nobel Publishing, Ankara: November.

Cam, Z., Seydoogullari, S., Cavdar, D., and Cok, F. (2012). Classical and contemporary approaches for moral development. *Educational Sciences: Theory and Practice*, 12(2), 1222-1225.

Capan, A. S. (2005). *Analysis of moral development of 3-11 year old children acording to Piaget`s moral development theory.* (Master Thesis). Marmara University, Istanbul.

Ciftci, N. (2003). The cognitive-moral developmental theory of Kohlberg: moral and democracy education. *Journal of Value Education*, *1* (1), 43-77.

Cileli, M. (1981). *Evaluation of moral judgment with mental developmental psychology approach in students aged 14-18.* (PhD Thesis). Ankara University.

Cinemre, S. (2014). Some critiques towards Kohlberg's moral development theory. *Journal of Value Education*, 12(28), 69-99.

Dokmen, Z. Y. (2004). *Gender, social psychological explanations*. Sistem Publishing.

Eisenberg, N. and Mussen, P. H. (1989). *The roots of prosocial behaviour in children*. New York, Cambridge University Press.

Evrim, S. (1972), *Introduction to the problem of role as a psychosociological concept in the field of personality.* Istanbul: Istanbul University, Faculty of Literature.

Gander, M. and Gardiner, H. (2010). *Child and adolescent development* (trans. A. Donmez). Ankara: Imge Bookstore.

Gerolds, L. R. (1981). *Kohlberg and moral education: a more comprehensive Outlook.* (Master Thesis). Concordia University.

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., and Ditto, P. H. (2011). Mapping the moral domain. *Journal Of Personality And Social Psychology*, 101(2), 366–385. https://doi.org/10.1037/a0021847

Gumus, E. (2015). *The Level Of Moral Development and Gender Roles of Secondary School Students According to Kohlberg's Theory of Moral Development* (Publication Number. 381648) (Master Thesis). Ataturk University.

Halstead, J. M. (1996). Values and values education in schools. Values in education and education in values, 3-14. (J. M. Halstead & M. J. Taylor, Ed.) *The Falmer Press* (A member of the Taylor & Francis Group) London Washington, D.C.

Hoffman, M. L. (2000) *Empathy and moral development: implications for caring and justice*. New York, Cambridge University Press.

Inci, E. (2009). *Examination of value orientations of students in early childhood period according to socio-economic level, age and gender variables* (Publication Number. 240070) (Master Thesis). Adnan Menderes University.

Kabaday, A. and Aladag, K. S. (2010). Comparison of the moral development of the students attending to different primary schools from different variables. *International Journal of Human Sciences*, *7*(1), 878-898.

Kandir, A. and Alpan, U. Y. (2008). The effects of parental behavior on the socio-emotional development in preschool. *14*(14), 33-38.

Koca, G. (1987). *Some factors influencing the moral jud gements of the seven year age students going to primary school's firot grade* (Publication Number. 1119) (Master Thesis). Ankara University.

Kochanska, G. (1991) *Socialization and temperament in the development of guilt and conscience.* Child Development, 62(6), 1379–1392.

Krettenauer, T. (2021). Moral sciences and the role of education. *Journal of Moral Education*, 50(1), 77-91.

MEB (2018). *Primary Education Social Studies Curriculum and Guide*, Ankara.

Ozgulec, F. (2001). *A research on the moral development of 7-11 years old children* (Publication Number. 104566) (Master Thesis). Ankara University.

Ozkaynak, B. (1982). *The development of moral judgments of children between the ages of six and eleven attending Tegmen Kalmaz Primary School.* (Master Thesis). Hacettepe University, Ankara.

Schwartz, S. H. and Bilsky, W. (1987) Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53(3), 550–562.

Selcuk, Z. (2008). *Education psychology, (15. ed.).* Ankara: Nobel Academic Publishing.

Staats, A. W. (1981). Paradigmatic behaviorism, unified theory, unified theory construction methods, and the Zeitgeist of separatism. *American Psychologist*, 36(3), 239.

Sahin, N. (2017). Nietzsche'nin Sosyolojisi. *Universal Journal Of Theology*, *2*(3), 207-226.

Tasar, M. F. (2006). Probing preservice teachers'understandings of scientific knowledge by using a vignette in conjunctıon with a paper and pencil test. *Eurasia Journal of Mathematics, Science & Technology Education*, *2*(1).

Tola, D. (2003). *Analyse the rlationship between primary 5th grade childrens moral behaviour and parent attitudes*. (Master Thesis). Gazi University, Ankara.

Ura, K. (2009). *A proposal for GNH value education in schools*. Thimphu: Gross National Happiness Commission.

Uyguc, N. (2003). Gender, individual values and career choice. *Journal of Dokuz Eylul University Faculty of Economics and Administrative Sciences.* 18 (1), 93-103.

Vatandas, C. (2007). Perception of gender and gender roles. *Journal of Sociology Conferences*, (35), 29-56.

Williams, T. (1988). Diagnosis and treatment of survivor guilt. *In Human adaptation to extreme stress* (pp. 319-336). Springer, Boston, MA.

Wolfgang A. and Berkowitz M. W. (2006) Moral education and character education: their relationship and roles in citizenship education, *Journal of Moral Education*, 35:4, 495-518, Doi: 10.1080/03057240601012204

Youniss, J. and Yates, M. (1999) Youth service and moral-civic identity: a case for everyday morality. *Educational Psychology Review*, 11(4), 361–376.

Are Those Who Raise Ideal Citizens Ideal Themselves?: A Qualitative Research Based on The Views of Social Studies Teachers Regarding Ideal Citizenship

Research Article

Bahadır KILCAN¹, Tevfik PALAZ², Osman CEPNI³

¹Gazi University, Gazi Faculty of Education, Department of Turkish and Social Sciences Education, Ankara, Turkey 0000-0003-0646-1804

¹Gazi University, Gazi Faculty of Education, Department of Turkish and Social Sciences Education, Ankara, Turkey 0000-0002-1631-531X

³Karabük University, Faculty of Letters, Department of Geography, Karabük, Turkey 0000-0003-3978-8889

ARTICLE INFO	ABSTRACT
Article History: Received: 23.03.2022 Available online: 02.09.2022	This research, which tries to reveal the views of social studies teachers on ideal citizenship and the extent to which they consider themselves as ideal citizen was designed under the basic qualitative research pattern evaluated within the perspective of qualitative research. The participant group of the research consists of 19 social studies teachers working in various provinces of Turkey during the fall semester of the 2021-2022 academic year. The participants were determined by the easily accessible case sampling method. Again, the research data were collected with a semi-structured interview form prepared by the research group and the collected data were analyzed through content analysis and descriptive analysis. The research results show that the study findings are concentrated around three main themes. The first of these themes is "The ideal citizen and its characteristics", the second one is "Am I an ideal citizen?" and the third one is "Supports and obstacles in my ideal citizenship". It has been concluded that participants focused more on the concepts of responsibility, sensitivity, and patriotism in the theme of " The ideal citizen and its characteristics", also those who consider themselves as ideal citizens explained the reason for this situation as being responsible and patriotic, those who see themselves as partly ideal citizens consider themselves insensitive; Finally, factors such as social factors, environmental factors, education, and the profession have a tremendous effect on being an ideal citizen as in the "the support and obstacles in my ideal citizenship" theme. **Keywords:** Citizen, ideal citizen, social studies

Introduction

It is known that various definitions have been made about the concepts of democracy and citizenship, which are the two basic concepts that come to the fore in people's discussions about society, power, and politics, in addition to the currently accepted definitions (Kılınç and Dere, 2013). This situation has caused the concept of citizenship to include a holistic structure that attracts attention from many fields and is tried to be defined in different ways by examining it in line with the views specific to those fields. In democracies, on the other hand, this has made it a priority to raise citizens with special knowledge, ability, and character (Galston, 2001) and this priority has prompted states to raise ideal citizens who actively participate in social processes, obey the laws, vote, avoid destructive and disproportionate acts, and love their homeland.

The concepts of good citizen or ideal citizen have been the subject of public debate for centuries. Studies show that citizens of each country develop a different understanding of "good citizenship" (Denters, Gabriel, & Mariano, 2007; McBeth, Lybecker, & Garner, 2010). Good citizenship as a concept has been debated for centuries, from Aristotle to Alexis de Tocqueville and Walter Bagehot (Walzer, 1989). However, these discussions did not help people to adopt a generally accepted and undisputed "good citizenship" model (Pykett, Saward, & Schaefer, 2010). According to Pyket et al. (2010), "good citizens" are individuals who protect their own rights and freedoms and look after the interests of themselves and their relatives, while respecting the rights and freedoms of others. Engle and Ochoa (1988), on the other hand, see good citizens as individuals who criticize the state and are willing to participate in all kinds of the progress of the state. According to Kymlicka and Wayne (1995), taking an active role in social and political life is much more valuable than pursuing personal pleasures. In addition, solidarity, active participation in social life, and tolerance are the leading principles of the ideal citizen. At this point, Haste (2004) suggested that the ideal citizen expression can be used to understand the concept of the good citizen and emphasized two significant pillars of the ideal citizen. The first of these is the duty and obligation of a citizen to comply with the expectations and rules of society, while the other is related to the relations in the family. According to Ricci (2004), there are two perspectives on ideal citizenship. The first is the person who refers to the legal status of individuals, obeys the laws of the country, and defends and protects his people. The second understanding is that which, as a manifestation of active affiliation, not only complies with the laws of the country but also helps to create laws that support ideal citizenship. Denters et al., (2007) mentioned the places where good citizens are assigned, apart from all these definitions, and they defined the occupations of good citizens in their way. According to them, voluntary associations or non-governmental organizations are known as the primary places where individuals who act with this thought perform their duties regarding good citizenship.

According to Puntaswari and Mukminan (2020), who draw a political and social perspective on good citizenship, citizenship is accepted as developing a set of attitudes towards political objects. The good citizen figure, on the other hand, is the result of various demands of the social and political forces existing in society. The same authors state that the concept of a good citizen is different from the definition of a good person. Aristotle emphasized that the concepts of a good person and a good citizen have different meanings. Ideal citizens are individuals who understand and apply their rights and obligations correctly, have social sensitivity and responsibility, and can solve social problems intelligently. Among the most important elements of good citizenship are to love one's homeland, protect the national values of one's country, and be willing to make sacrifices for the nation and state (Reichert, 2015). Essentially, the idea of being active in society or the political arena is emphasized by different theorists and politicians. Pykett et al. (2010) also state that current political theories attribute different meanings to the concepts of good citizen or ideal citizen, and what is understood from good citizen is different. For example, Republicans ideally view good citizens as having particular virtues and primarily an understanding of the collective good of the community. Liberals see good citizens as individuals who have rights and freedoms and who respect the rights and freedoms of others while

pursuing their own interests. Socialists, on the other hand, see good citizens as citizens who seek and advocate social and economic equality. In this context, some studies show that citizens understand that obeying the law, being loyal to the state administration, and their duty to vote, rather than taking an active role in political decision-making processes, make them good citizens (Manning and Ryan 2004; Sherrod, 2003).

As in all other disciplines, it is known that educators' interest in the concept of citizenship has increased as a result of the globalizing world and what it brings. This interest of educators, which emerged particularly in line with the political socialization process, was efficient in laying the foundations of the field of citizenship education (Rapoport, 2010) and also led to the diversification of definitions of the citizenship concept. Thus, the idea of "shaping the adults of the future in childhood", underlined by Marshall and Bottomore (2006) and stated in the aim of education, is also effective in keeping this interest alive. Because citizenship, if considered in the context of education, means raising individuals who will shape the future of countries. This situation also reveals the importance of schools in achieving the desired quality of citizenship education as an output of the political socialization process (Öntaş and Koç, 2020). The fact that schools, which are educational institutions, are crucial at this point is considered today as an indication that they undertake a great social mission in raising good citizens and encouraging the development of civic values (Galston, 2001; Kaestle, 2000).

In the studies conducted on students' citizenship perceptions based on citizenship, it is stated that people who obey the rules/laws, vote, help others, have feelings of patriotism/loyalty, and respect others are perceived as good citizens (Alazzi, 2012; Martin & Chiodo, 2007). Findings generated by Kennedy (2010) in his study on secondary school students on this subject reveal that students see voting, helping the needy, being patriotic, and taking part in activities that require volunteering as the key elements that make up the concept of citizenship. Again, Martin and Chiodo (2007), in their study comparing the ideal citizen perceptions of 8th and 11th-grade students studying at schools in rural and urban areas, found that ideal citizens are perceived as those who obey the rules and help others. At the same time, the students participating in the previously mentioned study also believe that the way to be good citizens is to help the community and school projects and comply with the law. In addition, Martin's (2008) research findings show that pre-service teachers emphasize civic participation rather than political participation as an answer to the questions asked about the concept of good citizenship, and they put forward two main criteria, which they specify as community participation and compliance with the law.

The raising of good citizens is one of the main missions of the national education of many countries in the world. Likewise, the role of social studies course is very important in bringing this mission to individuals. At this point, the National Council for Social Studies emphasizes that the social studies course is the most effective course in raising democratic and good citizens who interact positively with others (Puntaswari & Mukminan, 2020). In addition, the tradition of social studies as citizenship transmission, which is one of the three traditions of social studies, can be seen as significant in terms of emphasizing the importance of raising good citizens in accordance with the values and norms existing in society, nation, or state. Families, holy places, or non-governmental organizations contribute to the process of being a good citizen (Martin & Chiodo, 2007). However, here, the social studies course, whose aim is to raise good citizens, plays a leading role in the realization of this purpose through educational institutions. Teachers, who are among the main actors with whom individuals interact throughout their education life, also have various professional responsibilities in terms of citizenship education and play a crucial role in gaining the above-mentioned desire to raise good citizens (Kennedy, 2008).

The studies on citizenship are categorized in two main dimensions in the literature (Doğanay, 2009). The first of these categories is the theoretical research of political scientists, and the second is the studies of academics in the field of citizenship education. The number of theoretical studies on the field, especially by

political scientists, is very high (Hahn & Alviar-Martin, 2008). However, as stated above, there are several studies that examine the concept from the perspective of education. When the literature is examined, it is clear that the research made mostly on the citizenship perceptions of students at various educational levels (Bakioğlu & Kurt, 2009; Doğanay, 2009; Yeşilbursa, 2015), the curriculum of citizenship education (Westheimer & Kahne, 2004), active citizenship (Peterson & Knowles, 2009), global citizenship (Palaz, 2021), democratic citizenship (Doğanay, 2010), effective citizenship education practices (Ersoy, 2007), and ideal citizenship (Castro, 2013). However, no research has been found in the literature examining the situation of social studies teachers, who are the instructors of the social studies course, who have the perspective of raising ideal citizens and see themselves as ideal citizen. However, in the general objectives of the social studies curriculum prepared by the Ministry of National Education (2018), it is aimed that students "grow up as citizens of the Republic of Turkey who love their homeland and nation, know and use their rights, fulfill their responsibilities, and have a national consciousness. By focusing on whether social studies teachers, who play a dominant role in raising ideal citizens, see themselves as ideal citizens, the present study was carried out to determine whether the teachers who are believed to raise ideal citizens are ideal citizens as well as their views on ideal citizenship. For this purpose, the opinions of participants regarding the characteristics of the ideal citizen, whether they see themselves as ideal citizens, and what the factors are that support and prevent them from becoming ideal citizens constitute the objectives of the present study.

Methods

Research Model

This research, which tries to reveal the thoughts of social studies teachers about ideal citizenship and their situations of defining themselves as ideal citizens, was carried out under the basic qualitative research design evaluated within the perspective of qualitative research. According to Merriam (2009), this design is concerned with how individuals who present the research data interpret life and how they attribute meaning to it. In this context, based on the idea by researchers that social studies teachers have a responsibility to raise ideal citizens in addition to their other duties and responsibilities, their interpretations of ideal citizenship and how they attribute meanings to ideal citizenship constitute the main reason for designing and conducting the current study in a basic qualitative research design.

Participants

The participant group of the research consists of 19 (12 female and 7 male) social studies teachers working in various provinces of Turkey during the fall semester of the 2021-2022 academic year. The professional seniority of teachers, the types of schools they work in, and the socio-economic levels of the environments where the schools are located vary. The participants were determined by the easily accessible case sampling method. The ease of accessibility here can be explained by the fact that each author has already met some of the teachers in the participant group.

Data Collection Tool

A semi-structured interview form created by the researchers was used to collect data in the study. The questions in the interview form were created with each researcher expressing their ideas about their problem status and sharing within the group for making suggestions, changes, additions, and subtractions, if any, over the Whatsapp group they created. Six questions written by the researchers about the problem status in the related group were later edited by the first researcher in Word format and shared in the group application in which the researchers took part, so the related questions in the interview form were given their final form. Later, the researchers shared the questions they determined with two field experts and a linguistics expert via e-mail and asked them to present their recommendations regarding the questions. In the feedback from the field experts, it was stated that one question in the data collection tool focused on the same thing as another

question, and another question did not directly overlap with the problem situation of the current study. The linguistics expert declared that he did not make any suggestions regarding the questions in the data collection tool. Evaluating the opinions of the field experts, the researchers decided to remove the two questions that the experts recommended to be removed from the data collection tool, in the framework of consensus, and thus, four questions in the data collection tool (*''In your opinion, who is the ideal citizen, what are the main characteristics of the ideal citizen?'', ''Do you see yourself as an ideal citizen, why?'', "What are the situations that encourage you to be an ideal citizen?", and ''What are the situations that make it difficult (prevent) for you to being an ideal citizen?''*) remained.

Data collection

Researchers contacted 21 social studies teachers (12 female and 9 male) working in different provinces of Turkey via telephone. First of all, each teacher was told about the purpose of the research and they were asked to decide a suitable time for the telephone interview if they wanted to participate in the study. The interview hours on the day specified by each participant (they generally preferred evening hours when they did not have classes) were noted by the researchers, and as a result, since the times decided for the interview by the three participants overlapped, they were asked to arrange a time to interview them again, and the interview hours were adjusted so that they did not overlap. Then, interviews were conducted by calling the participants via phone by the third researcher at the interview hours determined by the participants. After the telephone conversations started, the researcher gave brief information about the purpose of the study for the second time. Afterward, they stated to the participants that the conversation on the phone will be recorded, via the voice recording application on the phone, to transcribe and analyze later. They also stated that this would not be done if they did not give permission. Since two male participants did not allow this, they were not included in the study. Interviews with the remaining 19 participants ended in approximately 20 minutes.

Analysis of Data

The analysis of the data obtained from the participants as a result of the phone calls started with the transfer of the data to the computers from the recording program on the researcher's phone. The data transferred to the computers were converted into text in Word format by listening one by one per the first and second researchers (9 people were recorded by the first researcher, 10 people were recorded by the second researcher). Afterwards, the data of the two researchers were brought together and all data were numbered by giving codes (K-1, K-11). Later, the researchers conducted a content analysis by coding the data that became systematic, reaching the themes based on these codings. According to Büyüköztürk, Çakmak, Akgün, Karadeniz, and Demirel (2010), this analysis method is among the most preferred analysis techniques, especially in the field of social sciences. The principal purpose of this analysis is to code a text obtained by following certain principles and rules and to summarize the data in the form of themes/categories based on these codings. In this context, in presenting the themes that emerged after the content analysis and the codes that formed those themes, the data of the participants were used by making exact quotations. The codes previously given to the participants were used in the exact citations.

Results

As a result of the content analysis based on the data obtained from the participants, the results of the study are concentrated around three main themes. The first of these themes is "The ideal citizen and its characteristics", the second one is "Am I an ideal citizen?" and the third one is "Supports and obstacles in my ideal citizenship". As a result of the content analysis carried out following the analysis of the data adopted in the analysis part of the research, the codes reached for the findings and the link that emerged in the direction of these codes are presented under this title of the study by making exact quotations of the participants.

The ideal citizen and its characteristics

As a result of the analysis carried out on the data that emerged in line with the views of the participant group, the opinions on what ideal citizenship is and its characteristics were determined by the participants as "*being responsible*", "*being sensitive, and behaving accordingly*", "*being patriotic and hardworking*", and ''*being equipped with moral and values*''.

One of the most important points expressed by the participants regarding ideal citizenship and its characteristics is the idea that individuals should be responsible. This idea is verbalized with expressions such as "*In my opinion, the ideal citizen is the citizen who primarily fulfills his responsibilities to the state*" (P-17), "*…a citizen who pays his taxes, does not think that the environment he lives in is only himself, but acts knowing that it concerns all humanity, and does not give importance to merit and favors people*" (P- 9), "*…the person who is sensitive to the problems of his country, does not constantly complain and takes action to change things is an ideal citizen*" (P-11), and "*…it is a citizen who puts forward an idea about the development of the country, knows his rights and freedoms and fulfills his responsibilities*" (P-15).

In addition to these thoughts of the participants, who see being responsible as one of the characteristics of an ideal citizen, some participants stated that ideal citizenship and its characteristics are *being sensitive* and *behaving accordingly*. The participants expressed their thoughts as "*…the person who is sensitive to the problems of his country, who does not constantly complain and takes action to change things is an ideal citizen. The ideal citizen should do his/her job well, follow the problems of his country and the world, and seek solutions to solve the problems*" (P-11), ''*In my opinion, the ideal citizen is a citizen who knows his rights and responsibilities and uses them correctly*" (P-4), and "*A person who knows his responsibilities and rights, can take action when necessary to seek the rights of himself and his superiors, and is sensitive to his surroundings, country, and nation.*" (P-8).

In addition, some participants, while sharing their thoughts on the ideal citizen and its characteristics theme, underlined that *being patriotic and hardworking* is seen as an ideal citizen characteristic. These participants grounded their thoughts based on statements such as "*In my opinion, the ideal citizen is someone who fulfills his responsibilities to the state and strives to raise his state to the level of contemporary civilizations*" (P-1), "*…they are people who keep the history, culture, past, and interests of the country above their interests, depend on them, and strive to produce continuously*" (P-2), "*The ideal citizen is the one who looks after the interests of the country rather than his interests, and is in favor of the unity and solidarity of his country*" (P-15), and "*…the one who takes care of the interests of his country and does his job at one's best. Because I think that if everyone fulfilled the requirements of their job in the best possible way, I think that the setbacks would be minimized*" (P-9).

Some of the participants, who stated that they think of the ideal citizen and their characteristics as *moral people equipped with values*, expressed their thoughts as "*The ideal citizens are individuals who have universal values. The ideal citizen obeys the rules set by the state without providing himself with personal benefit*" (P-5), "*…a person who has adopted the values of the society he lives in, has adapted to the culture of the society, and has internalized the values and cultural judgments of the society*" (P-6), and "*The ideal citizen can be defined as individuals who attach sufficient importance to their values and internalize this. It is the one who can boldly come forward without hesitation in a material and moral sense for the sake of its values*" (P-14).

Am I an ideal citizen?

According to the analysis made on the data obtained from the opinions of the participant group of the research, when the status of the participants seeing themselves as an ideal citizen is considered, some participants see themselves as "ideal citizens" and attribute this to "*being responsible*" and "*being conscious, sensitive and patriotic*". Some participants, on the other hand, see themselves as "partially ideal citizens" and state that the cause of this situation is "*being insensitive and having poor behavior*" related to some issues.

One of the important points that the participants expressed as the reason for seeing themselves as ideal citizens is about their thoughts on *being responsible*. These thoughts can be explained by their statements such as "*I see. Because I know and use my rights. I know my duties and I fulfill them. I try to raise well-equipped students by trying to do justice to my work*" (P-4), "*Yes, I see. Because I know my responsibilities, I am sensitive about my rights and freedoms, and I have the will to fight those who engage in activities that disrupt the unity of the nation*" (P-7), and "*…I can see myself as an ideal citizen if I can abide by the rules even when I am alone, thinking that the rules exist for everyone. In addition, following any social innovation and keeping up with this situation can be considered as an indicator of being an ideal citizen*" (P-5).

In addition, another essential point that some participants stated in seeing themselves as ideal citizens is their thoughts about being *conscious, sensitive,* and *patriotic*. This was also seen in their statements such as, "*Yes, I see. Because I am aware of my rights, freedoms, and responsibilities. I am using this awareness correctly. I do all I can do to be useful to my state*" (P-1), "*Yes, I see. Because I am aware of my rights… I love my country and try to raise it above the level of contemporary civilizations by serving as much as I can*" (P-18), and "*Yes, I see myself as an ideal citizen. Because I do not hesitate to seek my rights in matters that I am right*" (P-9).

Some of the participants, on the other hand, attribute the reason for seeing themselves as partly ideal citizens to their *insensitivity to specific issues and the related lack of behavior*. This situation can be explained by their thoughts, such as "*I see myself as a partially ideal citizen. Because I don't see myself enough to take action. I can be insensitive to problems at times. I think this stems from the social problems we are in…*" (P-11), "*I see myself as an ideal citizen partially. I have a life within the framework of a regular citizen, I live on them. However, I may have deficiencies in the dimension of the active-inquiring citizen. I guess I can meet 73 percent of the definition I have drawn mathematically. I have the traditional view of citizenship, but that is not my ideal.*" (K-17), "*Sometimes. Unfortunately, due to the conditions of our country, I cannot always put my conscience forward*" (P-12), "*I strive to be an ideal citizen. In some cases, I have this thought because I do not take the necessary actions as an ideal citizen*" (P-3), and "*To be an ideal citizen, some conditions must be met. I think that my age and also what I have done for my country are not enough for these*" (P-2).

The support and obstacles in my ideal citizenship

According to the analysis made on the data obtained in response to the third and fourth questions of the research, findings regarding the existence of situations that support the participants in being an ideal citizen and prevent them from being ideal citizens have been reached. In this respect, "*desires and wishes for the future*", "*social elements*", and "*the role of the environment, education, and profession*" are shown among the aspects that support the participants to be ideal citizens. On the other hand, "*institutional disruptions and inadequacies*", "*environmental factors*", and "*life experiences*" are among the aspects that prevent the participants from being ideal citizens.

The participants state that "*having wishes and desires for the future*" is among the aspects that support them to be ideal citizens. This was stated by the participants as "*The situation that supports me to be an ideal citizen is the desire to produce and bring something to people*" (P-2), "*The idea of being a noble person has a supporting element in being an ideal citizen*" (P-4), and "*The thought that I should not use any values and judgments in my favor, and that I stick to my plan and not bow to the obstacles that may come up against this plan supports my status as an ideal citizen*" (P-5).

The participants, who justify the aspects that support being ideal citizens as *social elements*, explain this situation with expressions, such as "*Our history, our common goals, and the conditions I grew up in make me act with the awareness of ideal citizenship*" (P-7), "*Being a member of a certain society, having a deep-rooted history, living for a certain ideal under the roof of a state, supports me to be an ideal citizen.*" (P-2), and "*The expectation of the society, our values, and our culture support my ideal citizenship*" (P-6).

Some participants stated that among the factors supporting them to be ideal citizens are the *role of the environment, education, and profession*. This situation was expressed by the participants as "*The education I received supported the concept of the ideal citizen. Another factor is that when I started to gain citizenship awareness, the people around me were conscious of rights, responsibilities, and freedoms and set an example for me in this direction*" (P-1), "*My secondary school, high school life, people around me, my teachers, the education I received, getting to know my students closely, learning about their lives and being able to touch theirs also helps me to be an ideal citizen*" (P-11), and "*I believe that the role that our profession has imposed on us has an impact*" (P-3).

In addition, some participants, while talking about the factors that prevent them from being ideal citizens, explained that institutional failures and inadequacies in Turkey constitute an obstacle to being an ideal citizen. The participants commented on that as follows "*Mistakes that the bureaucracy or institutions accept as true put us in a difficult position to become ideal citizens. The management approach that does not keep up with the developing world, and the people who accept that the old is correct and who feel responsible for the authority and power, who are very attached to the rules, block the way for us who say that something new will bring responsibility as well as its pluses and who are comfortable with the ongoing order*" (P-5), "*The deficiencies and disruptions in the field of law that come before an ideal citizen while seeking his citizenship rights are one of the main reasons that prevent this situation*" (P-3), "*The fact that some institutions and organizations do not provide the necessary care and attention at the point of seeking rights and the slow functioning of the justice system are compelling factors in terms of being an ideal citizen*" (P-8), "*Defects in state institutions and the rights and freedoms guaranteed to me by the state in the constitution prevent me from being taken away by wrong actions.*" (P-15), and "*Deficiencies in the implementation of bureaucratic rules, justice, equality, merit, etc. in the public*" (P-18).

On the other hand, some participants cited *environmental factors* as examples of situations that prevent them from being ideal citizens. This is indicated by their thoughts, such as "*The most difficult thing about this issue is that some people I meet do not have the same awareness as me. They are not aware of the requirements of citizenship, plus they are completely closed to self-development in this regard*" (P-1), "*Constantly complaining about people, trying to change the people around them without trying to change themselves, social problems, economic problems, people's lack of education, traditionalism, future concerns…*" (P-11), and "*As an active and effective citizen, you stand out when you express violations and this prevents you*" (P-6).

The participants, who think that life experiences also create obstacles on the way to ideal citizenship, express their thoughts as "*The unjust and selfish situations I encounter sometimes cause me to question whether one should be an ideal citizen*" (P-7), "*The thing that I find most difficult about being an ideal citizen is being favored by someone*" (P-9), and "*The bullying of non-ideal people I come across prevents me*" (P-12).

Conclusion, Discussion, and Recommendations

Social studies teachers are people who have a mission such as raising ideal citizens in addition to their other duties and responsibilities. In the current study, which examines the views of these people on ideal citizenship and the extent to which they see themselves as ideal citizens , the opinions of the participants are grouped into three clusters which are "The ideal citizen and its characteristics", "Am I an ideal citizen?", and "Supports and obstacles in my ideal citizenship".

When the opinions of the participants about the ideal citizen and their characteristics are considered, the participants evaluate the ideal citizen and its characteristics as "being responsible", "being sensitive and behaving accordingly", "being patriotic and hardworking", and "being noble and equipped with values". In many studies, ideal citizens are perceived as individuals who are responsible, who are patriotic, and who are willing to make sacrifices for their nation and state. Alazzi (2012) concluded in his research that students' perceptions of good citizens are dominated by elements such as responsibility and patriotism. Again, Kennedy (2010) concluded in his study that students' perceptions of good citizens are a multidimensional construct that

includes traditional actions such as being patriotic. Likewise, Puntaswari and Mukminan (2020) consider that among the most predominant elements of good citizenship are to love one's homeland, be conscious of the nation and state, and make sacrifices for the nation and state. On the other hand, it is an expected result that social studies teachers' definition of the ideal citizen and its characteristics are noble and equipped with values. Because the social studies course and its subjects aim to raise individuals who are sensitive to what is happening around them and are equipped with values.

Considering the participants' opinions regarding the situation of seeing themselves as ideal citizens, some participants see themselves as ideal citizens and the reason for this is that they are responsible, conscious, sensitive, and patriotic. It is also expected that the participants' evaluations of ideal citizens and their characteristics and whether they see themselves as ideal citizens are similar. This situation shows us that the ideal citizen definitions and perceptions of the participants are gathered in terms of responsibility, being conscious, and being patriotic. Gürses (2010) emphasizes that the idea of raising responsible and sensitive citizens who are loyal to the current regime, starting from the first years of the Republic, although there are some differences, is crucial in the context of raising ideal citizens. Ersoy (2014) also emphasized that social and moral responsibility and patriotism are the most significant areas to be considered while planning activities in schools regarding ideal citizenship. Similarly, Westheimer and Kahne (2004) emphasize the concept of responsibility and state that ideal citizens are individuals who pay taxes, help people in need, act responsibly towards society and the state, obey the laws, and are equipped with values such as honesty. In addition, Martin and Chiodo (2017), in their study on 11th-grade students, asked the question "What does it mean to be an ideal citizen" and obtained results emphasizing that law-abiding, patriotic, honest individuals who do their military service are ideal citizens. The results of this study also support the results of the current research. On the other hand, O'Brien and Smith (2011) emphasize that pre-service teachers often describe ideal citizenship as obeying the law and being responsible individuals.

In addition, some participants do not see themselves as ideal citizens, and they state that this is due to their insensitivity to specific issues and sometimes not being able to show adequate behavior for ideal citizenship. Participants interpret the institutional failures and inadequacies in the state as an obstacle to being ideal citizens. In addition, the participants generally state that some conditions must be met to be ideal citizens, but these conditions are not met for them. However, some of the participants state that they have taken steps to become an ideal citizen, but these steps cannot be considered sufficient to become an ideal citizen.

When the views of the participants on the factors that support and prevent them from being ideal citizens are examined, the role of social elements, environment, education and profession, and their wishes and desires for the future have a share in the participants' being ideal citizens. On the other hand, institutional failures and inadequacies, environmental factors, and life experiences are among the aspects that prevent the participants from being ideal citizens. In another result, the participants pointed out the role of social elements in being ideal citizens and stated that these elements were supportive factor. Here, the participants especially emphasized Turkish history and their own growing conditions. The fact that Turkish history has a deep-rooted history in terms of its structure and the practices of the Turkish state structure and ideal from past to present to create ideal citizens stand out as supporting factors in the emergence of these views of the participants. On the other hand, some participants stated that the other factors that support being an ideal citizen concept are the environment, education, and the role of the profession. Raising good citizens or ideal citizens, in general, is one of the most important goals of the Turkish National Education System. From the past to the present, these objectives are tried to be brought to individuals through schools, which are the main organs of the education system. Although this aim is valid for almost all countries, the philosophy, content, and meaning of the values to be gained differ between countries (Akyol & Özünal, 2015). According to this, every country tries to raise individuals who are suitable for their own citizenship understanding and policy through education

(Öntaş and Koç, 2020). For example, in the first years of the Republic, the goal of raising good citizens with strong national feelings and belonging, and commitment to new reforms, was seen (Öztürk and Yeşilbursa, 2021). The field of social studies is also a course that forms the basis for raising ideal citizens (Heater, 2007). In conclusion, as stated above, considering that one of the most important goals of the Turkish Education System is to raise ideal citizens, it is understandable that teachers put forward the role of education and profession among the factors that support them to be ideal citizens.

On the other hand, the participants think that institutional failures and inadequacies, environmental factors, and life experiences are the factors that prevent them from being ideal citizens. This is an indication that although the participants desire to be ideal citizens, some disruptions and environmental obstacles or failures in institutions that support ideal citizenship support them in not acting under their ideal citizen role.

This study, which determines the views of the social studies teachers, who play a significant role in raising ideal citizens, on the point of ideal citizenship, was created from the perspective of qualitative research. Based on the results of this research, it can be suggested to eliminate the institutions and processes that make it difficult for individuals to be ideal citizens, and to conduct academic studies based on a quantitative perspective on ideal citizenship for social studies teachers.

REFERENCES

Akyol, Y., & Özünal, S. (2015). Ortaokul Türkçe ders kitaplarının etkin vatandaş yetiştirme açısından incelenmesi. *Dil ve Edebiyat Eğitimi Dergisi*, *14*, 193-211.

Alazzi, K. K. (2012). Students perceptions of good citizenship: A study of middle and high school students in Jordan. *European Journal of Social Sciences*, 31, 223-230.

Bakioglu, A., & Kurt, T. (2009). Öğretmenlerin demokrasi vatandaşlık ve vatanseverlik algılarının nitel olarak incelenmesi. [A qualitative analysis of teachers' perceptions of democracy citizenship and patriotism]. *Marmara Universitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi, 29*, 13-39.

Büyüköztürk, Ş., Kılıç-Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2010). *Bilimsel araştırma yöntemleri.* (7. Baskı). Ankara: Pegem.

Castro, A. J. (2013). What makes a citizen? Critical and multicultural citizenship and preservice teachers' understanding of citizenship skills. *Theory & Research in Social Education*, *41*(2), 219-246.

Denters, B., Gabriel, O. W., & Torcal, M. (2007). *Norms of good citizenship*. In J. W. van Deth, J. R. Montero, & A. Westholm (Eds.), Citizenship and involvement among the populations of European democracies. A comparative analysis (pp. 87-107). London: Routledge.

Doğanay, A. (2009, May 28-30) Öğretmen adaylarının vatandaşlık algısı ve eylemlerinin siyasal toplumsallaşma bağlamında değerlendirilmesi. [The evaluation of prospective teachers' perception and practices of citizenship in the context of political socialization] [Paper prensantation]. *I. Uluslararasi Avrupa Birligi, Demokrasi, Vatandaşlık ve Vatandaşlık Eğitimi Sempozyumu.* Uşak Üniversitesi AB Eğitim, Araştırma ve Uygulama Merkezi [*1st International European Union, Democracy, Citizenship, and Citizenship Education Symposium*. Uşak University EU Education, Research, and Application Center], Uşak, Turkey.

Doğanay, A. (2010). What does democracy mean to 14-year old Turkish children? A comparison with results of the 1999 IEA Civic Education Study. *Research Papers in Education, 25*(1), 51-71.

Engle, S. H. & Ochoa, A. S. (1988). *Education for democratic citizenship: Decision making in the social studies*. New York. Teacher College Press.

Ersoy, A. F. (2007). *Sosyal bilgiler dersinde öğretmenlerin etkili vatandaşlık eğitimi uygulamalarına ilişkin görüşleri* [Yayımlanmış Doktora Tezi]. Eskişehir: Anadolu Üniversitesi.

Ersoy, A. F. (2014). Sosyal bilgiler ogretmen adaylarinin etkin vatandaslik deneyimleri: sivil toplum kuruluslari ornegi. [Social Studies Teacher Candidates' Experiences of Active Citizenship: The Case of Non-Governmental Organizations]. Journal of Ankara University Faculty of Educational Sciences/ *Ankara Universitesi Egitim Bilimleri Fakultesi Dergisi*, *47*(2), 65-88.

Galston, W. A. (2001). Political knowledge, political engagement, and civic education. *Annual Review of Political Science, 4, 217-234.*

Gürses, F. (2010). Kemalizm'in model ders kitabı: Vatandaş için medeni bilgiler. *Akademik Bakış*, *4*(7), 233-249.

Hahn, C. L., & Alviar-Martin, T. (2008). International political socialization research. In L. S. Levstik & C. A. Tyson (Eds.), *Handbook of Research in Social Studies Education* (81-108). Routledge.

Haste, H. (2004). Constructing the citizen. *Political Psychology*, *25*(3), 413-439.

Heater, D. (2007). *Yurttaşlığın Kısa Tarihi* [A Brief History of Citizenship]. (Trans. M. D. Usta). Imge Publications.

Kaestle, C. F. (2000). Toward a political economy of citizenship: Historical perspectives on the purposes of common schools. In L. McDonnell, P. M. Timpane, & R. W. Benjamin (Eds.), *Rediscovering the democratic purposes of education* (47-72). Lawrence, KS: University Press of Kansas.

Kennedy, K. J. (2010). Young citizens in Hong Kong: Obedient, active and patriotic? *Social Psychology of Education*, 13, *111-127.*

Kennedy, K. R. (2008). Rethinking teachers' Professional responsibilities: Towards a civic professionalism. In J. Arthur & I. Davies (Eds.), *Citizenship Education: Vol.2.The Purpose of Citizenship Education* (pp. 256-303). Sage.

Kılınç, E., & Dere, İ. (2013). Lise öğrencilerinin 'iyi vatandaş' kavramı hakkındaki görüşleri. *Sosyal Bilgiler Eğitimi Araştırmaları Dergisi*, *4*(2), 103-124.

Kymlicka, W., & Wayne N. (1995). *Return of the citizen: A survey of recent work on citizenship theory*, Beiner, Ronald (Der.). Theorizing Ctizenship (Albany: SUNY Press), 283-315.

Marshall, T. H. & Bottomore, T. (2006). *Yurttaşlık ve toplumsal sınıflar*. A. Kaya (Çev.), İstanbul: Bilgi Üniversitesi Yayınları.

Manning, B., & Ryan, R. (2004). *Youth and citizenship. A report for NYARS.* Canberra: NYARS.

Martin, L. A. (2008). Elementary and secondary teacher education students' perspectives on citizenship. *Action in Teacher Education*, *30*(3), 54-63.

Martin, L. A., & Chiodo, J. J. (2007). Good citizenship: What students in rural schools have to say about it. *Theory & Research in Social Education*, *35(1)*, *112-134.*

McBeth, M. K., Lybecker, D. L., & Garner, K. A. (2010). The story of good citizenship: Framing public policy in the context of duty-based versus engaged citizenship. *Politics & Policy, 38(1), 1-23.*

Merriam, S. B. (2013). Araştırmanın desenlenmesi ve örneklem seçimi (Çev. S. Turan ve D. Yılmaz), S. Turan (Çev. Ed.), *Nitel araştırma desen ve uygulama için bir rehber*. Ankara. Nobel.

Milli Eğitim Bakanlığı, [MEB], (2018). *Sosyal bilgiler dersi öğretim programı (İlkokul ve Ortaokul 4, 5, 6 ve 7. Sınıflar)*. Ankara: MEB Yayınları.

O'Brien, J. L., & Smith, J. M. (2011). Elementary education students' perceptions of "good" citizenship. *Journal of Social Studies Education Research, 2*(1), 21-36.

Öntaş, T. & Koç, E. S. (2020). Primary school teacher candidates' views of citizenship and ideal citizenship. *International Journal of Education Methodology*, *6*(2), 455-470.

Öztürk, F. & Yeşilbursa, C. C. (2021). The Story of the Ideal Citizen in Turkey: A Narrative Inquiry on the Perspectives of Prospective Social Studies Teachers, Education *and Science*, *46*(207), 285-314.

Palaz, T. (2021). Global citizenship and education: A bibliometric research. *International Journal of Education Technology and Scientific Researches*, *6*(16), 1907-1947.

Peterson, A., & Knowles, C. (2009). Active citizenship: A preliminary study into student teacher understandings. *Educational Research, 51*(1), 39-59.

Puntaswari, N. C., & Mukminan. (2020). Promoting good citizenship in the social studies course at the secondary school in Indonesia. (ICoSSCE 2019), 229–233.

Pykett J., Saward M., & Schaefer A. (2010). Framing the good citizen. *The British Journal of Politics and International Relations*, *12*(4):523-538.

Rapoport, A. (2010). We cannot teach what we don't know: Indiana teachers talk about global citizenship education. *Education, Citizenship and Social Justice*, *5*(3), 179-190.

Reichert, F. (2015). *Students' perceptions of good citizenship: A person-centred approach. Social Psychol Education*, 19, 661-693.

Ricci, D. M. (2004). *Good citizenship in America*. New York: Cambridge University Press.

Sherrod, L. R. (2003). Promoting the development of citizenship in diverse youth. *Political Science and Politics*, *36*(2), 287–292.

Walzer, M. (1989). A critique of philosophical conversation. *Philosophical Forum*, *21*(1), 182-196.

Westheimer, J. & Kahne, J. (2004). What kind of citizen? The politics of educating for democracy. *American Educational Research Journal*, *41*(2), 1-31.

Yeşilbursa, C. C. (2015). Turkish pre-service social studies teachers' perceptions of "good" citizenship. *Educational Research and Reviews*, *10*(5), 634-640.

Problems Encountered in Course Supervision in Turkey: A Meta-Synthesis Study

Research Article

Mehmet OZDOGRU¹

¹*Kütahya Dumlupınar University, Faculty of Education, Department of Special Education, Kütahya, Turkey* 🆔 0000-0002-3853-8389

ARTICLE INFO	ABSTRACT
	In this research, it is aimed to examine the studies that deal with the problems encountered in the course inspections in schools in Turkey with the method of meta-synthesis. This method provides the researcher with the opportunity to evaluate and synthesize the findings of the studies conducted with the qualitative method on the research subject. In meta-synthesis, the findings of the studies produced on a specific subject are brought together and analyzed in depth, synthesized and interpreted. The studies included in the research were reached by scanning the databases of YÖK National Thesis Center, Dergipark, Google Scholar. As a result of the screening, 36 qualitative studies suitable for the research purpose and inclusion criteria were accepted as data sources. The research was carried out by following the meta-synthesis steps developed by Walsh and Downe (2005). As a result of the in-depth analysis and reinterpretation of the data obtained, the main themes related to the problems identified in the research were determined as the problems encountered before the course supervision, the problems encountered during the course supervision, the problems encountered after the course supervision, the problems experienced about the effectiveness of the supervision, and the individual and organizational problems. The problems encountered before the course supervision were divided into three sub-themes: lack of information and guidance, not meeting with the teacher, and planning problems. The problems encountered after the lesson supervision are in two sub-themes, the negative effects of supervision on teachers and the violation of confidentiality, the problems experienced in the effectiveness of supervision are in two sub-themes, the lack of effective supervision and the uncertainty of the purpose, function and standards of the supervision, and the problems originating from the individual and the organization originate from the supervisor. The problems are discussed in three sub-themes: problems originating from teachers and organizational problems. At the end of the research, solution suggestions were made for these problems.

Introduction

Organizations are structures established to achieve certain goals. The effectiveness and efficiency of organizations can be mentioned in proportion to the achievement of these goals (Balcı, 2002). The way to increase effectiveness and efficiency is through control. Therefore, every organization has a control system. In addition, auditing is a necessity in terms of management (Aydın, 2014). It is an important managerial activity within the audit management processes in achieving organizational goals (Güçlü and Koşar, 2018). Thanks to inspection activities, it is ensured that the problems that may be encountered during the process are prevented and the problems encountered are eliminated (Kurum and Çınkır, 2017). Therefore, auditing is the process of checking the conformity of the principles and rules established in line with the predetermined objectives of organizational activities, taking into account the public interest (Bursalıoğlu, 2019). As a result of supervision in organizations, errors and deficiencies in processes are revealed through feedback and feedback (Taymaz, 2013).

The lack of control in organizations causes loneliness, disorder, closure, stagnation in the organization, and eventually the organization loses its power (Kimbrough & Burkett, 1990). The phenomenon of supervision is an extremely important process in terms of educational organizations as in other organizations. In educational organizations, supervision is a systematic control process for the professional development of teachers in order to improve and develop educational processes (Sullivan & Glanz, 2007). The activities carried out within the scope of education supervision are also necessary and important in terms of the effectiveness and efficiency of the education system (Toprakçı and Bulut, 2021). Sergiovanni and Starratt (2007) state that the focus of supervision is to develop teachers' professional competencies. Florence (2005) states that the aim of the supervision activity is to increase the in-class performance of teachers. In addition, the main purpose of the supervision of schools, which is the place where educational activities take place to a large extent and includes the instructional dimension of educational supervision, is to inform the state about the quality and standards of education offered to students (Kambuga & Dadi, 2015). The improvement and improvement of education quality and standards and educational activities are within the scope of the supervision within the education system (Toprakçı and Özerten, 2020). Educational supervision has a great impact on increasing school performance and education quality (AlKutich & Abukari, 2018).

The management process can be listed as decision, planning, organization, communication, influence, coordination and evaluation. Management theories include auditing through evaluation, which is one of the management processes (Başar, 2000). The supervision system, which receives feedback from the education system, is the most important management sub-system that prevents educational organizations from deviating from their goals (Başaran, 2000). According to Taymaz (2011) there are two types of supervision in the supervision of the education system: the supervision of the course and the institution. Course supervision is the observation and evaluation of the work of teachers working in educational institutions in education and training activities. The Ministry of National Education defines the course supervision as "the proficiency of the teacher in the field; preparation and planning, using appropriate teaching methods and techniques, being able to include activities, measurement and evaluation, classroom management and compliance with pedagogical principles, and examining and evaluating the level of students' attainment of the achievements envisaged in the curriculum (MEB, 2022).

The traces of the classical supervision approach are seen in the education supervision in Turkey. In the course inspections, it is seen that the current situation is determined and the evaluation is sufficient, and it is understood that the necessary importance is not given to the activities for improvement and development. Supervision is generally based on control and reporting and does not focus on teachers' professional development. In the modern or contemporary audit approach, an audit approach is dominant, in which the

audit starts with diagnosis, evaluation is made, focuses on correction and development, and professional assistance and human relations are at the forefront (Gökalp, 2010).

In the Turkish education system, lesson supervision was carried out through classroom visits by inspectors and school principals until 2014. With the legislative amendment made in 2014, the duty of course supervision was taken from the inspectors and left to the school principals. With the Ministry of National Education Regulation on Education Inspectors published on March 1, 2022, education inspectors were given the duty of course supervision again.

In recent years, changes in the name of primary education inspector, education inspector, Education inspector, and changes that look like formality also reveal that the changes in education supervision are unplanned and aimless, and that they lack philosophical infrastructure and structural arrangements (Aslanargun & Göksoy, 2013).

It has been revealed by researches that the audit, which has evolved from control to correction and development understanding in the historical process, has some problems related to structure and operation before it can be carried out effectively (Aslanargun and Tarku, 2014; Deniz and Saylık, 2018; Kayıkçı, 2018; Memduhoğlu, 2012; Özan and Nanto, 2018). In the studies conducted on supervision, it has emerged that the expected benefit from educational supervision is not sufficiently provided among teachers, supervisors, school administrators and faculty members, and that supervision practices cannot provide the expected contribution to improving the process. The main reason for this opinion is that the audit approach is not focused on improving the process and some wrong audit practices based on this are shown (Memduhoğlu, 2012).

There are many qualitative researches in which the opinions of many stakeholders are taken about course supervision, which is a process in which the pedagogical development of teachers in their own branch is monitored, the proficiency in using teaching methods and techniques during the course is examined, and it is checked whether the students are given education in accordance with the objectives of the course program. These studies provide rich data on the problems encountered in course inspections. It is important to evaluate and interpret the results of these studies as a whole in order to determine the obstacles to an effective course supervision. It is thought that this study, which aims to combine the meta-synthesis method with the researches that identify the problems encountered in the course supervision in schools in Turkey, will contribute to the production of effective policies regarding the knowledge in the field and course supervision. In the light of this basic justification, the aim of the research is to examine the studies that deal with the problems encountered in the course inspections in Turkey by the method of meta-synthesis.

Methodology

This study, which examines the problems encountered in course inspections in schools in Turkey, was carried out in accordance with the meta-synthesis method. This method provides the researcher with the opportunity to evaluate and synthesize the findings of the studies conducted with the qualitative method on the research subject. In meta-synthesis, the findings of the studies produced on a specific subject are brought together and analyzed in depth, synthesized and interpreted (Au, 2007; Polat & Ay, 2016). The aim is to produce holistic and functional interpretations by bringing together individual studies (Finfgeld, 2003). In this direction, the findings of the studies conducted with the qualitative method examining the problems encountered in the course inspections at schools in Turkey were interpreted and compared in accordance with the meta-synthesis method and evaluated.

Data Collection

There is a need for a certain number of studies on the subject of research in which the meta-synthesis method will be used. The findings of the studies included in the meta-synthesis should be broader and should

support making new inferences (Bondas & Hall, 2007). In order for the researcher to make the synthesis, the results obtained from the themes and sub-themes should be evaluated together and the findings should be classified (Polat & Ay, 2016). The studies to be included in the research were reached by searching the Higher Education Council (YÖK) National Thesis Search Center and ULAKBİM Social Sciences Database. The keywords "course supervision, teacher supervision, school supervision, course inspection" were used in the search. As a result of the scans, 36 studies were included in the study.

Before determining the studies to be included in the research and scanning, the process steps were determined. Although the suggestions about the process steps in the literature about the meta-synthesis method differ, the following process steps were applied by paying attention to these suggestions in the research:

1. Determining the work area

2. Identifying keywords

3. Scanning

4. Determining the criteria for inclusion, evaluating the accessed studies according to the criteria

5. Identifying the studies to be included in the research (Walsh & Downe, 2005).

The following criteria were used to determine the studies included in the study:

1-Containing the opinions of teachers, administrators and inspectors about the problems encountered during course supervision.

2- Having thesis, article with full text

3- Conducting the research in public schools affiliated to the state

4- The research was conducted within the borders of Turkey.

5-It was made between 2009-2021

When the studies were examined in general, 58 studies were identified that met the criteria. After evaluating the aim and method sections of 58 studies, it was decided that 36 studies fully met the criteria. In this study, which was conducted based on the meta-synthesis method, studies that met the inclusion criteria (researches with an asterisk (*) in front of the References section) were coded within the framework of the "Contents of Included Studies" presented in Table 1, in order to make comparisons between studies and to evaluate them systematically and shown in the tables.

When the studies reached were evaluated, it was seen that there were 58 studies that met the criteria. As a result of the examination of the aims and methods of these studies, it was decided that 36 studies fully met the criteria. Information on the studies included in this study, which was carried out in accordance with the meta-synthesis, is shown in Table 1.

Table 1. Information on the studies included in the meta-synthesis

Study code	Author(s) publication year	Post type	The place where the work was done	Participant group of the study	Education level at which the study was conducted

				Teacher	School administrator	Education inspector	Pre-school	Primary education	Secondary education
A1	Dönmez, B.& Demirtaş, Ç. (2018)	Article	Adıyaman	34	8			X	
A2	Koşar, S. & Buran, K. (2019)	Article	Ankara		15			X	X
A3	Dikmen, M., B. & Göksoy, S. (2021)	Article	Düzce		21			X	
A4	Köybaşı, F., Uğurlu C.T., Bakır, A.A & Karakuş B.(2017)	Article	Sivas	20				X	
A5	Demirhan, G., Bulca, Y. , Saçlı, F. & Kangalgil, M. (2014)	Article	Unspecified	16				X	X
A6	Ağaoğlu, S. & Selim, Y. (2020)	Article	Tokat		7			X	
A7	Uçar, R. (2012)	Article	Diyarbakır	15				X	
A8	Gün, N. (2019)	Master's thesis	Aydın	15	10		X		
A9	Koç, İ. (2018)	Master's thesis	Sivas	25				X	
A10	Tunç, Z.(2020)	Master's thesis	Ankara	42				X	
A11	Uzun, N. O.(2019)	Master's thesis	Amasya	12	36		X	X	X
A12	Kazak, E. (2013)	Article	Düzce	12				X	
A13	Şahin S. & Sümer S. (2020)	Article	Mardin		25			X	X
A14	Altun M. Şanlı Ö. &Çetin Tan,Ç. (2015)	Article	Malatya			15			
A15	Şanlı, Ö. , Altun, M. & Tan, Ç. (2015)	Article	Malatya		15	20		X	X
A16	Beytekin, O., F.&Tas,S. (2017)	Article	İzmir		10			X	
A17	Usta, ME & Özyurt, D. (2021).	Article	Unspecified	11	11			X	X
A18	Deniz, Ü. & Saylık, N. (2018).	Article	Siirt	18	12			X	X
A19	Tosun, A., & Ordu, A. (2019).	Article	Uşak		9			X	
A20	Yazıcı, S. (2019)	Master's thesis	Sivas		16				
A21	Yıldırım, M. C. & Demirtaş,H. (2012).	Article	Şanlıurfa	12		12		X	X
A22	Marangoz, S. (2019)	Master's thesis	Tekirdağ	30	10			X	
A23	Gültekin N.(2015)	Master's thesis	Batman		20			X	
A24	Kel, M.,A(2020)	Master's thesis	Sivas	6	12	6		X	X
A25	Yiğit, M. (2019)	Master's thesis	İstanbul		26		X		
A26	Kurt (2009)	Master's thesis	Edirne		44		X		
A27	Balcı, S.(2021)	PhD thesis	Hatay		16			X	
A28	Bayar, T.(2017)	Master's thesis	Burdur	26	13	13		X	
A29	Kaplan, İ. (2019)	PhD thesis	Hatay	40	20	21		X	X
A30	Sabancı, A., & Akcan, N. (2019).	Article	Antalya	5	5			X	
A31	Akbaşlı, S. ve Tunç, Z. (2019).	Article	Amasya	10				X	
A32	Uygur, M. (2020).	Article	Konya	9				X	
A33	Güven, S. & Demir, F. (2021).	Article	Çanakkale		11			X	X
A34	Seçen, A.(2010)	Master's thesis	Ankara	5		8		X	
A35	Aydın,B.,Günbey,M.&Kara,E. (2020).	Article	Giresun		8			X	

| A36 | Güngör A. (2020) | Article | Kilis and Gaziantep | 10 | 10 | | | X | X |

According to Table 1, 4 of the studies included in the study are 2021, 7 of them 2020, 10 of them 2019, 3 of them 2018, 3 of them 2017, 3 of them 2015, 1 of them 2014, 1 of them 2013, It is seen that 2 of them were produced in 2012, 1 in 2010 and 1 in 2009. Based on this data, it can be said that the subject of course supervision was frequently examined by researchers in 2019 and 2020. It is seen that 3 of the studies included in the research are doctoral thesis, 12 of them are master thesis and 21 of them are article type. It is understood that the studies included in the research are from very different cities that can represent the 7 regions of Turkey. In addition, it was seen that the opinions of 373 teachers, 360 school administrators and 83 education inspectors were consulted in these studies. However, it is understood that 2 of these studies were carried out at pre-school education level, 18 at primary education level, 11 at both primary and secondary education levels, and 1 at all three levels. When evaluated in general, it is understood that the research data are very broad and inclusive.

Analysis of Data

The analysis of the study data was carried out in accordance with the thematic synthesis used in the meta-analysis. In the thematic synthesis, it is argued that the findings obtained as a result of the researches made with the qualitative method should be synthesized. In the first stage of the thematic synthesis, the findings of the primary studies are coded as sentences, and then descriptive themes are formed. Finally, descriptive themes are collected and high-level themes are formed (Thomas & Harden, 2008). In the study, firstly, the texts were read according to the line reading technique. Based on the data obtained as a result of manual coding, the process of listing the codes of the problems was carried out.

The codes prepared by the researcher were presented to the field expert specializing in meta-synthesis and they were requested to be recoded. Common themes were created by comparing the codes that emerged as a result of both coding processes. These themes were rearranged after receiving the opinions of two experts. In order to minimize the error during the coding process, the detailed examination of the studies included in the research was continued and the data were saved to the computer. In order to ensure reliability in coding, the coding made by the researcher and two experts was reviewed. Coding reliability was determined by using the formula (Reliability=Number of Overlapping / (Number of Overlaps + Non-Overlapping)) and was found to be 88%. A value of 80% or more is required for the coding to be reliable (Miles & Huberman, 1994). The findings of the studies examined were included in the meta-synthesis as data. The synthesis of the study data started on January 15, 2022 and ended on March 16, 2022. 5 themes and 13 sub-themes were created regarding the problems encountered during course inspections at schools, and these themes are shown in Table 2:

Table 2. The distribution of the themes and sub-themes determined as a result of the analysis of the studies

Theme	Sub-themes
1.Problems encountered before the course inspection	Lack of information and guidance
	Not meeting with the teacher
	Planning issues
2.Problems encountered during course supervision	Failure to comply with audit principles and rules
	Lack of adequate communication and interaction during the audit
	Disruption of the natural classroom environment during the audit
3.Problems encountered after course inspection	Negative effects on teachers
	Violation of privacy
4.Problems with the effectiveness of the audit	Lack of effective supervision
	Uncertainty of the purpose, function and standards of the audit

5.Individual and organizational problems	Problems with the controller
	Problems caused by teachers
	Organizational issues

According to Table 2, it is seen that there are 5 main themes: the problems encountered before the course supervision, the problems encountered during the course supervision, the problems encountered after the course supervision, the problems experienced about the effectiveness of the supervision, and the problems arising from the individual and the organization. In this direction, it was seen that the findings of the studies included in the research were synthesized according to these themes.

Under the first theme of the study, the problems encountered before the course supervision, three sub-themes were determined as lack of information and guidance, not meeting with the teacher and planning problems. Under the theme of the problems encountered during the course supervision, which is the second theme of the study, three sub-themes were determined: non-compliance with the principles and rules of supervision, the lack of sufficient communication and interaction during the supervision process, and the deterioration of the natural classroom environment during the supervision process. Under the third theme of the study, the problems encountered after the course supervision, two sub-themes were determined: negative effects on teachers and violation of confidentiality. Under the theme of the fourth theme of the study, the problems experienced about the effectiveness of course supervision, two sub-themes were determined, namely, the lack of effective supervision and the uncertainty of the purpose, function and standards of supervision. Under the theme of the fifth theme of the study, problems originating from the individual and the organization, three sub-themes were determined: problems arising from the supervisor, problems arising from the teachers and organizational problems.

In order to be able to easily read the studies included in the research, codes such as A1, A2, A3, …….A36 are given. However, in order to understand which participant the direct quotations belong to in which study, abbreviations have been made as follows. Teacher: Ö, Manager: Y, Education Supervisor: M (A6Ö: teacher in the 6th study, A20Y: the administrator in the 20th study)

Validity and Reliability

In order to ensure the validity and reliability of the study, the aim of the study was determined clearly. Criteria were determined and clearly stated in the selection of the studies to be included in the study. The data of the studies included in the study are presented in a clear and understandable way. For reliability in data analysis, separate coding was done by both researchers and experts. Coding reliability was determined by using the formula (Reliability=Number of Overlapping / (Number of Overlaps + Non-Overlapping)) and was found to be 88%. A value of 80% or more is required for the coding to be reliable (Miles & Huberman, 1994) quotations have been made.

<div align="center">

Results

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In this part of the study, the findings obtained as a result of the analysis made to determine the problems encountered in course supervision are included. The study subject determined in the content analysis was examined by associating with 5 themes and 13 sub-themes.

Findings Regarding the Problems Encountered in Course Supervision in the Researches Included in the Study

The sub-themes and codes related to the 5 themes created within the scope of this study are presented in the form of tables and with quotations. The sub-themes and their codes related to the theme of "problems encountered before the course supervision" by analyzing the opinions of the participants of the studies are presented in Table 3. In addition, the views of the participants on this theme are included by directly quoting.

Table 3. *Analysis of the data in the researches included in the study related to the theme of problems encountered before the course supervision*

Theme	Sub-themes	Codes
Problems encountered before the course inspection	Lack of information and guidance	Unannounced supervision, untimely supervision, lack of guidance, lack of guidance, lack of information
	Not meeting with the teacher	Not taking the teacher's opinion, not asking if there is a situation that prevents the supervision
	Planning issues	Random execution, unplanned supervision, high number of teachers, high administrative workload

According to Table 3, under the theme of the problems encountered before the course supervision, three sub-themes were formed: lack of information and guidance, not meeting with the teacher, and planning problems. In the majority of the studies included in the study, it was found that the problems related to course supervision started before the supervision. Regarding the sub-theme of the lack of information and guidance in the course supervision, the participants stated that they were not informed before the course supervision, the supervision was made untimely, and there was no guidance and information before the supervision. Regarding the sub-theme of not meeting with the teacher, the participants stated that there was no exchange of views with the teacher before the inspection, and they were not asked whether there was any obstacle to the inspection. Regarding the planning problems, the participants in the studies included in the meta-synthesis stated that there was no pre-inspection inspection plan, and that the number of teachers working in the school and the administrative workload of the school principal who conducted the inspection made it difficult to plan. Some sample statements of the participants on the subject are given below:

"While the principal can supervise the teachers 2 or 3 times a year in a school with 15 teachers, in schools with 100 teachers, school principals may not be able to attend the classes of all teachers. After all, the other work that the school principal has to do creates some trouble in this regard." (A11Ö)

"The teacher entering the class unprepared, finding the physical environment inadequate and the school principal's unannounced supervision. The teacher's inability to fully use the teaching methods related to the course operation, his inability to dominate the classroom, most importantly, the fact that both the school principal and the teacher know the purpose of this inspection. This must be known. The teacher needs to feel comfortable in the classroom." (A6Ö)

"Our manager comes to the audit absolutely unannounced. In other words, he can come to the classrooms suddenly and visit them for inspection purposes. I cannot say that I am very happy with this situation." (A25Ö)

"It comes unannounced. I don't think it's appropriate to come without notice. It can be stressful, first for me and then for the children, when someone suddenly comes into the classroom and watches you. The presence of a different adult in the classroom inevitably attracts the attention of the children." (A9O)

"Course supervision is not about suddenly entering the classroom. Maybe I was sick that day, you may have a bad memory at that time. Therefore, it is possible to talk to the teacher beforehand and go to the class. The manager doesn't get my opinion. I can say that I am uncomfortable with this situation." (A16Ö)

The sub-themes and their codes related to the theme of "problems encountered during course supervision" by analyzing the opinions of the research participants are presented in Table 4. In addition, the participant's views on this theme are included by quoting directly.

Table 4. Analysis of the data in the researches included in the study related to the theme of problems encountered during course supervision

Theme	Sub-themes	Codes
Problems encountered during course supervision	Failure to comply with audit principles and rules	indication of the teacher's shortcomings in front of the students, behaviors to undermine the teacher's authority, inappropriate entry to the classroom, sitting at the teacher's desk without permission, clear and incomplete search, failure to manage time effectively
	Lack of adequate communication and interaction during the audit	lack of feedback from the student, insufficient interaction with the teacher, insufficient interaction with the student, superior-subordinate relationship
	Disruption of the natural classroom environment during the audit	constructed classroom environment, increased teacher anxiety, increased student anxiety, teacher's feeling of pressure

According to Table 4, three sub-themes were determined under the theme of problems encountered during course supervision: non-compliance with the principles and rules of supervision, lack of adequate communication and interaction during the supervision process, and deterioration of the natural classroom environment during the supervision process. In all of the studies included in the scope of the study, it was found that various problems were experienced during course supervision. Regarding the sub-theme of non-compliance with the principles and rules of supervision during course supervision, the participants stated that the teacher's shortcomings were stated in front of the students, that the teacher's authority was violated, that the classroom was entered without knocking, that the teacher was sitting at the teacher's desk without permission, that clear and incomplete searches came to the fore, and that time could not be used effectively they have done. Regarding the sub-theme of lack of adequate communication and interaction during the inspection, the participants stated that there was no feedback from the student during the inspection, that there was not enough interaction with the teacher and the student, and that the principal and teacher-subordinate relationship prevented effective communication. The participants stated that during the inspection, the classroom environment designed for the deterioration of the natural classroom environment could be encountered, teacher and student anxiety increased, and the teacher could feel pressured. Some *sample statements of the participants on the subject are given below:*

"He focused on whatever the teacher's deficit was, and did not approach the teacher from the point where he needed it. I do not believe that it has much benefit in terms of professional development." (A19O)

"Unfortunately, we do not have a chance to express our views, as more inspectors expressed their opinions and thoughts during the audit. Most of the time, when we express our problems, they are immediately dismissed by giving some responses." (A24Ö)

"Teachers feel uneasy and have fear of supervision while they supervise the lesson. They experience excitement, uneasiness and extreme stress during the audit." (A6Y)

"The teacher continues to have the anxiety that he will criticize himself, that he will be searched for, and that my psychology will deteriorate. The school principal's encouraging words can eliminate them. The teacher's self-confidence comes and the mutual malicious glances disappear." (A32Ö)

"While students can express themselves better under normal conditions, they cannot express themselves fully when they are supervisors." (A5O)

"Teachers feel uneasy and have fear of supervision while they supervise the lesson. They experience excitement, uneasiness and extreme stress during the audit…"(A2Y)

"…only the presence of a third person in the classroom creates an uneasiness on the student and the teacher. This is a negative side of course supervision on the student." (A22Ö)

The sub-themes and their codes related to the theme of "problems encountered after course supervision" by analyzing participant opinions in the research are presented in Table 5. In addition, the participant's views on this theme are included by quoting directly.

Table 5. *Analysis of the data in the researches included in the study related to the theme of problems encountered after the course supervision*

Theme	Sub-themes	Codes
Problems encountered after course inspection	Negative effects on teachers	Loss of motivation, decreased self-confidence
	Violation of privacy	Sharing of data, revealing the identity of the teacher

According to Table 5, two sub-themes were determined under the theme of the problems encountered after the course supervision: negative effects on teachers and violation of confidentiality. In the studies, it was stated that there were some negative effects on the teachers after the course supervision. It was stated by the participants that teachers experienced low motivation and their self-confidence decreased after the inspection was over. The participants in the studies included in the meta-synthesis stated that the inspection data were shared with other people in a way to reveal the identity of the teachers after the inspection regarding the sub-theme of breach of confidentiality. Some sample statements of the participants on the subject are given below:

"He said that there were some shortcomings in my plans, Ms. He also asked me to write longer reports on home visit forms. When this happened, I was sad, my wish was broken. After this inspection, I tried to prepare the documents very meticulously, but I did not work very enthusiastically." (A8O)

"At first, I was very upset when I said the missing and mistakes like scolding, manager. After all, I was a teacher for many years. He criticizes me randomly without knowing his pre-school education. I did not deserve what was said. I felt horrible. His way of speaking also hurt me, to say the east." (A22Ö)

"…the course inspections must have a reward and a sanction. If there is no sanction on the teacher for the situations we see as negative, this time we have a conflict with that teacher in the same school…" (A2Y)

"I think the most important thing is the post-audit. If you ask why, everything positive and negative is discussed. Come on, you are reinforcing the positive ones, what about the negative ones about the teacher's behavior, how will the teacher learn the right behavior from whom?" (A12Ö)

The sub-themes and codes related to the theme of "problems experienced in the effectiveness of the audit" by analyzing the opinions of the research participants are presented in Table 6. In addition, the participant's views on this theme are included by quoting directly.

Table 6. Analysis of the data in the studies included in the study related to the theme of the problems experienced in the effectiveness of the audit.

Theme	Sub-themes	Codes
Problems with the effectiveness of the audit	Lack of effective supervision	Not giving effective feedback, focusing on documents, superficial control, staying in shape, not giving enough importance to the process, being result oriented
	Uncertainty of the purpose, function and standards of the audit	Positive aspects of teachers are not supported, supervision has no sanctioning power, there is no standard among supervisors, there is no criterion, the continuity of supervision is not provided, the teacher is not evaluated in all aspects, the teacher cannot find

	solutions to his professional problems, the priorities in the supervision change frequently, and there is no reward

According to Table 6, two sub-themes were determined under the theme of problems experienced in the effectiveness of the audit, namely, the lack of effective auditing and the uncertainty of the purpose, function and standards of the audit. Regarding the sub-theme of lack of effective supervision in the research, the participants stated that there was no effective feedback, the focus was on documents in the audit, the audit was superficial and remained in the form, and a result-oriented audit was carried out instead of the process. The participants in the studies included in the meta-synthesis focused on the deficiencies related to the uncertainty of the purpose, function and standards of the supervision, and the positive aspects of the teachers were not supported, the supervision did not have a sanctioning power, there was no standard among the supervisors, there was no criterion while evaluating, the supervision could not be ensured, the teachers were not evaluated in all aspects, the supervision was not the teacher's professional They stated that they could not find a solution to their problems, that the priorities in the audit changed frequently and that they were not rewarded. Some sample statements of the participants on the subject are given below:

"I do not think that the inspection made only on the documents is positive. It does not contribute to the teacher. The teacher's class may be excellent and the paperwork may be insufficient. Or his class may be very bad, his papers may be very good. Such an evaluation is far from a positive evaluation of the teacher. The inspector does not notice this situation. It stems from the short-term evaluation problem…" (A4Ö)

"I can't really say that the feedback was done, he wasn't even looking at my file. So it was a bit of a formality. Let friends see the story in shopping." (A19O)

"Unfortunately, we do not have a chance to express our views, as more inspectors expressed their opinions and thoughts during the audit. Most of the time, when we express our problems, they are immediately dismissed by giving some responses." (A6Ö)

The sub-themes and their codes related to the theme of "problems originating from individuals and organizations" by analyzing the opinions of the research participants are presented in Table 7. In addition, the participant's views on this theme are included by quoting directly.

Table 7. *Analysis of the data in the studies included in the study related to the theme of problems originating from the individual and the organization*

Theme	Sub-themes	Codes
Individual and organizational problems	Problems with the controller	Insufficient knowledge about supervision, supervision of the course outside the branch, poor communication skills, not taking into account the conditions of the school and the classroom, not having enough professional experience, not being objective, prejudiced, ideological differences, not having enough time for supervision, not being able to allocate enough time for supervision, not checking
	Problems caused by teachers	Not being open to criticism, perceiving supervision as an intervention to the lesson, negative psychology (fear of supervision, excessive excitement, uneasiness, excessive stress), negative attitude towards supervision, prejudice against supervision mechanism, not being open to change and development, resistance, low belief in supervision
	Organizational issues	Tension in the school climate, damage in bilateral relations, loss of trust in the organization

According to Table 7, three sub-themes were determined under the theme of problems originating from the individual and the organization: problems arising from the supervisor, problems arising from the teachers and organizational problems. In all of the studies included in the study, it was found that various problems originating from individuals and organizations were experienced during course inspections. Regarding the sub-theme of problems arising from the supervisor in the course supervision, the participants in the researches stated that the supervisor did not have sufficient knowledge about supervision, had to supervise different branches outside of his/her branch, had weak communication skills, did not take into account the conditions of the school and class, did not have sufficient professional experience, and could not be objective, They stated that they acted prejudiced, reflected their ideological differences, did not have a good command of the curriculum of the supervised lesson, did not spare enough time for supervision, and did not supervise the lessons of all teachers in the school. Regarding the sub-theme of problems arising from teachers in lesson supervision, the participants stated that teachers are not open to criticism, they perceive supervision as an intervention to the lesson, they experience fear, uneasiness, extreme excitement and stress, they have a negative attitude towards supervision, they are prejudiced, they are not open to change and development, they show resistance, stated that their belief in control was low. The participants in the studies included in the meta-synthesis stated that there was tension in the school climate, the relations within the school were damaged and the trust in the organization decreased about the organizational problems experienced in the course supervision. Some sample statements of the participants on the subject are given below:

"When the school principals come to the lesson for supervision, they do not come in with the teacher, they usually come to the lesson late. The fact that they enter the classroom without knocking on the door gives teachers and students the impression that I am superior to the teacher. Being set up at the teacher's desk, trying to teach the teacher how to teach the lesson, and trying to tense and frighten the teacher in front of him as if he were a child are other behaviors that harm the teacher's authority during the lesson. I will grade you with this behavior of the teacher during the lesson, then I will act as I want, it means against you." (A31Ö)

"As the most ideal environment is desired to be seen in each school, evaluations are made without taking into account the conditions of the schools, the district they are located in, their family structure, the income level of the families and the importance they attach to education." (A9O)

"Unfortunately, school principals are young today, only 2-3 years old. There are those who are principals before they learn to teach. Once you bring those principals into the classroom to supervise, it gives a sense of enanity. I think the person who will supervise should have worked as a teacher for at least 10 years." (A11Ö)

"No, while they generally show more tolerance to the people they feel close to, they try to find their deficiencies especially towards the people they do not feel close to them." (A25Ö)

"Especially the fact that experienced teachers do not accept their shortcomings and are closed to feedback limits the main service of supervision." (A3M)

"School principals do not have sufficient equipment for course supervision as of now." (A18Ö)

"…I saw that our teacher was inadequate at the school where I worked before. But since our teacher was not open to criticism, I had problems in terms of sincerity."(A2Y)

"…There is no control culture in our country. This leads to negative situations. We don't like to be criticized. We see ourselves as our best." (A2O)

Discussion, Conclusion and Recommendations

In this study, it was determined that many problems were encountered as a result of synthesizing the findings of the researches carried out to determine the problems encountered in course supervision in Turkey. These problems are; The problems encountered before the course supervision, the problems encountered

during the course supervision, the problems encountered after the course supervision, the problems experienced about the effectiveness of the supervision, and the problems arising from the individual and the organization were examined in 5 main themes.

In the study, it was concluded that in most of the studies included in the meta-synthesis, various problems were encountered before the course supervision. Before the course supervision, a healthy relationship based on mutual trust and support should be established between the supervisor and the teacher. In this direction, it can be ensured that the teacher and the supervisor meet, share mutual expectations, plan the supervision, give the supervisor confidence in the teacher, and reduce the fear, anxiety and anxieties about the supervision and the supervisor (Aydın, 2014). In this study, within the scope of the problems encountered before the course supervision, the teacher was not informed before the course supervision, the supervision was made untimely, the guidance and information was not given before the supervision, the opinion was not exchanged with the teacher, it was not asked whether there was an obstacle to the supervision, there was no supervision plan, and the number of teachers working in the school. It has been determined that the high administrative workload of the school principal and supervisor makes planning difficult. In his study, Koç (2018) states that course inspections are not carried out by school principals within a plan, and inspections can develop by chance. In Taşdan's (2008) study, it was concluded that course inspections were made randomly. In the study conducted by Zembat and Doğan (2014), it was found that there was no meeting with the teacher before the course supervision, and the supervision time was not planned. Similarly, in Uğurlu's (2012) study, it is stated that half of the school principals who conduct inspections do not conduct a preliminary interview with the teachers before the inspection. In Kaplan and Gülcan (2020) research, it is suggested that interviews with teachers should be made before course supervision. Research findings; It also coincides with the findings in the research of Ergen and Eşiyok (2017) and Taşdan (2008) that the excessive workload of school principals negatively affects supervision. Again, the finding in the research that guidance and information was not provided before the audit is consistent with the findings of Akşit (2006) and Kayıkçı and Kuralay (2011) that guidance is neglected during the audit.

One of the prominent problems regarding course supervision in the studies included in the meta-synthesis in the study is the problems encountered during course supervision. In this context, the participants stated that the teacher's shortcomings were pointed out in front of the students, behaviors that undermined the teacher's authority were experienced, the classroom was entered without knocking, sitting at the teacher's desk without the teacher's permission, clear and incomplete searches were prominent, and time could not be used effectively. However, in the studies included in the study, it was stated that there was no feedback from the student during the inspection, that there was not enough interaction with the teacher and the student, and that the principal and teacher-subordinate relationship prevented effective communication. In addition, the participants stated that during the inspection, the classroom environment, which was designed for the deterioration of the natural classroom environment, could be encountered, teacher and student anxiety increased, and the teacher could feel pressured. Samancioglu et al. (2009) stated in their study that during course supervision, teachers expect their supervisors to be careful in front of students. Similarly, in the study conducted by Doğanay (2006), it was concluded that inspectors sometimes behaved condescendingly towards teachers during course supervision, and Sapancı et al. In Altınok's (2013) study, it was found that supervisors sit at the teacher's desk. The research findings reached; It also coincides with the findings of Can (2004) and Koç (2018)'s research that time is not allocated for auditing and time is not used effectively. The finding in Yalçınkaya's (2002) research that auditing should be done with a more constructive approach coincides with the finding in the research that open and incomplete searches are prominent in audits. In the study conducted by Demir (2009), the finding that students were negatively affected by supervision and that they could not answer the questions asked supports the research findings. In the study of Gökçe and Kantos (2010), it was concluded that supervision creates anxiety in students. In the study conducted by Türkdemir (2013), the

finding that there is an artificial environment in the school and in the classroom during the inspection supports the finding of the research in the research that a classroom environment designed for the deterioration of the natural classroom environment can be encountered during the inspection.

In the study, when the studies included in the meta-synthesis were evaluated in the context of "problems encountered after the course supervision", it was concluded that the supervision had negative effects on the teachers, that the teachers had low motivation, that their self-confidence was reduced, that the confidentiality was violated, that the inspection data were shared with other people in a way that would reveal the identity of the teachers after the inspection. . Türkdemir (2013) concluded that the supervision process negatively affects teachers' motivation and job satisfaction. Memduhoğlu and Zengin (2012) state that teachers should be motivated and job satisfaction should be ensured in supervision. In Yalçınkaya's (2002) study, he states that supervision should be used as an educational tool and that supervisors should display a more constructive approach.

In the study, when the studies included in the scope of meta-synthesis were evaluated in the context of "problems about the effectiveness of the audit", it was found that there was no effective audit, no effective feedback was given, the audit focused on documents, the audit was superficial and remained in form, and a result-oriented audit was made instead of the process. Again, in this context, the purpose, function and standards of supervision are unclear, positive aspects of teachers are not supported, supervision has no sanctioning power, there is no standard among supervisors, there is no criterion when evaluating, continuity in supervision cannot be ensured, teachers are not evaluated in all aspects, supervision cannot produce solutions to teachers' professional problems, and priorities in supervision are not supported. It has been concluded that it changes frequently and there is no reward. Dobbelear, Prins, and Dongen (2012) underline that giving effective feedback in supervision will make a significant contribution to the professional development of the teacher. Memduhoğlu and Taymur's (2010) study supports the research findings, as a result of the fact that the document control is mostly carried out in the course inspections and it does not contribute to the professional development of the teacher. Similarly, in the study conducted by Can (2004), the finding that teachers should be recognized and evaluated in all their aspects is in parallel with the research. The finding in the research that the inspection was made superficially and remained in the form, and that a result-oriented inspection was made instead of the process, is in line with the opinion of Memduhoğlu and Zengin (2012) that process-oriented inspection should be done instead of the result in their study. The finding that school principals' supervision practices differ in Koç's (2018) study and that in Akşit's (2006) study that there are differences in practice in course supervision support the finding in the study that there is no standard among supervisors. The finding in the study that the teachers were not evaluated in all their aspects and the supervision could not produce solutions to the professional problems of the teachers, and the result of the study of Memduhoğlu (2009) that the education supervision in Turkey is control-oriented and does not contribute enough to the teachers in the professional sense, and that there are no studies that strengthen the weak aspects of the teachers in the supervision of the research of Altınok (2013). consistent with their findings.

In the study, when the studies included in the meta-synthesis were evaluated in the context of "problems originating from the individual and organization", it was concluded that there were problems originating from the supervisor, teachers and organizational. Problems arising from the supervisor; the inspector does not have sufficient knowledge about supervision, the inspector has to supervise different branches, his communication skills are weak, he does not take into account the conditions of the school and the classroom, he does not have sufficient professional experience, he is not objective, he acts prejudiced, reflects his ideological difference, does not have a command of the program of the supervised course, it was seen that they did not spare enough time for supervision and all teachers in the school did not supervise their lessons. In the studies that were included in the scope of meta-synthesis regarding the problems arising from the teachers in the course

supervision, it was stated that the teachers were not open to criticism, they perceived supervision as an intervention to the lesson, they experienced fear, uneasiness, extreme excitement and stress, had a negative attitude towards supervision, were prejudiced, were not open to change and development, It was stated that they showed resistance and their belief in supervision was low. In addition, it has been concluded in the studies that there is tension in the school climate, the relations within the school are damaged and the trust in the organization decreases in relation to the organizational problems experienced in the course In the study conducted by Tonbul and Baysülen (2017), it is stated that there may be problems in the competencies of school principals in course supervision, and that school principals should be developed in supervision. Similarly, Koç (2018) stated in his research that the knowledge and skills of school principals about supervision are low. In his study, Onuma (2015) states that principals do not have the necessary knowledge and skills regarding course supervision. Demir (2009), on the other hand, states in his study that the difference between the branch of the supervisor and the teacher causes a lack of equipment. In the study of Demirtaş and Akarsu (2016), it was reported that school principals' lack of competence in all branches is among the negative aspects of course supervision by school principals.

The finding in the research that the supervisor's communication skills are weak supports the finding in Aksu and Mulla's (2009) study that teachers are not satisfied with the human relations dimension during the supervision process. Samancioglu et al. (2009), on the other hand, emphasize the importance of good communication by supervisors. Bige (2014) states in his study that there should be a strong communication between the supervisor and the teacher. In the study conducted by Özmen and Batmaz (2006), it was stated that the person who supervises the course should have empathy skills and features that can use communication well. Another problem encountered in course supervision in the meta-analyzed studies is that the supervisors do not take into account the conditions of the school and the classroom. Gelmez (2011) similarly states that the inspections carried out by the inspectors who do not know the school and environmental conditions are incomplete. Another important finding obtained from the studies is the finding that the inspectors are not objective, act with prejudice and reflect their ideological differences.

The research findings reached; the finding in Uçar's (2012) study that the inspectors do not act objectively supports the findings of Ömür (2005) that the inspectors do not act fairly. In Dağlı's (2000) study, the teachers who supervised the course stated that the supervisors were less objective. Aydın (2014) underlines that objectivity and being objective should be given importance at every stage of the audit. In this way, he states that the teacher, who sees that he is evaluated objectively, will develop himself professionally by giving more importance to supervision, and as a result, the educational processes will develop in a good way. Koçak, Koçak and Günal (2009) found in their studies that the inspectors who supervise the course do not have control over the curriculum. In another study, Köse (2017) concluded that school principals do not have a good command of the curriculum. The findings of both studies support the finding that the supervisor in the research does not have a command of the curriculum of the supervised course. The finding in Türkdemir's (2013) study that there are problems arising from the way teachers understand supervision supports the findings in the research that teachers are not open to criticism and that they perceive supervision as an intervention to the lesson. Balcı (1987) draws attention to the problem of the teacher's self-defense and rejection of the supervisor's diagnosis during supervision.

In the studies included in the meta-synthesis, it was found that there was tension in the school climate about the organizational problems experienced in the course supervision, the relations within the school were damaged and the trust in the organization decreased. Türkdemir (2013) concluded in his study that stress and tension are experienced in the school atmosphere during the supervision, and that there are negativities in power relations. Supervision can cause stress and demoralization to everyone working in the institution. Negative effects of supervision are also seen in schools (Özmen & Özdemir, 2012). Şanlı, Altun, and Tan (2015)

state in their studies that the effectiveness of supervision cannot be achieved in an institution where informal relations between teachers and school principals are experienced. Memduhoğlu and Zengin (2012) draw attention to the importance of instructional leadership and guidance in supervision, apart from examination and investigation, and the importance of motivating teachers and ensuring job satisfaction in supervision.

As a result, in this study, which examines the problems encountered in course supervision in schools in Turkey, it is seen that many problems related to course supervision are encountered. It is understood that these problems start from the lack of work to be done before the course supervision, continue with the addition of new problems during the course supervision, and finally continue to exist after the supervision. In addition, it is noteworthy that the majority of the problems are related to the person performing the audit and the purpose of contemporary auditing is not realized. However, it is seen that teachers' wrong perspectives towards supervision emerge as a problem in the course supervision process. The following suggestions were made in order to solve the problems encountered in the course inspections identified in the research and to carry out an effective inspection:

Recommendations for practitioners

1-The aim of improving education and training should be reconsidered in the course supervision, and the professional development of the teacher should be aimed.

2-Guidance work should not be neglected during the course supervision process, necessary information should be given to the teachers.

3-Both supervisors and teachers should be made aware of the realization of supervision in mutual respect and understanding and within the framework of human values.

4-Maximum importance should be given to objectivity, objectivity and impartiality at every stage of the audit process, and necessary sanctions should be taken in case of violation of this situation.

5-In order for school principals to conduct course supervision more effectively, practice-oriented trainings should be organized.

Recommendations for policy makers

1-School principal candidates should be required to do postgraduate education in the field of educational administration and supervision.

2-School principals should be trained in course supervision in the process of starting to become a manager.

3-Lesson inspections should not be limited to course observations, but multiple data sources should be used.

4-It should be ensured that the evaluations made and the decisions taken as a result of the audit are based on data.

5-In order for an effective course supervision to take place in Turkey, an understanding of supervision should be dominant, in which supervision starts with diagnosis, evaluation is made, focuses on correction and development, professional assistance and human relations are at the forefront.

REFERENCES

*Ağaoğlu, S., & Selim, Y. (2020). Okul müdürlerinin okul denetim sorumlulukları. *Sosyal Bilimler Araştırmaları Dergisi, 15*(1) , 219-226.

*Akbaşlı, S., & Tunç, Z. (2019). İlkokul öğretmenlerinin müdürlerin ders denetimine ilişkin görüşlerinin değerlendirilmesi. *Erzincan Üniversitesi Eğitim Fakültesi Dergisi, 21*(3) , 75-92.

Akşit, F. (2006). Performans değerlendirmeye ilişkin öğretmen görüşleri: Bigadiç ilköğretim öğretmenleri örneği. *Gaziosmanpaşa Üniversitesi Sosyal Bilimler Araştırmaları Dergisi, 1*(2), 76-101.

AlKutich, M., & Abukari, A. (2018). Examining the benefit of school inspection on teaching and learning: A case study of Dubai private schools. *Journal of Education and Practice, 9*(5), 37-48.

Altınok, F. (2013). *İlkokul ve ortaokullarda yapılan sınıf içi denetim etkinliklerinin klinik denetim modeli açısından incelenmesi.* (Yayımlanmamış yüksek lisans tezi), Akdeniz Üniversitesi Eğitim Bilimleri Enstitüsü, Antalya.

*Altun, M., Şanlı, Ö., & Tan, Ç. (2015). Maarif müfettişlerin, okul müdürlerinin denetmenlik görevleri hakkındaki görüşlerinin incelenmesi. *Turkish Studies, 10*(3),79-96.

Aslanargun, E., & Göksoy, S. (2013). Öğretmen denetimini kim yapmalıdır? *Uşak Üniversitesi Sosyal Bilimler Dergisi, (Özel sayı)*, 98-121.

Aslanargun, E., & Tarku, E. (2014). Öğretmenlerin mesleki denetim ve rehberlik konusunda müfettişlerden beklentileri. *Kuram ve Uygulamada Eğitim Bilimleri, 20*(3) , 281-306.

Au, W. (2007). High-stakestesting and curricular control: A qualitative meta-synthesis. *Educational Researcher, 36*, 258-267.

*Aydın, B. Günbey, M., & Kara, E. (2020). İlk defa görevlendirilen okul müdürlerinin karşılaştıkları sorunlar. *Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 20*(2), 1194-1205.

Aydın, M. (2014). *Çağdaş eğitim denetimi*. Ankara: Gazi.

Balcı, A. (1987). Klinik teftiş, *Eğitim Bilimleri Dergisi, 20*(1), 29-34.

Balcı, A. (2002). *Etkili okul*. Ankara: Pegem A.

*Balcı, S.(2021) *Okul müdürlerinin sınıf içi öğretimin iyileştirilmesine yönelik etkili geri bildirim verme kapasitelerini geliştirme.* (Doktora Tezi), Gaziantep Üniversitesi Eğitim Bilimleri Enstitüsü, Gaziantep.

Başar, H. (2000). *Eğitim denetçisi*. Ankara: Pegem Yayıncılık.

Başaran, İ. E. (2000). *Eğitim yönetimi: Nitelikli okul*. Ankara: Feryal Matbaası.

*Bayar, T. (2017). *Maarif müfettişlerinin sınıflarda uyguladığı rehberlik ve denetim uygulamalarının kaldırılmasına ilişkin öğretmen okul müdür ve maarif müfettişlerinin görüşleri.* (Yayımlanmamış Yüksek Lisans Tezi), Mehmet Akif Ersoy Üniversitesi, Eğitim Bilimler Enstitüsü, Burdur.

*Beytekin, O.F., & Taş, Ş. (2017) Ortaokul müdürlerinin öğretimsel denetime ilişkin görüşlerinin incelenmesi. *Turkish Studies,12*(33), 115-128.

Bige, E. F. (2014). *İlkokul müdürlerinin ders denetimleri ile ilgili öğretmen görüşleri.* (Yayınlanmamış yüksek lisans tezi), Adnan Menderes Üniversitesi, Sosyal Bilimler Enstitüsü, Aydın.

Bondas, T., & Hall, O.C. (2007). A decade of meta synthesis research in health sciences: A meta-method study. *International Journal of Qualitative Studies on Health and Well-being, 2*, 101-113.

Bursalıoğlu, Z. (2019). *Okul yönetiminde yeni yapı ve davranış.* Ankara: Pegem Akademi.

Can, N. (2004). İlköğretim öğretmenlerinin denetimi ve sorunları. *Milli Eğitim Dergisi, 161*, 112-122.

Dağlı, A. (2000). İlköğretim öğretmenlerinin algılarına göre ilköğretim müdürlerinin etkili müdürlük davranışları. *Kuram ve Uygulamada Eğitim Yönetimi, 23*, 431-442.

Demir, M. (2009). *İlköğretim müfettişlerinin ders teftişlerinin öğretmenler tarafından değerlendirilmesi,* (Yayımlanmamış Yüksek Lisans Tezi), Yeditepe Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

*Demirhan, G., Bulca, Y. , Saçlı, F., & Kangalgil, M. (2014). Beden eğitimi öğretmenlerinin uygulamada karşılaştıkları sorunlar ve çözüm önerileri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 29*(29-2), 57-68.

Demirtaş, H., & Akarsu, M. (2016). Öğretmen teftişini müfettiş yerine okul müdürünün yapmasına ilişkin öğretmen görüşleri. *İnönü Üniversitesi Eğitim Fakültesi Dergisi, 17*(2), 69-93.

Deniz, Ü., & Saylık, N. (2018). Okul müdürleri ve öğretmenlerin perspektifinden öğretimde denetim problemi. *Uluslararası Liderlik Çalışmaları Dergisi: Kuram ve Uygulama, 1*(1), 67-80.

*Dikmen, M.B., & Göksoy, S. (2021). Ortaokul müdürlerinin yürüttükleri ders denetimi uygulamalarında karşılaştıkları sorunlar ve çözüm önerileri. *Ekev Akademi Dergisi,* (86), 351-384.

Dobbelaer, M. J., Prins, F. J., & Van Dongen, D. (2013). The impact of feedback training for inspectors. *European Journal of Training and Development, 37*(1), 86-104.

*Dönmez, B., & Demirtaş, Ç. (2018). Okul müdürlerinin ders denetimi görevlerine ilişkin okul müdürleri ve öğretmenlerin görüşleri (Adıyaman ili örneği). *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 10*(29), 454-478.

Ergen, H., & Eşiyok, İ. (2017). Okul müdürlerinin ders denetimi yapmalarına ilişkin öğretmen görüşleri. *Çağdaş Yönetim Bilimleri Dergisi, 3*(1), 2-19.

Finfgeld, D. L. (2003). Meta-synthesis: The state of the art-so far. *Qualitative health research, 13*(7), 893- 904.

Florence, G. W. (2005). *Teacher supervision methods in Virginia.* (Doctoral dissertation), Virginia Commonwealth University, Richmond, Virginia.

Gelmez, Ş. (2011). *İlköğretim okullarında okul müdürlerinin yaptığı denetimin öğretmenlerin mesleki gelişim ve yeterliliklerine etkisi.* (Yayınlanmamış yüksek lisans tezi), Maltepe Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.

Gökalp, S. (2010). *İlköğretim müfettişlerinin öğretmen teftişlerindeki denetim görevlerini yerine getirme derecelerine ilişkin ilköğretim okullarında görev yapan öğretmenlerin algılarının incelenmesi.* (Yayınlanmamış yüksek lisans tezi) Mersin Üniversitesi Sosyal Bilimler Enstitüsü, Mersin.

Gökçe, A. T., & Kantos, Z. E. (2010). *İlköğretim okulu öğrencilerinin algılarına göre müfettişler.* [Sözlü bildiri]. II. Uluslararası Katılımlı Eğitim Denetimi Kongresi, Kütahya.

Güçlü, N., & Koşar, S. (2018). *Eğitim yönetiminde liderlik: Teori, araştırma ve uygulama,* (Edt. Nezahat Güçlü, Serkan Koşar), Ankara: Pegem Akademi

*Gültekin, N. (2015). *Yöneticilerin denetim rollerine ilişkin ilkokul ve ortaokul müdürlerinin görüşleri (Batman İli Örneği).* (Yüksek lisans tezi). Zirve Üniversitesi, Sosyal Bilimler Enstitüsü, Gaziantep.

*Gün, N. (2019). *Okul öncesi öğretmenlerinin ders denetim sorunları.* (Yüksek Lisans Tezi), Aydın Adnan Menderes Üniversitesi, Sosyal Bilimler Enstitüsü, Aydın.

*Güngör A. (2020). *Din kültürü ve ahlak bilgisi öğretmenlerinin okul müdürlerince denetimine ilişkin tarafların görüşlerinin değerlendirilmesi (Kilis-Gaziantep Örneği).* (Yüksek lisans tezi), Erciyes Üniversitesi, Sosyal Bilimler Enstitüsü, Kayseri.

*Güven, S., & Demir, F. (2021). Okul müdürlerinin denetmenlik görevleri hakkındaki görüşlerinin incelenmesi. *Türk Akademik Yayınlar Dergisi, 5*(2), 253-273.

Kambuga, Y., & Dadi, H. (2015). School inspection in Tanzania as a motor for education quality: challenges and possible way forward. *Review of Knowledge Economy, 2*(1), 1-13.

*Kaplan, İ. (2019). *Öğretmenlerin sürekli mesleki gelişimini destekleyen denetim modeli.* (Doktora Tezi), Gazi Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.

Kaplan, İ., & Gürkan Gülcan, M. (2020). Öğretmen kariyer basamaklarının oluşturulmasına ilişkin görüşlerin incelenmesi: karma yöntem araştırması. *Gazi Eğitim Bilimleri Dergisi, 6*(3) , 380-406.

Kayıkçı, K. (2018). Türkiye'de eğitim hizmetleri ve çözüm önerileri. M. Sağır ve S. Göksoy (ed). *Eğitimde denetim ve değerlendirme.* Ankara: Pegem yayınları, 385-412.

Kayıkçı, K., & Kuralay, M.E. (2011). Eğitim müfettişlerinin ilköğretim okullarında rehberlik ve işbaşında yetiştirme çalışmalarının değerlendirilmesi: Bir durum çalışması. [Sözlü bildiri]. III. Uluslararası Katılımlı Eğitim Denetimi Kongresi, Mersin.

*Kazak, E. (2013). Ders denetimindeki uygulama farklılıklarına ilişkin öğretmen görüşleri. Anadolu *Eğitim Liderliği ve Öğretim Dergisi, 1*(1), 15-26.

*Kel, M.A. (2020). *Maarif müfettişleri, okul yöneticileri ve öğretmenlerin değişim sürecindeki eğitim denetimine ilişkin görüşleri.* (Yüksek Lisans Tezi), Tokat Gaziosmanpaşa Üniversitesi, Eğitim Bilimleri Enstitüsü, Tokat.

Kimbrough, R. B., & Burkett, C. W. (1990). *The principalship: Concepts and practices*. Englewood Cliffs NJ: Prentice-Hall.

*Koç, M. H. (2018). Okul müdürleri tarafından yapılan öğretmen denetimlerine ilişkin ilkokul müdürlerinin görüşleri. *Marmara Üniversitesi Atatürk Eğitim Fakültesi Eğitim Bilimleri Dergisi*, 48, 91-110.

Koçak, H., Koçak, E., & Günal, Y. (2009). *İlköğretim okullarında görevli öğretmenlerin denetiminde müfettişlerden beklentileri ve bunun karşılanma durumu (Trabzon ili örneği).* [Sözlü bildiri], IV. Ulusal Eğitim Yönetimi Kongresi, Denizli.

*Koşar, S., & Buran, K. (2019). Okul müdürlerinin ders denetim faaliyetlerinin öğretimsel liderlik bağlamında incelenmesi. *Eğitimde Nitel Araştırmalar Dergisi, 7*(3), 1232-1265.

Köse, A. (2017). Türk eğitim sisteminde ders denetimi sorunsalı. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi, 46*(2), 298-367.

*Köybaşı, F., Uğurlu, C. T., Bakır, A. A., & Karakuş, B. (2017). İlkokullarda ders denetimine ilişkin öğretmen görüşleri. *Electronic Turkish Studies, 12*(4), 327-344.

*Kurt, S. (2009). *İlköğretim kurumlarındaki yöneticilerin denetleme faaliyetlerine ilişkin yönetici görüşlerinin değerlendirilmesinin incelenmesi.* (Yayınlanmamış yüksek lisans tezi). Trakya Üniversitesi, Edirne.

Kurum, G., & Çınkır, Ş. (2017). Cehennemde evlilik: Türkiye'de eğitim denetiminin birleştirilmesi üzerine maarif müfettişlerinin görüşleri. *Eğitim ve Bilim 42*(192), 35-57.

*Marangoz, S. (2019). *Ortaokul yöneticileri ve öğretmenlerinin ders denetimine ilişkin görüşleri* (Yüksek Lisans tezi), İstanbul Üniversitesi, Lisansüstü Eğitim Enstitüsü, İstanbul.

MEB, (2014). *Millî Eğitim Bakanlığı Rehberlik Ve Denetim Başkanlığı İle Maarif Müfettişleri Başkanlıkları Yönetmeliği.* https://www.resmigazete.gov.tr/eskiler/2014/05/20140524-18.htm

MEB, (2022). *Millî Eğitim Bakanlığı Eğitim Müfettişleri Yönetmeliği,* https://www.resmigazete.gov.tr/eskiler/2022/03/20220301-9.htm

Memduhoğlu, H. B. (2009). Paydaşların gözüyle Türkiye'de eğitim denetimi sorunsalı. [Sözlü bildiri]. IV. Ulusal Eğitim Yönetimi Kongresi, Pamukkale Üniversitesi, Denizli.

Memduhoğlu, H. B. (2012). Öğretmen, yönetici, denetmen ve öğretim üyelerinin görüşlerine göre Türkiye'de eğitim denetimi sorunsalı. *Kuram ve Uygulamada Eğitim Bilimleri, 12*(1), 135-156.

Memduhoğlu, H.B., & Taymur, A. (2010). *Türkiye'de eğitim denetiminin yeniden yapılanmasına ilişkin bir model önerisi.* [Sözlü bildiri]. Uluslararası Katılımlı Ulusal Eğitim Denetimi Sempozyumu. Tüm Eğitimciler ve Müfettişler Sendikası (TEM-SEN), Ankara.

Memduhoğlu, H.B., & Zengin, M. (2012). Çağdaş eğitim denetimi modeli olarak öğretimsel denetimin Türk eğitim sisteminde uygulanabilirliği. *Kuramsal Eğitimbilim Dergisi, 5*(1), 131-142.

Miles, M, B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook.* (2nd ed). Thousand Oaks, CA: Sage.

Ömür, Ş. (2005). *İlköğretim denetmenlerinin denetim sürecinde karşılaştıkları etik sorunları algılama düzeyleri.* (Yüksek Lisans tezi), Fırat Üniversitesi. Sosyal Bilimler Enstitüsü, Elazığ

Özmen, F., & Batmaz, C. (2004). *İlköğretim okul müdürlerinin öğretmen denetimindeki etkililikleri: cinsiyet ve yaş değişkenine göre öğretmen görüşleri.* [Sözlü bildiri]. XIII. Ulusal Eğitim Bilimleri Kurultayı, İnönü Üniversitesi, Eğitim Fakültesi, Malatya.

Onuma, N. (2015). Principals' management support practices for enhancing teachers' performance in secondary schools in Nigeria. *Journal of Emerging Trends in Educational Research and Policy Studies, 6*(1), 11-17.

Özan, M. B., & Nanto, Z. (2018). Okul Yöneticilerinin Gözünden Geçmişten Günümüze Denetim. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi, 4*(2), 19-37.

Özbaş, M. (2002). *İlköğretim okulu müdürlerinin sınıf içi etkinliklerin denetiminde yapmaları gereken ve yapmakta oldukları işler konusunda müdür ve öğretmen görüşleri.* (Yayınlanmamış yüksek lisans tezi), Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

Özmen, F., & Özdemir, T. Y. (2012). Anlatılan öykülere dayalı olarak, denetçilerin denetlenenlerle yüz yüze iletişimlerinde yaşadıkları sorunlar, *Milli Eğitim Dergisi, 42*(195), 43-66.

Polat, S., & Ay, O. (2016). Meta-sentez: Kavramsal bir çözümleme. *Eğitimde Nitel Araştırmalar. Dergisi, 4*(1), 52-64.

*Sabancı, A., ve Akcan, N. (2019). Okul müdürlerinin ders denetimi görevlerinin rehberlik etkililiği açısından değerlendirilmesi. *Kastamonu Eğitim Dergisi, 27*(5), 1893-1910.

Sapancı, A., Aslanargun, E. & Kılıç, A. (2014). Eğitim müfettişlerinin öğretmen denetiminde kullandıkları güç türleri. *Anadolu Eğitim Liderliği ve Öğretimi Dergisi, 2*(2), 52-68.

*Seçen, A. (2010). *İlköğretim okullarındaki denetim uygulamalarının değerlendirilmesi.* Ankara: MEB.

*Şahin, S., & Sümer, S. (2020). Öğretmenlerin ve yöneticilerin perspektifinden okullardaki öğretimsel denetim uygulamaları, *Uluslararası Sosyal Araştırmalar Dergisi, 13*(70), 1307-9581.

*Şanlı, Ö., Altun, M., & Tan, Ç. (2015). Okulların genel denetimleri hakkındaki; Maarif müfettişlerinin ve okul idarecilerinin görüşlerinin değerlendirilmesi. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi, 26*(2015*)*, 78-99.

Taşdan, M. (2008). Çağdaş eğitim denetiminde meslektaş yardımlaşması. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Dergisi, 41*(1), 69-92.

Tonbul, Y., & Baysülen, E. (2016). Ders denetimi ile ilgili yönetmelik değişikliğin maarif müfettişlerinin, okul yöneticilerinin ve öğretmenlerin görüşleri açısından değerlendirilmesi. *İlköğretim Online, 16*(1), 0-0

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC medical research methodology, 8*(1), 1-10.

Toprakçı, E., & Bulut, A. (2021). Ortaokul denetim rehberinin alanyazın ve yasal belgeler temelinde incelenmesi. *E-Uluslararası Eğitim Araştırmaları Dergisi, 12*(1), 16-35.

Toprakçı, E., & Özerten, K.N. (2020). Özel öğrenci yurtları denetim rehberinin yasal belgeler ve alanyazın temelinde incelenmesi. E-Uluslararası Eğitim Araştırmaları Dergisi, 11(3), 199-216.

*Tosun, A., & Ordu, A. (2019). Changing supervision practices according to school principals: A comparative analysis Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, 48, 1-19.

*Tunç, Z. (2020). *Müfettiş ve müdürlerin ders denetimi uygulamalarının çağdaş denetim özellikleri ve ilkeleri doğrultusunda değerlendirilmesi.* (Yayımlanmamış yüksek lisans tezi). Hacettepe Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara.

*Uçar, R. (2012). İlköğretim okullarında görev yapan öğretmenlerin sınıflarındaki denetim uygulamalarına ilişkin görüşleri. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi, 3*(2), 82-96.

Uğurlu, B. (2012). *Resmi liselerde çalışan öğretmenlerin kişilik özellikleri ile kullandıkları disiplin stilleri arasındaki ilişkinin incelenmesi.* (Yüksek lisans tezi), Marmara Üniversitesi, Sağlık Bilimleri Enstitüsü, İstanbul.

*Usta, M.E., & Özyurt, D. (2021). Yönetici ve öğretmen görüşlerine göre okul denetiminde yaşanan sorunlar ve çözüm önerileri. *Mustafa Kemal Üniversitesi Eğitim Fakültesi Dergisi, 5*(7), 35-61.

*Uygur, M. (2020). Sınıf öğretmenleri ders denetimine ilişkin görüşlerinin incelenmesi. *Sosyal Bilimler ve Eğitim Dergisi, 3*(1), 400-411.

*Uzun, O. N. (2019). *Okul müdürlerinin ders denetim etkinliklerinin hesap verebilirlik çerçevesinde incelenmesi.* (Yüksek lisans tezi). Tokat Gaziosmanpaşa Üniversitesi Eğitim Bilimleri Enstitüsü, Tokat.

Walsh, D., & Downe, S. (2005). Meta-synthesis method for qualitative research: A literature review. *Journal of Advanced Nursing, 50*(2), 204-211.

*Yıldırım, M. C., & Demirtaş, H. (2012). Yapılandırmacı öğrenme paradigması ilkeleri açısından ilköğretim okullarında öğretmen denetimi uygulamalarının değerlendirilmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi, 43*(43), 495-507.

Sergiovanni, T. J., & Starratt, R. J. (2007). *Supervision: A redefinition* (8th edition). New York: McGraw-Hill, Inc.

Samancıoğlu, O. Bağlıbel, M., & Kaygısız G.M. (2009). *İlköğretim görev yapan öğretmenlerin müfettişlerden beklentileri.* [Sözlü bildiri], 1. Uluslararası Katılımlı Ulusal Eğitim Denetimi Sempozyumu, Ankara.

Sullivan S., & Glanz, J. (2005). *Supervision. That improves teaching and learning.* California: Corwin Press SAGE.

Taymaz, H., (2011), *Eğitim sisteminde teftiş: kavramlar, ilkeler, yöntemler.* Ankara: Pegem Akademi Yayınları.

Taymaz, H. (2013). *Teftiş ilkeler, kavramlar, yöntemler* (Geliştirilmiş 6. Baskı). Ankara: Kadıoğlu Matbaası.

Türkdemir, A. (2013). *Okul öncesi öğretmenlerinin bakış açısından okul öncesi eğitim denetiminin değerlendirilmesi.* (Yüksek Lisans Tezi). Mersin Üniversitesi, Eğitim Bilimleri Enstitüsü, Mersin.

Yalçınkaya, M. (2002). Yeni öğretmen ve teftiş, *Milli Eğitim Dergisi,* 153- 154.

*Yazıcı, S. (2019). *Sınıf öğretmenlerinin mesleki gelişim ihtiyaçları ve denetim uygulamalarıyla mesleki gelişim ihtiyaçlarının karşılanmasına ilişkin görüşleri.* (Yüksek lisans tezi), Sivas Cumhuriyet Üniversitesi, Eğitim Bilimleri Enstitüsü, Sivas.

*Yiğit, M. (2019). *Okul öncesi eğitimde rehberlik ve denetim uygulamalarına ilişkin okul yöneticilerinin görüşleri.* (Yüksek lisans tezi) Marmara Üniversitesi, Eğitim Bilimleri Enstitüsü, İstanbul.

Zembat, R., & Doğan, B. (2014). Okul öncesi eğitim kurumlarında görevli öğretmenlerin ve eğitim denetmenlerinin denetmen tutumlarına ilişkin görüşlerinin incelenmesi. *The Journal of Academic Social Science Studies,* 29, 1-19.

Teachers' Opinions on Students' Learning Losses During the COVID-19 Pandemic: A Case Study

Research Article

Ahmet UYAR¹, Omer Faruk KADAN²

¹Hatay Mustafa Kemal University, Antakya Vocational School, Department of Computer Technologies, Hatay, Türkiye 0000-0001-9694-8629

²Hatay Mustafa Kemal University, School of Foreign Languages, Department of Foreign Languages, Hatay, Türkiye 0000-0001-5187-3694

ARTICLE INFO	ABSTRACT
Article History: Received: 08.04.2022 Available online: 22.07.2022	The aim of this study was to examine the learning losses experienced during the Covid-19 pandemic based on teachers' opinions. For this purpose, a case study, one of the qualitative research methods, was carried out. Opinions of 35 teachers working at different school levels were gathered. The subjects were interviewed using a semi-structured interview form. The interviews were conducted online due to the restrictions of Covid-19. The data were measured by content analysis, and it was indicated that distance education was less effective. It was also revealed that there are some reasons for learning loss stemming from family, students, teachers, educational system and school administrators. The teachers reported that students generally suffered from learning losses in all courses. The teachers emphasized that Web 2.0 tools should be used, internet access should be provided, equipment support should be provided, infrastructure problems should be eliminated, fun activities should be added and materials should be used in order to prevent learning losses in the distance education process. Finally, the teachers suggested that extra courses should be given, summer recovery programs should be offered, the subjects should be reviewed, the lesson periods should be longer, and lessons should be taught effectively in order to eliminate learning losses. **Keywords:** Covid-19 pandemic, learning loss, teacher opinions

Introduction

The COVID-19 pandemic negatively affected several areas such as economy and social life. This situation caused inequality among individuals. Factors such as health problems, economic crisis, and school closures have widened the gap of this inequality, the risk of school drop-outs, and learning losses (UNESCO,

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2020; United Nations, 2020; World Bank, 2020; Fore, 2021). That is why one of the most densely affected areas is education. According to the Global Education Cluster (2020) report, over 90% students were affected by the pandemic and stayed away from their schools. UNESCO (2020) reported that about 24.9 million students in Türkiye and approximately 1.6 billion students worldwide could not attend to classes.

In Türkiye, emergency remote learning was adopted in order to diminish negative effects of school closure, to ensure continuity of learning, and to prevent learning loss (Sözen, 2020). Remote learning process in Türkiye was carried out through Education and Information Network (EBA), EBA TV (broadcast streaming), online live classes. About 60% of the students did not log into EBA at all (TEDMEM, 2020). The fact how those students learnt, whether they followed classes on EBA TV or not, on what level EBA TV contributed to their learning is not clearly known. Since students' level of readiness towards remote learning is not high, they may have motivational problems in live classes as well (Karakuş, 2020; Uyar & Karakuyu, 2020). Besides all these, factors such as students' internet addiction (Akdağ et al., 2014), social media addiction (Karakuyu, 2019), negative effects of the COVID-19 pandemic to their mental health (Çaykuş & Mutlu Çaykuş, 2020), their lack of attention and interest (Opere, 2021) negatively affected the students' learning processes. All of these factors led to students' learning loss (TEDMEM, 2020; Çelik, 2020; Çaykuş & Mutlu Çaykuş, 2020; Sarı & Nayır, 2020; OECD, 2020; World Bank, 2020).

Learning loss can be defined as a regression in students' learning stemming from disruption in educational practices (Karabey, 2021). This concept is mostly known as decrease in pupils' knowledge and skills (Pier, et al., 2021). Arı (2005) identified it as a failure in retrieval from long-term memory. In another study, it was described as regression in learning and the opportunity cost of lost learning (Angrist, et al., 2021). In the related study, learning that students would gain if schools did not close was given as an example for the opportunity cost of learning loss. In general, learning loss can be defined as a decrease in knowledge level of students due to breaks in teaching process or the problems experienced in teaching process.

There are a great number of negative impacts of school closure during the COVID-19 pandemic. One of these impacts is students' learning loss. A lot of students experienced difficulties in learning during remote learning. Socioeconomically disadvantaged students were not able to benefit from live classes as they did not have enough technological equipment. In addition, the fact that parents could not adequately support their children's learning in terms of education and knowledge, and the lack of suitable conditions for students to follow lessons and study at home made the benefits of distance education even more limited. In teaching conducted on EBA TV, the teaching could not be carried out effectively because interaction between the teacher and the students was not possible, and it was not possible to follow the students' reactions and to provide feedback to them (Çelik, 2020; TEDMEM, 2020, World Bank, 2020). All these conditions led to a decrease in students' motivation towards lessons and to experience learning losses, especially for the ones with low academic achievement and insufficient self-regulation skills.

During the COVID-19 pandemic, the proportion of learning loss has increased because of extension of school closure. It is assumed that if the transition to classroom instruction is prolonged, it will be more difficult and sometimes even impossible to compensate learning losses in the long run (Çelik, 2020; Karabey, 2021; Selçuk, 2020; TEDMEM, 2020). Although it is known that many factors such as the quality of distance education, student characteristics, and parental attitudes would have an impact on learning losses, it is not exactly known what the learning losses are during the COVID-19 pandemic. In a study, it was mentioned that students in the sub-Saharan African region have had a half-year to one-year learning loss due to COVID-19 (Angrist, et al., 2021). On the other hand, there are several studies on learning losses experienced by students due to summer vacation, adverse weather conditions or school closures due to natural disasters, and these studies may predict the learning loss experienced during the pandemic. Kuhfeld and Tarasawa (2020) put forward projections for the learning losses that the COVID-19 pandemic would cause in students, based on

the data regarding summer vacation learning losses in previous years. In the study, they predicted learning losses through the assessments made using the data from more than 5 million 3rd and 8th graders in the USA. They estimated that students experienced a learning loss of approximately 30% in reading and 50% in math in the fall of 2020. In another study on learning losses caused by the COVID-19 pandemic in students, it was assumed that schools would open in January 2021. In this case, it was estimated that students would experience a learning loss of 3-4 months if they received a qualified distance education, 11-12 months if they received a low-quality distance education, and approximately 12-14 months if they did not have access to distance education courses (Dorn et al., 2020). In line with these studies, it can be claimed that it is inevitable for students to experience learning loss during the COVID-19 pandemic.

It is assumed that learning losses that students experience during the COVID-19 pandemic will cause some problems in the short and long term, some of which are listed below:

- Inability of students to achieve social and emotional gains to be gained through implicit learning.

- Inability to compensate for the learning losses of students in need of special support.

- Inability of students to acquire some skills due to missing a period since they can only be acquired in a certain age range.

- The fact that learning loss leads to income loss in the medium or long term (TEDMEM, 2020).

- A decrease in students' performance in exams such as LGS (high-school entrance exam), YKS (university entrance exam), PISA, and TIMSS (TEDMEM, 2020).

- An increase in school drop-outs (Saavedra, 2020; UNESCO, 2020; World Bank, 2020; TEDMEM, 2020).

Minimizing the learning losses that students may experience will also eliminate these problems. For this reason, it is necessary to conduct studies on students' learning losses, the level of losses, and ways to compensate for them.

Only a few studies have been found in the literature on learning losses experienced during the COVID-19 pandemic (Baz, 2021; Booth, et al., 2021; Donnely & Patrinos, 2021; Wahyudi, 2021). However, there have been a great number of studies on learning losses experienced by students due to reasons such as summer vacation, epidemics and natural disasters. In those studies, it was emphasized that the students mainly experienced learning losses in Turkish language and math classes (Arı, 2005; Atteberry & McEachin, 2016; Kuhfeld, 2018; Şen, 2009; World Bank, 2020). It was stressed that the learning losses experienced especially in the field of mathematics were higher than in all other classes (Arı, 2005; Cooper et al., 1996; Kuhfeld, 2018; Şen, 2009). Learning losses are experienced not only because of the summer holidays, but also because of the school closures during natural disasters. It was pointed out that the students suffered from 1.5-2 years of learning loss due to the three-month school closure after the earthquake in Pakistan in 2005 (World Bank, 2020). In addition, due to the swine flu virus, the students experienced a learning loss of about two months with the extension of the school closure during the winter holiday in Sao Paulo (Amorim et al., 2020). It was indicated in a meta-analytic review of 39 studies that learning loss due to summer vacation equaled an average of one month of education (Cooper et al., 1996).

The studies revealed that staying away from schools for various reasons caused students experience learning losses. During the COVID-19 pandemic, students have been away from school for a long time. In this process, education has been carried out with distance education activities. However, considering that we are not fully ready for distance education in the context of teachers, students, parents and infrastructure, it is thought that learning losses are inevitable in this process. Therefore, in this study, primary school, secondary

school and high school teachers were asked to express their opinions on learning losses. Thus, the information about the learning losses experienced in all education levels has comprehensively been revealed. Since teachers do guide learning (Yılmaz & Kadan, 2019) and know their students' learning process best, their views were included in this study. No research study on learning loss experienced in the distance education process has been found in the literature. In several studies, it was emphasized that studies need to be carried out to detect distance education-oriented learning losses (OECD, 2020; Sarı & Nayır, 2020; TEDMEM ,2020; Karakuş, 2020; Çelik, 2020). With these aspects, the study is believed to be both original and necessary.

The aim of the study was to determine the learning losses experienced by the students during distance education. For this purpose, the following sub-objectives were identified and completed to achieve the main objective:

- What is the effectiveness of learning in distance education?

- What are the reasons for learning losses during the COVID-19 pandemic?

- In what courses is the learning loss higher during the COVID-19 pandemic?

- What kind of distance education process should be followed in order to minimize learning losses during the COVID-19 pandemic?

What can be done to compensate for these learning losses when the distance education process ends and classroom instruction is started?

Methodology

In this study, which was carried out to determine the learning losses stemming from distance education during the COVID-19 pandemic based on the teachers' opinions, the case study pattern - one of the qualitative research methods - was employed. A case study is a qualitative research approach in which the researcher scrutinizes one or several situations, the boundaries of which are determined over time, with various data collection tools, and the situations and themes related to these situations (Creswell, 2007). In a case study, factors related to a situation (environment, individuals, processes, events, etc.), how these factors affect the relevant situation and how they are affected by the relevant situation are thoroughly investigated with a holistic approach (Yıldırım & Şimşek, 2018). In this study, the learning losses experienced during the COVID-19 pandemic were examined. How the distance education carried out during the pandemic affected the learning losses experienced by the students was probed.

The Study Group

The study group consisted of 35 teachers working in Hatay, Türkiye in 2021-2022 academic year. Maximum variation sampling, one of the purposive sampling types, was used in the study. In this type of sampling, the sample selection is made by determining the factors that make it possible to obtain the most information about the situation under investigation (Neuman & Robson, 2014). For this reason, 35 teachers working in primary, secondary and high schools affiliated to the Turkish Ministry of National Education were included in the study group. Descriptive data regarding the teachers in the study group were given in Table 1.

Table 1. Descriptive data related to the teachers in the study group

Participants	Participant Code	Sex	Number of Students Attending to Live Lessons	Age	Seniority	School Type	Field
Teacher1	G1	Male	10	32	1-5 years	Secondary	Social Studies
Teacher2	G2	Male	5	35	6-10 years	Primary	Class
Teacher3	G3	Male	7	26	1-5 years	Primary	Class
Teacher4	G4	Female	5	54	1-5 years	Primary	Class

Teacher5	G5	Female	12	32	11-15 years	Primary	Class
Teacher6	G6	Male	25	39	11-15 years	Primary	Class
Teacher7	G7	Female	18	43	16-20 years	Primary	Class
Teacher8	G8	Male	31	43	20-25 years	Primary	Class
Teacher9	G9	Female	22	45	20-25 years	Primary	Class
Teacher10	G10	Male	12	36	1-5 years	High	English
Teacher11	G11	Female	21	36	6-10 years	Primary	Class
Teacher12	G12	Female	20	39	6-10 years	Secondary	Turkish
Teacher13	G13	Male	4	32	16-20 years	Primary	Class
Teacher14	G14	Female	30	34	6-10 years	Secondary	Science
Teacher15	G15	Male	14	27	1-5 years	High	Chemistry
Teacher16	G16	Female	15	25	1-5 years	High	Math
Teacher17	G17	Male	10	48	20-25 years	High	English
Teacher18	G18	Female	10	47	20-25 years	High	Literature
Teacher19	G19	Female	12	40	16-20 years	High	English
Teacher20	G20	Female	15	30	6-10 years	High	Math
Teacher21	G21	Female	10	36	11-15 years	High	Religious Culture
Teacher22	G22	Female	15	39	6-10 years	High	English
Teacher23	G23	Male	15	40	11-15 years	High	Physical Education
Teacher24	G24	Male	11	37	11-15 years	Secondary	English
Teacher25	G25	Female	9	39	16-20 years	High	English
Teacher26	G26	Male	8	37	11-15 years	High	English
Teacher27	G27	Male	15	44	20-25 years	High	Geography
Teacher28	G28	Male	15	40	16-20 years	High	Literature
Teacher29	G29	Female	15	36	11-15 years	High	English
Teacher30	G30	Male	18	46	16-20 years	Secondary	Science
Teacher31	G31	Male	30	49	20-25 years	Secondary	Math
Teacher32	G32	Female	3	24	1-5 years	Secondary	Math
Teacher33	G33	Male	25	40	6-10 years	Secondary	English
Teacher34	G34	Male	10	35	11-15 years	High	English
Teacher35	G35	Female	16	33	6-10 years	Secondary	English

As it can be seen in Table 1, 18 male (51.42%) and 17 female (48.58%) teachers were included in the study. The teachers were from ten different fields which were Class (f:10), English (f:11), Literature (f:2), Math (f:4), Science (f:2), Turkish (f:1), Religious Culture (f:1), Geography (f:1), Physical Education (f:1), Chemistry (f:1), Social Studies (f:1). In other words, 16 high school, 9 secondary school and 10 primary school teachers were included in the study.

Data Collection Tools

A semi-structured interview form developed by the researchers was used in the study. As a result of the literature review, clear, understandable and non-directive questions were included in the interview form. The interview form, which consisted of four questions initially, was developed by asking the opinions of two faculty members experienced in qualitative research, one from the field of curriculum and instruction and the other from the field of psychological counselling and guidance. In line with their opinions, the question "*What are the factors that cause learning loss during the Covid-19 pandemic? Please explain?*" was edited as "*In your opinion, what are the reasons for learning loss during the Covid-19 pandemic*". Later, a faculty member working in the department of Turkish language teaching was asked to revise the final interview form consisting of 5 questions in terms of structure, language and expression, and its validity was ensured. Then, the opinions of four

teachers to participate in the study were obtained on the relevance and clarity of the questions through preliminary interviews. Final revision was made in line with the feedbacks.

Data Collection Process

During the data collection process, some measures were taken in order to minimize the factors that may adversely affect the validity and reliability of the study (Yıldırım & Şimşek, 2018; Eroğlu & Bektaş, 2016; Uyar et al., 2021). Data on the measures taken were shown in Table 2.

Table 2. Validity and reliability measures taken for the Study

Validity	Internal Validity	Taking experts' opinion
		Obtaining participant opinion
		Direct quotation
	External Validity	Describing data collection tool and its development process
		Explaining the data analysis process
		Explaining the characteristics of the study group
		Stating the method of selection of the study group
		Describing the implementation process of the study
		Explaining the reason for choosing the method employed
		Explaining the validity and reliability measures
		Purposive sampling
Reliability	Internal Reliability	Presenting the findings without interpretation
	External Reliability	Discussing the data in the conclusion appropriately
		Checking consistency among the data

Some procedures, some of which were explained in the above section, were carried out in order to ensure internal validity. Before the interviews, the participating teachers were informed about the implementation. They were informed about the scope and duration of the implementation, the confidentiality of personal data and opinions, and the voluntary participation. The data of the study were collected online considering the conditions of the COVID-19 pandemic. The access link of the online interview form created through Google forms was sent to the teachers via social communication networks. The responses given by the participants were presented in the section of findings, including the direct opinions of the participants. In order to ensure external validity of the study, the research model, study group, data collection tools, data collection process, data analysis and the way of organizing the data were described thoroughly.

The findings were presented to the reader without interpretation in order to ensure internal reliability of the study. In order to ensure the external reliability of the study, the data were analysed and coded by two researchers. Then ratio of agreement between the coders was calculated based on the formula of Miles and Huberman (1994) and found as 95%. After this process, the researchers gathered together and agreed on the categories and themes.

The data were discussed in the section of conclusion in accordance with the purpose of the research. Finally, the researchers came together and came to an agreement in order to check the consistency of the findings and conclusion sections.

Data Analysis

Content analysis was performed for analysing the data obtained as a result of the interviews. Content analysis is defined as a systematic technique in which some words of a text are converted into smaller content categories by coding according to certain rules. (Büyüköztürk et al., 2020). The main purpose of content analysis is to reach the concepts and relations that enable the data collected to be explained (Yıldırım & Şimşek, 2018). In the study, the data obtained from the teachers through Google Forms were transferred to the Word

processor program. These data were divided into meaningful parts, and descriptive codes were given to these parts. Then, related codes were put together to form categories and were presented under themes. After the codes, categories and themes were created, the correctness of the codes, of the categories, of the themes and the appropriateness of the codes under each category were checked, and the data analysis was performed. Analysis results of the data obtained from the teacher opinions were presented in the section of findings using variables such as theme, category, code, and frequency (f). Teachers' names were not included while presenting the teachers' opinions with direct quotations. The codes as I1 (Interviewer1), I2, I3, ………, I35 were used.

Findings

In this section of the study, the findings obtained from the teachers' opinions on the students' learning losses experienced during the COVID-19 pandemic and direct quotations of these findings were included. The findings regarding teachers' views on the effectiveness of distance education are shown in Figure-1.
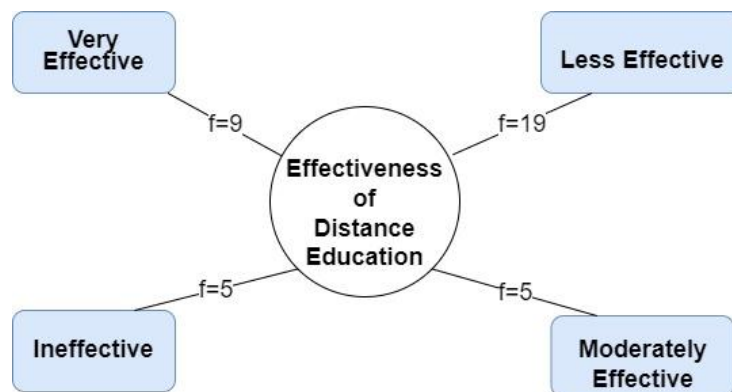

Figure 1. Effectiveness of distance education

Teachers mostly stated that the distance education is less effective. Additionally, there were also teachers believing that distance education is very effective, moderately effective and ineffective. Direct excerpts of the teachers' texts on the effectiveness of distance education are given below:

I5: *"I think it is not as effective as classroom instruction. Education does not achieve its purpose since it is difficult to teach without making eye contact or sharing any setting with students."*

I19: *"Distance education has been really useful for the ones having attended the lessons regularly and having actively participated. That is because of the fact that with only 10-15 students attending each lesson on average, students were given the opportunity to speak more and ask questions. The distraction in the classroom setting and the prevention of noise in the digital environment made the lessons more fluent."*

I35: *"I don't think it's any different from classroom instruction. The only problem is that students cannot take responsibility for their own learning. That's why they don't consider the lessons important."*

I13: *"Lessons are disconnected. The pupils cannot adapt, cannot be disciplined and cannot take it seriously. Most students cannot attend to lessons."*

I15: *"It is an education type of no use."*

Teachers' views on the causes of the students' learning losses experienced during the pandemic are given in Figure 2.
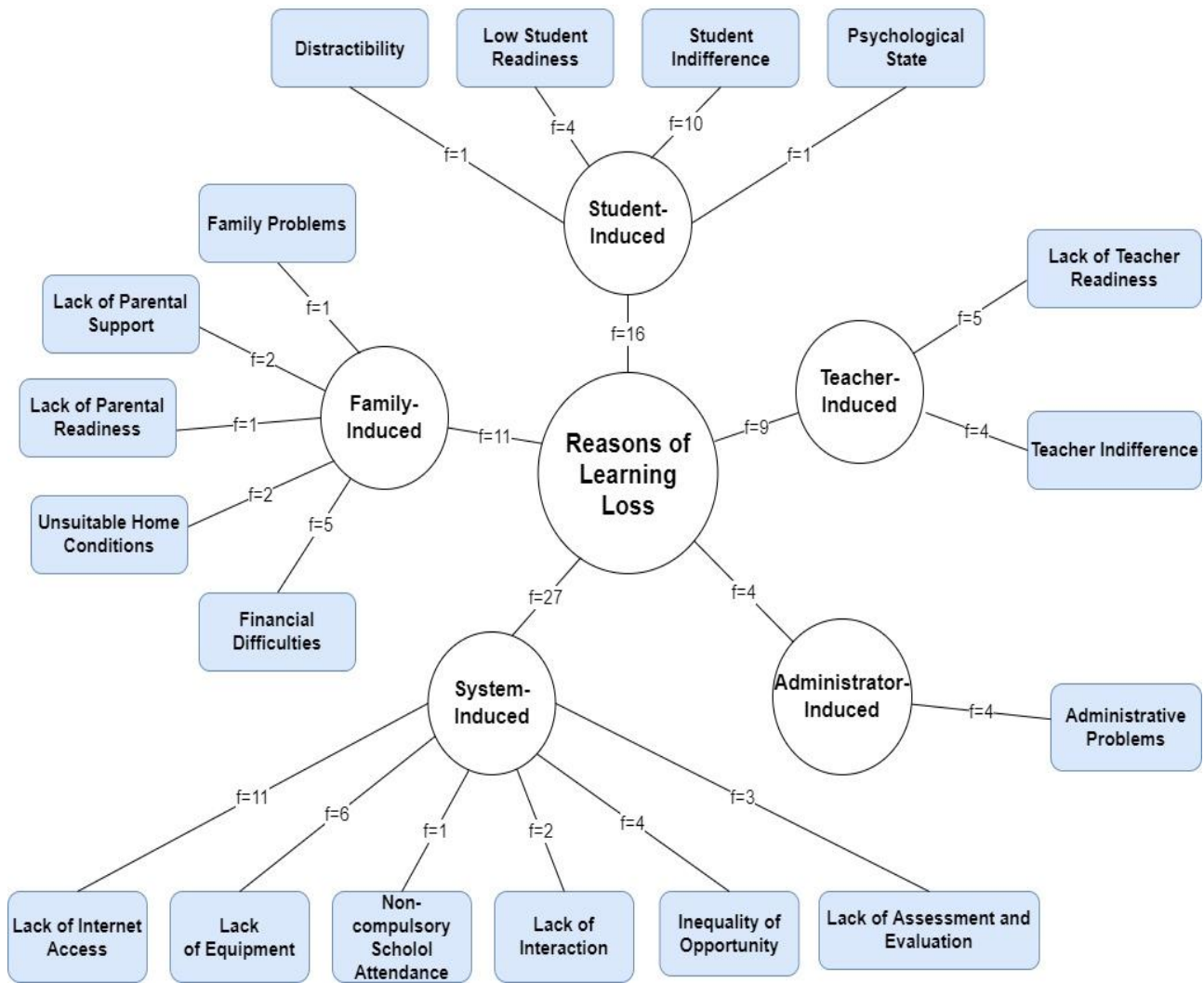
Figure 2. Reasons of learning loss

Teachers mostly regarded the reasons of learning losses as lack of internet access, student indifference, lack of equipment, financial difficulties, low teacher readiness, low student readiness, inequality of opportunity and administrative problems. Direct excerpts from teachers' opinions on the causes of learning losses are presented below:

I7: *"Some of the students stayed away from the lessons because of the problem of internet access. Some of them got bored with the continuity of the distance education, and this caused a break in the lessons. Hence, this led to learning losses."*

I23: *"Distance education does not fully provide the conditions necessary for learning. Bias of teachers and students, physical and hardware deficiencies, inability to provide suitable conditions for learning at home, the failure to provide equality and justice in education are among the causes of learning losses."*

I12: *"The callousness of some teachers or some students in this process."*

I32: *"Lack of grade anxiety and financial impossibilities."*

I27: *"Impromptu decisions. Managers' unwillingness to consult. Lack of transparency of decision makers."*

Teachers' views on which courses the students have the highest level of learning losses during the pandemic are shown in Figure 3.
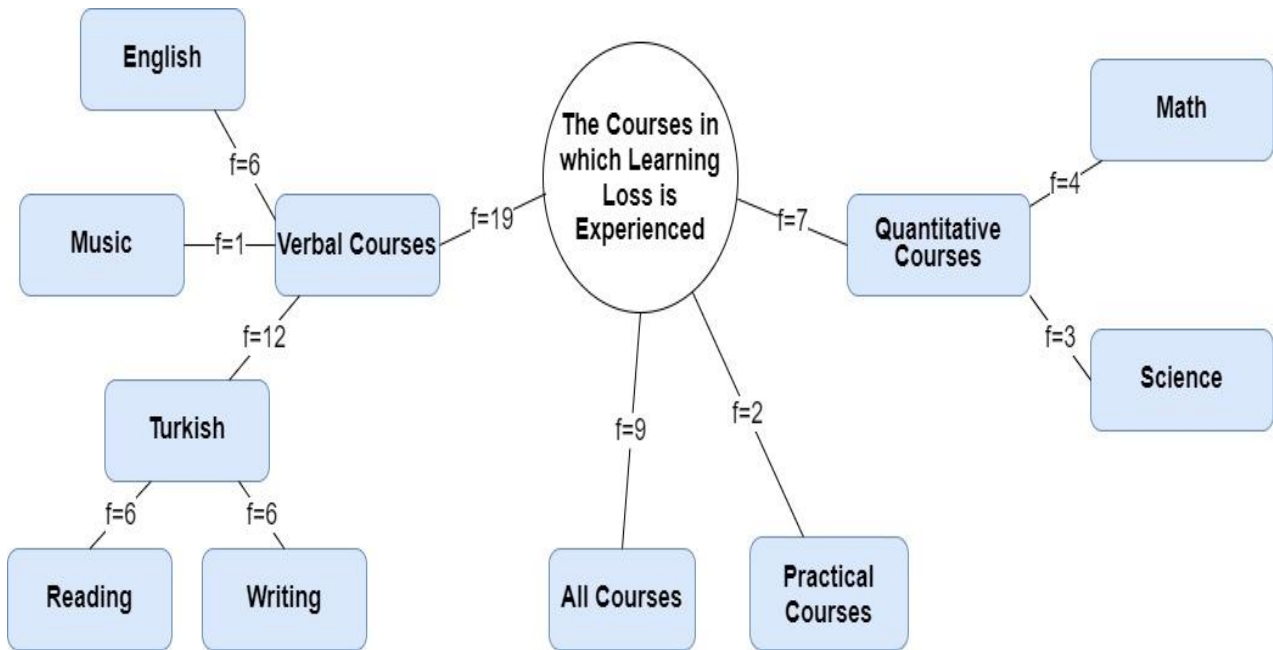
Figure 3. *The courses in which learning loss is experienced*

Teachers generally emphasized that learning losses are experienced in all courses. They stated that the learning losses experienced in Turkish and English courses among verbal courses and in math and science courses among quantitative courses are more than the other courses. Direct excerpts from teachers' opinions regarding the courses in which learning losses are experienced are given below:

I20: *"I think that there is learning loss in all courses, especially in courses that require analytical thinking, because use of this skill has decreased."*

I25: *"Especially in the courses of Turkish and math. Kids have forgotten to read and write and become addicted to television. They can't understand what I'm writing, addition and subtraction are all confused. This is the case from the 5th grade to the 8th grade."*

I26: *"It is obvious that there are learning losses for courses that require practice such as English."*

I30: *"As a science teacher, I would like to write down my losses because I think that other courses are more or less the same as mine. I am not able to give learning outcomes in time. We cannot make student-based plans. The fact that experiments are not conducted by doing and living causes learning to be abstract. In other words, digressing from being concrete causes students to digress from learning."*

I21: *"In practical, quantitative and science courses"*

The teachers' opinions on how to prevent learning losses through distance education during the pandemic are shown in Figure 4.
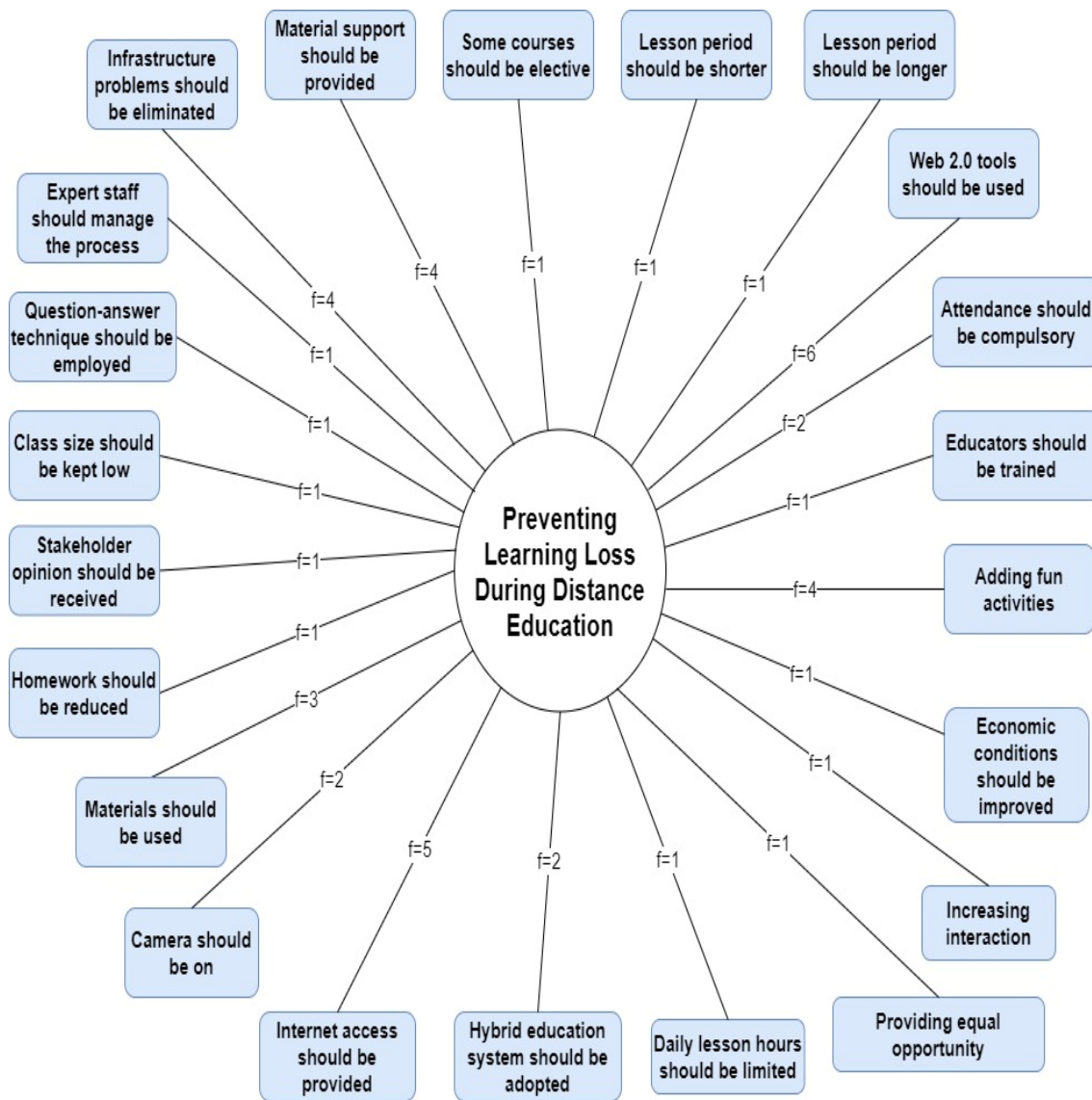
Figure 4. Preventing learning loss during distance education

Teachers emphasized that Web 2.0 tools should be used, internet access should be provided, equipment support should be provided, infrastructure problems should be eliminated, fun activities should be added and materials should be used in order to prevent learning losses in the distance education process. Direct excerpts from the teachers' opinions on preventing learning losses during distance education are given below:

I24: *"I believe that Web 2.0 tools should be used effectively."*

I3: *"First of all, the students' equipment and internet problems need to be eliminated, and then the students' attendance to online lessons should be compulsory."*

I9: *"Increasing student interest in courses by providing more fun content and less homework."*

I23: *"It is necessary to provide qualified staff and institutions that will create sufficient infrastructure to monitor the process and to contribute to change and development. It can be achieved by taking all stakeholders into consideration."*

I29: *"Absolutely the camera should be open and visual materials such as question-answer presentations should be used. Mini-tests that all students can participate in simultaneously and programs about drawings can be developed. The teacher should also be able to see the answers at the same time."*

Teachers' opinions on how learning losses can be compensated by bringing classroom instruction back following the pandemic are presented in Figure 5.
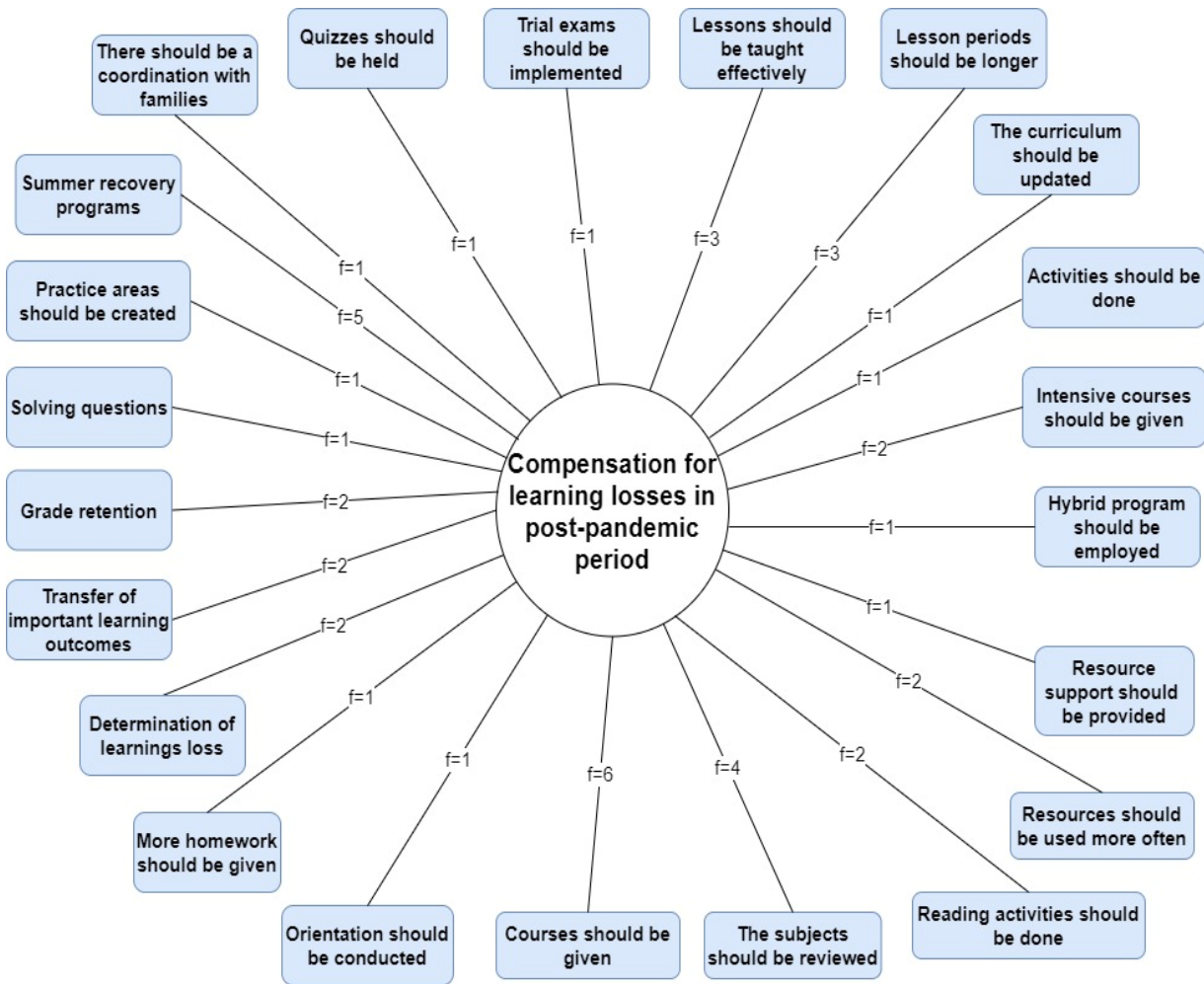

Figure 5. Compensation for learning loss

The teachers generally expressed that when classroom instruction is brought back, extra courses should be given, summer recovery programs should be offered, the subjects should be reviewed, the lesson periods should be longer, and lessons should be taught effectively. Direct excerpts from teachers' texts on compensation for learning losses are given below:

I4: *"At its simplest, courses and in-class concretization techniques should be implemented"*

I19: *"Important learning outcomes can be included in the annual plans in the next academic year. A 1-month summer recovery program can be organized."*

I14: *"First readjustment to school, then learning to study again. Reviewing the subjects in which learning difficulties are experienced."*

I10: *"The lesson periods should be longer, or intensive program can be implemented."*

I21: *"The student can be stimulated to be more active. Assignments can be made. Resource support can be provided. A collective work can be done by keeping in touch with the family."*

I32: *"I recommend that everyone repeat their grade. It is impossible to make up for 1 year in 1 or 2 months."*

I1: *"Initially, to identify the learning deficiencies by disregarding the learning outcomes, to move on to new subjects and learning outcomes after these deficiencies are eliminated."*

I20: *"Reading activities, quizzes, and trial exams should be implemented in schools every day."*

Conclusion and Discussion

Learning loss is a factor that negatively affects individuals mentally, emotionally, etc. It occurs when the educational process does not take place at the same level as in previous years. (Pier, et al., 2021). For this reason, it is thought that students suffer from serious learning losses due to the disruptions in teaching during the COVID-19 pandemic. Policy makers, scientists and prominent figures in education have claimed that these learning losses have reached an unrecoverable level in the Turkish education system (Çelik, 2020; Di Pietro et al., 2020; Dorn et al., 2020; Karabey, 2021; Sarı & Nayır, 2020; Selçuk, 2020; TEDMEM, 2020; Yıldız & Akar Vural, 2020). That is why teachers' opinions on the detection and elimination of learning losses were presented in the present study. It is assumed that the findings obtained from the study will guide teachers and policy makers.

In the study, the teachers mostly stated that the distance education was less effective. They stated that this stemmed from problems such as insufficient infrastructure, low student-teacher interaction, low student interest, and access problems (internet, lack of materials and equipment). However, on the contrary, some teachers stressed that distance education is very effective in certain aspects. According to these teachers, the effectiveness of distance education was raised by some factors such as the increase in the motivation of the students having distractibility caused by their classmates, the increase in their attendance to the lessons by providing more comfortable classroom management, the continuity and discipline in their attendance to the lessons through parent control, the increase in the students' interests with the fun content. Based on the teachers' opinions, it can be concluded that distance education is not very effective in general due to the problems experienced. In a study (Hannay & Newvine, 2006: 9), it was indicated that only students with a strong need for personal growth and development may benefit from distance education environment. In the study carried out by Kurnaz et al. (2020) discussing the teachers' views on distance education, the teachers stated that there are serious drawbacks of distance education which reduces the effect of distance education. In some other studies, it was emphasized that classroom instruction is more effective than distance education in reducing learning losses (Wisher et al., 2001), students suffer from motivation loss in distance education (Durak, 2017), and distance education cannot provide social interaction enhanced in face-to-face lessons (Öztaş & Kılıç, 2017). However, in another study, it was stated that distance education could become much more effective only if its infrastructure is improved (Arat & Bakan, 2011; Orhan Karsak & Şan, 2021). In fact, with the lessons derived from the distance education activities carried out due to the COVID-19 pandemic, it is predicted that distance education will replace classroom instruction rather than being a complementary element of it (Yamamoto & Altun, 2020). When the findings obtained from the current study and from the studies in the literature are discussed together, it is supposed that the advantages of distance education will come to the fore and even become more effective with the elimination of the problems reducing its effect. Thus, it can be suggested that distance education can continue to be used in a supportive role for classroom instruction even if the pandemic ends.

The teachers participating in the study stated that reasons such as lack of internet access, student indifference, lack of materials and equipment, financial difficulties, low teacher readiness, administrative problems, lack of infrastructure, inequality of opportunity, low student readiness, lack of assessment and evaluation, and lack of interaction lead to learning losses during distance education. Additionally, the teachers stressed that reasons such as family problems, asocial life, non-compulsory school attendance, lack of parental support, low parental readiness, unsuitable home conditions, distraction, and technology addiction result in learning losses. In the literature, it is stated that there are many factors that cause learning losses. The factors that are stated to cause learning losses such as students' indifference to the lessons (Baz, 2021), lack of interaction (Base, 2021), distraction (Baz, 2021), asocial life (Baz, 2021), financial difficulties (Chetty et al., 2020; Rogers & Sabarwal, 2020; Blazer, 2011; Çaykuş & Mutlu Çaykuş, 2020; Jamar, 1994; Sarı & Nayır, 2020; Sezgin

et al., 2020; Şirin, 2014; von Hippel, 2019; Wilson, 2020), lack of tools and materials (Dorn et al., 2020; Sezgin et al., 2020), the problem of internet access (Sarı & Nayır, 2020), lack of infrastructure (Sarı & Nayır, 2020), low parental readiness (Arı, 2005; Sarı & Nayır, 2020; Sezgin et al., 2020), unsuitable home conditions (Arı, 2005), non-compulsory school attendance (Kuhfeld et al., 2020; Reid, 2005), lack of parental support (Dorn et al., 2020; Sabates et al., 2021; Sezgin et al., 2020), inequality of opportunity (Saran, 2020; Yıldız & Akar Vural, 2020), lack of assessment and evaluation (Sarı & Nayır, 2020), low teacher readiness (Sarı & Nayır, 2020) support the findings obtained from the present study. Unlike the findings obtained from the present study, the students' stress (Baz, 2021), their living in a village or town (Erol, 2006), disruption of learning (Sarı & Nayır, 2020), low effect of distance education (Sarı & Nayır, 2020), lack of parent-teacher communication (Sarı & Nayır, 2020), psychological problems experienced by the teachers and students (Sarı & Nayır, 2020), length of vacation time (Alexander et al., 2007; Sezgin et al., 2020), TV addiction (Sezgin, Erdoğan & Dağ, 2020) are also some reasons for learning losses. Most of these studies include findings related to the causes of learning losses stemming from breaks in education due to summer holidays, natural disasters and midterm holidays. The learning losses experienced in the distance education process during the COVID-19 pandemic include much more variables. The drawbacks of distance education and the negative conditions brought about by the pandemic also had an impact on the learning losses occurring during the COVID-19 pandemic. Although it has been tried to ensure continuity in education through distance education, it can be said that learning losses have increased due to the problems experienced in the distance education process and to the negative conditions caused by the epidemic.

The teachers participating in the study emphasized that learning losses were experienced in all courses during the COVID-19 pandemic. They stated that the learning losses experienced in math and science courses among quantitative courses and in Turkish and English courses among verbal courses are more than the other courses. They stressed that learning losses experienced in Turkish lessons are prominent in reading and writing skills. In addition, they reported that the students experienced learning losses in the courses requiring practice and in the music course. Studies in the literature are mainly studies for the determination of learning losses that occur due to summer vacation. It was stated in these studies that learning losses were mainly experienced in math and Turkish courses (Arı, 2005; Gershenson & Hayes, 2018; Sezgin et al., 2020; Wyse et al., 2020). In some studies; however, it was stated that the learning losses in the math course are higher than the learning losses in the Turkish course (Cooper et al., 1996; Kuhfeld, 2018; Kuhfeld & Tarasawa, 2020; Marcotte & Helmelt, 2008). Kuhfeld & Tarasawa (2020) expressed that the possible learning losses that may occur after the COVID-19 pandemic will be approximately 50% in the math course and approximately 30% in the Turkish course. In a meta-analysis study, in which 39 different studies on learning losses experienced due to summer vacation were evaluated, it was concluded that learning losses in math course were higher than learning losses in Turkish course (Cooper et al., 1996). Sezgin et al. (2020) emphasized in their study that apart from these courses, there are also learning losses in the English course. Kayır and Özçelik (2018), on the other hand, reported in their study that learning losses in English course are higher than in all other lessons. The results of the studies in the literature are in line with the findings obtained from this study. In Şen's study (2009) involving primary school students, it was concluded that there were learning losses in the life sciences course as well as in the math course. In addition, in the related study, it was determined that there was a negligibly low level of learning loss in Turkish course. This result differs from the findings obtained from the study. The fact that the pandemic may take a long time and is still ongoing prevents the implementation of a stable plan in education. Therefore, it is thought that there are learning losses in almost all courses in this process. Even though learning losses are experienced in all courses, it can be said that the level of these losses varies depending on the content of the courses and the methods employed in the course.

In the study, the teachers generally wrote that internet access should be provided, Web 2.0 tools should be used, equipment support should be provided, infrastructure problems should be eliminated, fun activities

should be done, materials should be used, attendance should be compulsory, a hybrid education system should be adopted, and the camera should be turned on during the lesson in order to minimize learning losses in the distance education process. In addition to these opinions, the teachers stressed that some courses should be elective, the courses should be under the supervision of experts, lesson periods should be shorter, lesson periods should be longer, the educators should be trained, economic conditions should be improved, interaction should be increased, equal opportunity should be provided, daily lesson hours should be limited, homework should be reduced, stakeholder opinion should be received, class size should be kept low, the question-answer technique should be used, and expert staff should manage the process. The current and previous studies revealed that math is one of the courses with the highest learning loss. Visuals can be used in math course to reduce learning losses during distance education. It was found that the use of visuals in math course promotes problem-solving achievement of the students (Usta, et al., 2018). Li and Lalani (2020) stated in their report that an effective hybrid education model will emerge. Lafortune (2020) declared that distance education cannot completely eliminate learning losses, but it can have a reducing effect on learning losses. The distance education process has a multidimensional structure (Orhan Karsak, 2019). The system, teacher, student, administrator and family have an important role in the effective execution of distance education. It can be claimed that if the problems stemming from the factors in this structure are minimized, the efficiency of distance education will increase and learning losses will decrease accordingly.

The participant teachers stated that the students' learning losses can be compensated after the pandemic through courses, summer recovery trainings, increasing lesson periods, more effective teaching, intensive courses, increasing use of resources, book reading activities, detection of learning losses, focusing on important learning outcomes, grade repetition. In addition, they emphasized that coordination with the family, quizzes, trial exams, update of the curriculum, activities, a hybrid program, resource support, orientation, increasing amount of homework, question solutions and creation of practice areas would be beneficial in compensating for learning losses. In the literature, there are opinions such as providing recovery courses (Dorn et al., 2020; Kayır & Özçelik, 2018; TEDMEM, 2020), reviewing the courses of the previous year (Kaffenberger, 2021), preparing enriched content (Kaffenberger, 2021), organizing summer recovery courses, providing trainings (Alexander et al., 2007; Borman, Benson, Overman, 2005; Cooper, 2003; Kaffenberger, 2021; Kim & Quinn, 2013), group work (Kaffenberger, 2021), providing parental support (Alexander et al., 2007; Arı, 2005; Borman et al., 2005; Burgess & Sievertsen, 2020; Dorn et al., 2020; Elleseff, 2018; Sabates et al., 2021 Sezgin, Erdoğan & Dağ, 2020; Wilson, 2020), detection of learning losses (Sabates et al., 2021; TEDMEM, 2020; OECD, 2020), updating curriculum (Kayır & Özçelik, 2018; TEDMEM, 2020; Osman, 2020; Baz, 2021), increasing the use of resources (Kayır and Özçelik, 2018; Wilson, 2020), giving project assignments (Kayır and Özçelik, 2018), stakeholders' working together (TEDMEM, 2020), conducting activities (Elleseff, 2018; Sezgin, Erdogan & the Mountain, 2020; Wilson, 2020), providing intensive courses (Wilson 2020), parent training (Wilson ,2020), effective teaching (Baz, 2021; Sarı & Nayır, 2020), reviewing the subjects (Elleseff, 2018). When the studies are analyzed in general, it can be seen that there are both similar and different findings with the results of the present study. Since the pandemic is not completely over, hybrid teaching practice is still emerging at many educational levels. For this reason, it is considered that the students' learning losses should be determined first when the pandemic is over and classroom instruction is started. Thus, the content and planning of the course programs and current education programs can be implemented by making remedial training regarding the learning losses defined by considering the efficiency, socio-economic conditions and individual differences of the students.

REFERENCES

Akdağ, M., Yılmaz, B. Ş., Özhan, U., & Şan, İ. (2014). Üniversite öğrencilerinin internet bağımlılıklarının çeşitli değişkenler açısından incelenmesi (İnönü Üniversitesi Örneği) [Examining internet addiction of university students in terms of various variables (Inonu University Example)]. *Journal of Inonu University Faculty of Education*, *15*(1), 73-96.

Alexander, K. L., Entwisle, D. R., & Olson, L. S. (2007). Summer learning and its implications: Insights from the beginning school study. *New Directions for Youth Development*, *114*, 11-32.

Amorim, V., Piza, C., & Lautharte Junior, I. J. (2020). *The Effect of the H1N1 Pandemic on Learning*. Retrieved from https://openknowledge.worldbank.org/handle/10986/33997

Angrist, N., de Barros, A., Bhula, R., Chakera, S., Cummiskey, C., DeStefano, J., Floretta, J., Kaffenberger, M., Piper, B., Stern, J., 2021. Building back better to avert a learning catastrophe: estimating learning loss from COVID-19 school shutdowns in Africa and facilitating short-term and long-term learning recovery. *International Journal of Educational Development, 84*, 102397.

Arat, T. & Bakan, Ö. (2011). Distance education and applications. *Journal of Selcuk University Vocational School of Social Sciences*, *14*(1–2), 363–374.

Arı, A. (2005). *İlköğretim Okulu Öğrencilerinin Yaz Tatilindeki Öğrenme Kayıpları [Learning Losses of Primary School Students During Summer Vacation]*. PhD thesis. Gazi University, Ankara.

Atteberry, A., & McEachin, A. (2016). School's out: Summer learning loss across grade levels and school contexts in the United States today. In Alexander, K., Pitcock, S., ve Boulay, M. (Eds). Summer learning and summer learning loss, pp35-54. New York: Teachers College Press.

Baz, B. (2021). An Evaluation on Possible Learning Losses of Students During The COVID-19 Pandemic. *Journal of Basic Education, 3*(1), 6-19.

Blazer, C. (2011). Summer learning loss: Why its effect is strongest among low-income students and how it can be combated. Research Services. Miami-Dade County Public Schools.

Booth, C., Villadsen, A., Goodman, A., & Fitzsimons, E. (2021). Parental perceptions of learning loss during covid-19 school closures in 2020. *British Journal of Educational Studies, 69*(6), 657-673.

Borman, G. D., Benson, J. ve Overman, L. T. (2005). Families, schools and summer learning. *The Elementary School Journal, 106*(2), 131-150.

Burgess, S., & Sievertsen, H. H., (2020). Schools, skills, and learning: The impact of COVID-19 on education. Retrieved from https://voxeu.org/article/impact-covid-19-education

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö.E., Karadeniz, Ş. ve Demirel, F. (2020). *Bilimsel araştırma yöntemleri* (28.Baskı) [*Scientific research methods (28th Edition)*]. Ankara: Pegem Academy.

Chetty, R., Friedman, J. N., Hendren, N., & Stepner, M. (2020). Real-time economics: A new platform to track the impacts of COVID-19 on people, businesses, and communities using private sector data. *NBER Working Paper, 27431*.

Cooper, H. (2003). *Summer Learning Loss: The Problem and Some Solutions.* ERIC Digest. Retrieved from https://files.eric.ed.gov/fulltext/ED475391.pdf

Cooper, H., Nye, B., Charlton, K., Lindsay, J., & Greathouse, S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research*, *66*(3), 227–268. doi:10.3102/00346543066003227.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Çaykuş, E.T. & Mutlu Çaykuş, T. (2020). Ways to promote children' resiliency to the Covid-19 pandemic suggestions for families, teachers and mental health specialists. *Eurasian Journal of Researches in Social and Economics (EJRSE)*, *7*(5), 95-113.

Çelik, Z. (2020, Ağustos). *Covid-19 salgınının gölgesinde eğitim: Riskler ve öneriler. [Education in the shadow of the Covid-19 pandemic: Risks and recommendations].* Eğitim-Bir-Sen Center for Strategic Studies. Retrieved from
https://www.researchgate.net/publication/343787640_Covid_19_salgininin_golgesinde_egitim_Riskler_ve_oneriler

Di Pietro, G., Biagi, F., Costa, P., Karpinski, Z. & Mazza, J. *The Likely Impact of COVID-19 on Education: Reflections Based on the Existing Literature and Recent International Datasets*; Publications Office of the European Union: Luxembourg, 2020.

Donnelly, R., & Patrinos, H. A. (2021). Learning loss during COVID-19: An early systematic review. *Prospects*, 1-9.

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg E. (2020). COVID-19 and student learning in the United States: The hurt could last a lifetime. Retrieved from https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime#:~:text= All%20told%2C%20we%20estimate%20that,%2D19%E2%80%93related%20learning%20losses

Durak, G. (2017). Uzaktan eğitimde destek hizmetlerine genel bakış: sorunlar ve eğilimler [Overview of support services in distance education: problems and trends.]. *Journal of Open Education Practices and Research*, 3(4), 160-173.

Elleseff, T. (2018). Tips on reducing 'summer learning loss' in children with language/literacy disorders. *Smart Speech Therapy*, 1-2.

Erol, H. (2006). *İlköğretim 6. sınıf sosyal bilgiler dersinde demokratik hayat ünitesinin hedefleri ve bu hedeflerin gerçekleşme düzeyi* [*Objectives of democratic life unit in social studies lesson at the 6th grade of elemantary education and the level of attaining these objectives*]. Unpublished master's thesis. Kocatepe University Graduate School of Social Sciences: Afyon.

Fore, H. (2021). *Los niños y niñas no pueden permitirse otro año sin escuela*. UNICEF. Retrieved from https://www.unicef.org/lac/comunicados-prensa/los-ni%C3%B1os-y-ni%C3%B1as-no-pueden-permitirse-otro-a%C3%B1o-sin-escuela

Gershenson, S., & Hayes, M. S. (2018). The implications of summer learning loss for value-added estimates of teacher effectiveness. *Educational Policy*, *32*(1), 55-85.

Global Education Cluster. (2020). *Education in global health emergencies: COVID-19.* Retrieved from https://www.educationcluster.net/COVID19

Hannay, M., & Newvine, T. (2006). Perceptions of distance learning: A comparison of online and traditional learning. *Journal of Online Learning and Teaching*, 2(1), 1-11.

Jamar, I. (1994). *Fall Testing: Are Some Students Differentially Disadvantaged?* Pittsburgh, PA: University of Pittsburgh Learning Research and Development Center.

Kaffenberger, M. (2021). Modeling the long-run learning impact of the COVID-19 learning shock: Actions to (more than) mitigate loss. *RISE Insight Series*, 1-12.

Karabey, B. (2021). Pandemide çocuklardaki öğrenme kayıpları [Children's learning losses during the pandemic]. Retrieved from https://onedio.com/haber/burak-karabey-yazio-pandemide-cocuklardaki-ogrenme-kayiplari-952408

Karakuş, M. (2020). COVID 19 sürecinde öğrenme kayıpları [Learning losses during COVID-19]. Retrieved from https://www.hurriyet.com.tr/aile/yazarlar/merve-karakus/covid-19-surecinde-ogrenme-kayiplari-41680150

Karakuyu (2019). Meslek yüksekokulu öğrencilerinin sosyal medyadaki gelişmeleri kaçırma korkuları ve yalnızlık durumlarının nomofobilerine katkısı [Fears of vocational school students to miss the developments in social media and the ctribution of loneliness to their nomophobia], *Journal of Anadolu Bil Vocational School of Higher Education*, *14*(54), 93-106.

Kayır, G., & Özçelik, F. U. (2018). İngilizce dersindeki yaz tatili öğrenme kayıplarına ilişkin öğretmen görüşleri [Teachers' Views on Summer Learning Loss in English Lesson]. *Turkish Journal of Primary Education 3*(1), 33-45.

Kim J. S. & Quinn D. M. (2013). The effects of summer reading on low-income children's literacy achievement from kindergarten to grade 8 a meta-analysis of classroom and home interventions. Review of Educational Research, 83(3), 386–431.

Kuhfeld, M. (2018, July 16). Summer Learning Loss: What We Know and What We're Learning. Retrieved from https://www.nwea.org/blog/2018/summer-learning-loss-what-we-know-what-were-learning/

Kuhfeld, M. & Tarasawa B. (2020, April). The COVID-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement. Retrieved from https://www.nwea.org/content/uploads/2020/05/Collaborative-Brief_Covid19-Slide-APR20.pdf

Kurnaz, A., Kaynar, H., Barışık, C. Ş. & Doğrukök, B. (2020). Öğretmenlerin uzaktan eğitime ilişkin görüşleri [Teachers' views on distance learning]. *Journal of National Education*, *49*(1), 293-322.

Lafortune, J. (2020, 2 Nisan). How COVID-19 Closures May Disrupt Student Learning. Retrieved from https://www.ppic.org/blog/how-covid-19-closures-may-disrupt-student-learning/ on 2021, January 27.

Li, C. & Lalani, F. (2020, 29 Nisan). The COVID-19 pandemic has changed education forever. Retrieved from https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-onlinedigital-learning/

Marcotte, D. & Hemelt, S. (2008). Unscheduled school closings and student performance. *Education Finance and Policy*,*3*(3), 316-338.

Miles, M, B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook.* (2nd ed). Thousand Oaks, CA: Sage.

Neuman, W. L. & Robson, K. (2014). *Basics of social research.* Pearson Canada Toronto.

OECD. (2020). *Education responses to covid-19: Embracing digital learning and collaboration.* Retrieved from www.oecd.org/coronavirus/en/

Opere, W. M. (2021). Negative impacts of the current COVID-19 crisis on science education in Kenya: How certain can we be about the efficacy of the science learning framework online?. *Journal of Microbiology & Biology Education, 22*(1), ev22i1-2559.

Orhan Karsak, H. G. (2019). Internet learning. In Theory and Practice in Social Sciences. Krystev, V. Efe, R. Atasoy, E. (Eds). pp. 182-191. Sofia: St. Kliment Ohridski University Press.

Orhan Karsak, H. G. & Şan, İ (2021). *Eğitimde Uzaktan Eğitim Okuryazarlığı*. Koçoğlu, E. (Ed., Eğitimde okuryazarlık becerileri-1 ss.221-245) [Distance Education Literacy in Education (Ed. Literacy skills in education-I p. 221-245)]. Ankara: Pegem Academy Publishing.

Osman, M. E. (2020). Global impact of COVID-19 on education systems: The emergency remote teaching at Sultan Qaboos University. *Journal of Education for Teaching, 46*(4), 463-471.

Öztaş, S., & Kılıç, B. (2017). Atatürk ilkeleri ve inkılâp tarihi dersinin uzaktan eğitim şeklinde verilmesinin öğrenci görüşleri açısından değerlendirilmesi [The evaluation of students' opinions of teaching the Atatürk's principles and history of revolution course with distance education]. *Turkish History Education Journal*, *6*(2), 268-293.

Pier, L., Hough, H.J., Christian, M., Bookman, N., Wilkenfeld, B., & Miller, R. (2021, January 25). COVID-19 and the educational equity crisis. Evidence on learning loss from the CORE data collaborative. PACE. Retrieved from https://www.edpolicyinca.org/newsroom/covid-19-and-educational-equity-crisis

Reid, K. (2005). The causes, views and traits of school absenteeism and truancy: An analytical review. *Research in Education, 74*(1), 59-82. doi: 10.7227/RIE.74.6

Rogers, F. H., & Sabarwal, S. (2020). The COVID-19 Pandemic: Shocks to Education and Policy Responses (No. 148198, pp. 1-56). The World Bank.

Saavedra, J. (2020). Educational challenges and opportunities of the Coronavirus (COVID-19) pandemic. Retrieved from https://blogs.worldbank.org/education/educational-challenges-and-opportunitiescovid-19-pandemic

Sabates, R., Carter, E., & Stern, J. M. B. (2021). Using educational transitions to estimate learning loss due to COVID-19 school closures: The case of Complementary Basic Education in Ghana. *International Journal of Educational Development, 82*, 1-9.

Saran, S. (2020). Technology: Digital Epiphany? COVID-19 and Our Tech Futures. In Insight Report Challenges and Opportunities in the Post-COVID-19 World (pp. 24–27).

Sarı, T. & Nayır, F. (2020). Pandemi dönemi eğitim: sorunlar ve fırsatlar [Education in the pandemic period: Challenges and opportunities]. *Turkish Studies*, *15*(4), 959-975. https://dx.doi.org/10.7827/TurkishStudies.44335

Selçuk, Z. (2020). Eğitim ve öğrenme kayıpları uzun vadede tahribatlara yol açabilir [Educational and learning losses may cause destruction in the long run]. Retrieved from https://www.gunes.com/egitim/bakan-selcuk-egitim-ve-ogrenme-kayiplari-uzun-vadede-tahribatlara-yol-acabilir-1095850?fbclid=IwAR2E9ebEe-tfXXMNL968cpZdm4z8sKZf1YaG0CI8LquT7tsVokxm47sTcEI

Sezgin, F., Erdoğan, O., & Dağ, S. (2020). Ortaöğretim öğrencilerinin yaz tatili öğrenme kayıpları: Aile eğitim düzeyine ilişkin bir analiz [Summer learning losses of high school students: An analysis of family education]. *Journal of National Education, 49*(226), 35-52.

Sözen, N. (2020). COVID 19 sürecinde uzaktan eğitim uygulamaları üzerine bir inceleme [An investigation on distance education applications in the COVID 19 process]. *Eurasian Journal of Researches in Social and Economics (EJRSE)*, *7*(12), 302-319.

Şen, E. U. (2009). *Yapılandırmacı yaklaşım temelli yeni ilköğretim programı kılavuzluğunda gerçekleştirilen öğretim etkinlikleri sonrası yaz tatili öğrenme kayıpları* [*Post-teaching activities summer holiday learning losses performed*

under the guidance of new primary school curriculum based on constructivist learning approach]. *Master's thesis*, Ondokuzmayıs University: Samsun.

Şirin, S. (2014, June 24). Yaz tatilinde geriye düşen çocuklar! [Kids falling behind on summer vacation] *Hürriyet newspaper*. Retrieved from http://www.hurriyet.com.tr/yazarlar/selcuk-sirin/yaz-tatilinde-geriye-dusen-cocuklar-26686887

TEDMEM. (2020). *COVID-19 sürecinde eğitim: Uzaktan öğrenme, sorunlar ve çözüm önerileri* (TEDMEM Analiz Dizisi 7) [Education during COVID-19: Distance learning, problems and solution proposals]. Ankara: Turkish Education Association Publications. Retrieved from https://tedmem.org/yayin/covid-19-surecinde-egitim-uzaktan-ogrenme-sorunlar-cozum-onerileri

UNESCO (2020). *COVID-19 educational disruption and response*. Retrieved from https://en.unesco.org/covid19/educationresponse

Usta, N., Yılmaz, M., Kartopu, S., & Kadan, Ö. F. (2018). Impact of visuals on primary school 4th graders' problem-solving success. *Universal Journal of Educational Research*, *6*(10), 2160-2168. Doi: 10.13189/ujer.2018.061014

Uyar, A., Canpolat, M. & Şan, İ. (2021). STEM merkezindeki öğretmenlerin ve öğrencilerin STEM eğitimi hakkındaki görüşleri: PayaSTEM merkezi örneği [Views of Teachers and Students in Stem Center on STEM Education: The Sample of PayaSTEM Center]. *Manas Journal of Social Studies*, *10*(1), 151-170.

Uyar, A. & Karakuyu, A. (2020). Meslek yüksekokulu öğrencilerinin e-öğrenmeye yönelik hazırbulunuşlukları [Readiness of vocational school students' towards e-learning]. *Journal of Social and Humanities Sciences Research, 7*(60), 2905-2914.

Von Hippel, P. T. (2019). Is Summer Learning Loss Real?. Retrieved from https://www.educationnext.org/is-summerlearning-loss-real-how-i-lost-faith-education-research-results/ on 2021, January 21.

Wahyudi, A. (2021). Learning loss during Covid-19 pandemic in Indonesia and the strategies to minimize it. *Journal of English Education and Linguistics, 2*(2), 18-25.

Wisher, R. A., Curnow, C. K., & Seidel, R. J. (2001). Knowledge retention as a latent outcome measure in distance learning. *American Journal of Distance Education, 15(3), 20-25.* Doi: 10.1080/08923640109527091

Wilson, M. (2020). COVID-19 learning loss: Recommendations to improve student outcomes during COVID-19 pandemic. Retrieved from https://apluscolorado.org/reports/covid-19-learning-loss/

World Bank. (2020). Guidance note: Remote learning & COVID-19. Retrieved from http://documents.worldbank.org/curated/en/531681585957264427/pdf/Guidance-Note-on-Remote-Learning-and-COVID-19.pdf

Wyse, A. E., Stickney, E. M., Butz, D., Beckler, A., & Close, C. N. (2020). The potential impact of COVID-19 on student learning and how schools can respond. *Educational Measurement: Issues and Practice*, *39*(3), 60-64.

Yamamoto, G.T. & Altun, D. (2020). Coronavirüs ve çevrimiçi(online) eğitimin önlenemeyen yükselişi [The Coronavirus and the Rising of Online Education]. *Journal of University Research*, *3*(1), 25-34.

Yıldırım, A. & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri* (11. Baskı) [Qualitative research methods in social sciences (11th edition)]. Ankara: Seçkin Publishing.

Yıldız, A., & Akar Vural, R. (2020). Covid-19 pandemisi ve derinleşen eğitim eşitsizlikleri. *Türk Tabipleri Birliği Covid-19 Pandemisi Altıncı Ay Değerlendirme Raporu* [The Covid-19 pandemic and deepening education inequalities. Turkish Medical Association Covid-19 Pandemic Sixth Month Evaluation Report], 556-565. Retrieved from https://www.ttb.org.tr/kutuphane/covid19-rapor_6/covid19-rapor_6_Part64.pdf

Yılmaz, M., & Kadan, Ö. F. (2019). Öğretmen adaylarının mesleğe yönelik tutumlarının incelenmesi (Bartın Üniversitesi eğitim fakültesi örneği) [The Prospective Teachers' Attitudes Towards the Profession (Bartın University faculty of education sample)]. *Journal of Social Sciences, 6*(35), 487-498.

Syrian Children's Education and Integration Problems from Teachers' Perspectives

Research Article

Kadir Vefa TEZEL[1]

[1]*Bolu Abant İzzet Baysal University, Faculty of Education, Department of Educational Science, Bolu, Turkey* 0000-0002-2636-1221

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ARTICLE INFO	ABSTRACT
	Due to the war in Syria, Turkey has become the country that hosts the largest number of refugees in the world. With the refugees came problems that required solutions. The education of Syrian children is one of those problems. Turkey initially implemented short-term policies, expecting the war to end soon. When that possibility faded, long-term educational policies were devised, but a major communication problem emerged in classrooms as neither the Turkish teachers nor the Syrian students knew the language of each other. This study was conducted to obtain not only the opinions of the teachers who found themselves in that situation but also their recommendations to solve this problem. The teachers' recommendations were twofold: preparatory language education for students who do not know Turkish and additional courses for those who are able to follow the curriculum with their Turkish peers to help them improve their proficiency in Turkish.

Introduction

Wars and armed conflicts cause devastating consequences on local civilians who are forced to flee their native land, seek sanctuary in another country and become refugees. On the United Nations Refugee Agency (UNHCR) website, refugees are defined as people who have fled war, violence, conflict or persecution and have crossed an international border to find safety in another country. Forced migration causes adaptation problems in the lives of people who begin to live usually under worse economic conditions in a different society that speaks a different language. These displaced people not only have to adapt to their new environment, but the host country has to make accommodations to deal with this unexpected human tragedy as both parties are unprepared to deal with such a problem.

* Corresponding author: Bolu Abant İzzet Baysal Üniversitesi
Telephone: +905412340614
e-mail: vefa2000@gmail.com

The Civil War in Syria started in March 2011 and it is not likely that it will end in the foreseeable future. The ever-intensifying violence has forced a significant portion of Syrians to migrate to other countries. Türkiye has been inevitably affected by the civil war in Syria politically, economically, and socially (Paksoy & Karadeniz, 2016) as massive numbers of refugees crossed its 911 kilometer-long (566 statute miles) border with Syria. Türkiye immediately started implementing an open-door policy to provide a safe haven and became the first choice of these millions of forcefully displaced Syrians (Aydın & Durgun, 2018, p. 507). The open-door policy allowed Syrians to cross the border immediately and prevented further loss of lives. Syrians continue to come to Türkiye. The latest updated official number of Syrians in Türkiye announced by the General Directorate of Migration Management is 3.638.288 (Göç İdaresi Genel Müdürlüğü, 2020).

Another prominent reason for Syrians to choose Türkiye primarily lies in its being a contiguous transcontinental country that has territories on both the continents of Europe and Asia. Thus, refugees consider Türkiye as their gateway to countries where wars, political turmoil, and instability are not on the daily agenda of the local societies.

Erdoğan (2019) sums up the current situation as follows: "Thanks to Syrian refugees, Türkiye has become the world's most refugee-hosting country since 2014 (p.2)". The UNHCR (2021) endorses this conclusion by stating "Türkiye continues to host the largest number of refugees worldwide, as the number of people forcibly displaced across the world due to conflict, violence, and persecution hit record levels. Türkiye currently hosts over 3.6 million registered Syrian refugees along with over 365,000 persons of concern from other nationalities." The Syrian refugees reside in 21 temporary protection centers set up by the Turkish government (AFAD, 2020) and in cities.

Türkiye's efforts: Official policies

As a country that has always provided a safe haven for refugees, the republic of Türkiye has faced 9 major migration waves from its foundation in 1923 until 2001. To name a few known by the international community, 51,542 people from Iraq in 1988, 467,489 Iraqis in 1991, 20.000 people from Bosnia and Herzegovina between 1992 and 1998, and 17.746 people from Kosovo sought refuge in Türkiye (Göç Tarihi, 2018). The latest wave caused by the civil war in Syria is the largest migration wave in Türkiye's history.

At the very beginning, Türkiye devised short-term policies to satisfy the Syrians' immediate basic human needs such as security, shelter, food, and health care (Kaya & Eren, 2015, p.28). In time, however, the war escalated, and it became clear that it would be unreasonable to continue to implement those short-term policies for the Syrians who were not able to go back to their country. This continuing wave of migration has caused many "social, economic and political problems both within Syria and in neighboring countries" (Ağır & Sezik, 2015, p. 96).

One of those problems is the education of the migrant school-age children. Migrant children can be seriously deprived of education due to social and cultural isolation, tiring and dangerous jobs, extreme poverty, poor health conditions, and language barriers (Rossi, 2008; Erdem, 2017). To cope with this significant problem, Türkiye has begun to devise long-term policies. One of those policies is "Law 6458 on Foreigners and International Protection (YUKK)" which was adopted in 2013. Article 34 of the law permits refugee children to attend primary and secondary educational institutions until the age of 18 without obtaining a student residence permit because a generation of young people who cannot receive proper education will experience major difficulties in terms of adapting to the social, cultural, and economic life of the host country and will most likely to be forced to become victims of child labor, sexual abuse, child marriage, panhandling, and most terrifying of all, be forced to become soldiers by terrorist organizations. The law also made education possible for the Syrian infants born in Türkiye following their parents' arrival.

Schooling of Syrian children: Educational models

Türkiye has developed two educational models for the schooling of Syrian children. The first model was developed as part of the initial emergency action plan which was based on the assumption that the Syrian migrants would return to their countries after the war ended. The model followed the Syrian curricula for the education of the school-age children. Arabic was used as the medium of instruction. Under the auspices of the Turkish state and the ministry of National Education, migrant children were provided education at the temporary education centers by Syrian teachers and by Turkish teachers who knew Arabic (Eğitim Bir-Sen, 2016). In other contexts, social organizations assumed responsibility in the education of Syrian children. The children whose parents had residence permits and lived outside the camps attended public schools. Syrians who lived outside the camps and did not have residence permits were issued guest status that allowed them to enroll their children in public schools. There were also schools founded with support from local authorities and non-governmental organizations that employed Syrian teachers (United Nations High Commissioner for Refugees - Birleşmiş Milletler Mülteciler Yüksek Komiserliği, 2015b; Erdem, 2017, 29). These initial measures were implemented, but because of the high numbers of Syrian refugees, as Culbertson & Constant (2015) state, Türkiye needed to make more effort in the schooling of Syrian refugee children than other countries.

However, in early 2016, five years after the beginning of the war, non-bordering countries began to be involved as actors in the war. Russia exerted its military presence at the end of September 2015 (Tellal, 2015) and this was followed by the military presence of the United States in November 2015. The international community continued to refrain from displaying the expected determination to end the war. In 2016, the report published by the Directorate General of Migration Management showed that there were 2.834.441 Syrians in Türkiye ((2016, p. 77). Of those, 1.350.342 (47.64%) were between the ages of 0-18. Most of those children needed basic education. A major finding that necessitated urgent measures to be taken was the fact that 321.460 (11.34%) of those children had been born between 2012 and 2016 in Türkiye and there appeared no possibility of their parents' going back to their homeland on the horizon. In addition, 349.064 (12.32%) Syrians were between the ages of 19-24 which meant that they were at higher education level. These facts indicated clearly that designing another educational model to realize the social adaptation and integration of school-age Syrians was imminent and would be beneficial for them and for the host country as was also discussed by Ertaş & Çiftçi Kıraç (2017). One of the first efforts in this area was The Immigration and Emergency Education Department which was founded under the General Directorate for Lifelong Learning on May 16, 2016.

The new model was based on the Turkish curricula in which the medium of instruction was Turkish. The goal was to provide a permanent solution to the largest migration wave since WW II. When the second model was implemented, language appeared as the major obstacle between the Syrian students and Turkish teachers for neither party was linguistically prepared. School-age Syrian children who continue their education in Lebanon, Jordan, Iraq, and Egypt may be considered more fortunate as Arabic is also the native language of those countries. In Türkiye, however, as Turkish is the native language, Syrian children have to learn both a different language and school subjects taught through it simultaneously. This causes serious problems in the education of refugee children, their adaptation to the Turkish society (Karaman & Bulut, 2018), and their school attendance. Demir & Özgül (2019, p. 1991) note that "it is the lower language proficiency of these children (or their inability to speak Turkish at all) that prevents them from receiving education in Turkish schools." Although language knowledge (or rather the lack of it) appears as the main obstacle in the education of the Syrian students, there are also problems that stem from the students themselves. Taştan & Çelik (2017) present three general Syrian student profiles to explain those problems: Type-1 students are those who have lost their motivation to attend schools at all. Type-2 students have moderate schooling difficulties. Type 3 students are the only or indispensable source of income for their families.

Purpose of the study

The implementation of the second model paved the way for the integration of Syrian children into the Turkish school system but it also showed that Arabic, which was the only language the students knew, was a major obstacle between them and Turkish teachers who only knew Turkish. Due to this, both parties began to experience significant difficulties. This study was initiated to identify the problems faced by the Turkish teachers who had Syrian students in their classes, using an inductive approach to obtain their invaluable perspectives as insiders and provide solutions on the basis of those findings. The analysis of the collected data was used to serve its dual purposes:

1. To present its findings to stakeholders in Türkiye with the intention to contribute to the implementation and refinement of the devised model.

2. To share the analysis of these first-hand experiences with educators who are in similar circumstances in other countries to offer them some useful pointers for local adaptation.

Studies conducted by the Ministry of National Education (MoNE) and other institutions regarding the effects of refugees on social life in Türkiye and the education of their children also reveal that Türkiye needs to make more efforts on language education (Öztürk, Cengiz, Köksal & İrez, 2017; Kaya & Yılmaz Eren, 2015, Emin, 2016; Orhan & Şenyücel Gündoğar, 2015; Özer, Komşuoğlu & Ateşok, 2016). Individual researchers are of the same opinion (Tanrıkulu, 2017; Taştan & Çelik, 2017). Some of these studies focus on teachers and their opinions and experiences as the most important elements in the provision of education. However, these studies are limited in number (Şimşir & Dilmaç, 2018; Kardeş & Akman, 2018; Zayimoğlu Öztürk, 2018). Language, which is the most basic requirement for the education of Syrian children, and the difficulties experienced in this regard (Solak & Çelik, 2018; Güven & İşleyen 2018) and studies on the views of language teachers on the issue (Bulut, Kanat Soysal & Gülçiçek, 2018; Koçoğlu & Yanpar Yelken, 2018; Moralı, 2018; Taşkaya & Ersoy, 2016) form subsets of these limited number of studies.

Literature Review

Studies that investigated the language-related problems experienced by the students were conducted mostly in 3 types of school contexts in Türkiye. These are pre-school, elementary school, and secondary school. Of those, the majority of the studies were conducted in elementary school contexts. In this section, the findings obtained through the studies conducted in these three contexts will be discussed first. The data in those studies were collected from teachers who witnessed those problems in their classes. This will be followed by the findings of studies conducted with school administrators on the issue.

The number of studies in pre-school contexts is limited. In a rare study, Aydın & Kurtulmuş (2018) investigated pre-school teachers' opinions regarding the problems teachers experienced with refugee children in their classes. In their study, language appeared as a barrier between not only teachers and students but between teachers and students' families as well. Teachers also reported cultural differences to be a major cause of problems that arose in classroom environments.

The majority of the studies on language-related problems were conducted in elementary school environments. These studies inform the reader of the types of problems that lack of knowledge of the medium of instruction could cause. In one study, Erdem (2017) stated that the main problem source for refugee students was language (p. 35) as lack of its competence led to comprehension problems in reading the coursebooks and listening to teachers in classes. In their study, İmamoğlu & Çalışkan (2017, p. 539) identified lack of language competence as the major problem which was coupled by the Syrian students' receiving education in Turkish with their Turkish peers in the same classroom. Güngör & Şenel (2018) identified 6 problems experienced by the Syrian students. Language and culture differences top the list. The other five are comprehension, academic

failure, lack of competence in basic language skills, expressing self, and lower academic performance than specified in the curriculum. Ciğerci & Güngör (2016) identified language as the main barrier from the perspective of teachers who were teaching refugee students, the majority of whom were Syrian and Iraqi nationals. Taşkın & Erdemli (2018) also noted that the language barrier was the most important problem reported by the teachers educating Syrian students. Koçoğlu & Yanpar Yelken (2018) approached the issue from a different angle by obtaining the opinions of teachers regarding the efficiency of the Turkish curricula for different grades. The teachers in their study expressed that "learning outcomes needed to be revised because the Syrian students in their classes did not know Turkish" (p. 140).

Yurdakul & Tok (2018) conducted their study with elementary and secondary school teachers and found language as the major problem which was followed by problems emanating from cultural differences. In another study conducted with elementary and secondary school teachers, Şimşir & Dilmaç (2018) identified language as the factor causing obstacles in the refugee students' academic performance and their interaction with their peers. Zayimoğlu Öztürk (2018) also reported the language barrier as the most important obstacle in civic education classes which resulted in lack of comprehension which led to boredom. Language was also reported by the teachers to be a hindrance in the students' acceptance by their Turkish peers. Akay, Hamamcı & Kurt (2018) in their study with counselors who worked with Syrian refugee students in secondary and high schools stated that 29 counselors out of a population of 32 reported lack of language competence as the main barrier that hindered the communication and societal adaptation.

School administrators' views were parallel to those of the teachers. Levent & Çayak (2017) found that 27 (90%) of the 30 school administrators who participated in their study reported language as the major problem. Demircan (2019) also found that the school administrators in her study considered language as the major problem. Eren (2019, p. 221) found that the participating school administrators in her study unanimously reported language as the major problem.

The studies referred to in this section unanimously indicate language as a fundamental hindrance in the education of Syrian students. Lack of language proficiency causes failures in the comprehension of oral and written language. As students and teachers are not able to communicate through a common language and education has to continue per curriculum incessantly, the lack of language knowledge and proficiency on the side of the Syrian students needs to be addressed to solve the matter once and for all.

Methodology

Research design

This study is qualitative by design. It employs phenomenology, which as English and English (1958) noted, takes direct experience at face value and studies and argues that behavior is determined by the phenomena of experience rather than by externally described reality. Phenomenology functions as a valuable tool to study conscious experience by providing an in-depth understanding of an issue from the perspective of those who experience it. Phenomenology not only contributes to our understanding of a phenomenon from the first person point of view but it provides us with explanations that will help interested parties understand a phenomenon better as well (Best & Kahn, 2017; Creswell, 2013). Analyses based on the data collected through phenomenology (Creswell, 2018, p. 277) provide "a detailed description of people's experiences". The obtained experiences and examples contribute to knowing and understanding a phenomenon better. The phenomenology design also identifies common points in individual experiences related to a phenomenon and as such makes significant contributions to both scientific literature and practice (Creswell, 2013).

Participants

One hundred and seventy-six elementary school, Turkish language, and Turkish literature teachers voluntarily participated in the study. All teachers had Syrian students and Turkish students in their classes. Female teachers formed the majority of the teacher population by 65.3%. The ages of more than half of the teachers were between 21-30. Slightly more than half of the teachers had 1-5 years of professional experience. The distribution of the number of the participants by subject area is elementary school teachers (f=94, 53.4%), Turkish language teachers (f=68, 38.6%), and Turkish literature teachers (f=14, 7.9%). As seen, elementary school teachers formed the majority. Almost 85% of the participating teachers were graduates of faculties of education. As for the places of employment, elementary school teachers reported that they were teaching in elementary schools and temporary protection centers. Other subject teachers noted that they were teaching in secondary or high schools. Detailed demographic information about the participating teachers is given in Table 1.

Table 1. Demographic information on the participating teachers

		f	*%*
Gender	Female	115	65,3
	Male	61	34,7
Age	21-25	43	24.4
	26-30	50	28.4
	31-35	34	19.3
	36-40	26	14.8
	41+	23	13.1
Years of experience	1-5 years	89	50.6
	6-10 years	32	18.2
	11-15 years	24	13.6
	16 years and more	31	17.6
Subject	Elementary school teacher	94	53.4
	Turkish teacher	68	38.6
	Literature teacher	14	7.9
Faculty of undergraduate major	Faculty of Education	149	84,6
	Faculty of Arts and Letters	21	11.9
	Other	6	3.4
Place of employment	Elementary school	77	43.7
	Secondary school	68	38.6
	High school	14	7.9
	Temporary education centers	17	9.6
Total		176	100

Data collection process

A questionnaire was used as the data collection tool to reach the largest possible number of teachers and obtain their experiences. In order not to burden teachers with regular mailing processes, the questionnaire was formed online, using Google forms. The prepared questionnaire was sent to 3 field experts and 3 teachers to seek their feedback. Based on the suggestions, a revised questionnaire was drafted and sent to the same party. Having received the experts' approval, the final version of the questionnaire was made electronically available for filling out. All teachers who were teaching Syrian students in all educational institutions in Türkiye were kindly invited to fill it out through a letter of invitation.

The questionnaire consisted of 17 questions. Some questions were open-ended. The purpose of using open-ended questions was to enable the teachers to express their views in the way they wish and thus to gain comprehensive information on the subject. The first 5 questions were for demographic information about the teachers. The remaining questions were prepared to obtain information on learners' performances in four language skills (6-7), teachers' opinions on the implementation of the existing curricula to teach Syrian students (8-9), sufficiency of the number of hours of instruction (10-11), problems teachers experienced while teaching Turkish (12, entirely open-ended), skill/s taught successfully by teachers (13), skill/s taught least effectively by teachers (14), effectiveness of professional events on teaching refugee students (15-16), and areas teachers would like to have information in (17).

Data analysis

The collected data were analyzed using descriptive statistical analyses and content analysis. Frequency and percentages were calculated for the descriptive analyses. Content analysis was conducted to determine the teachers' opinions on the focuses of this study. The results of both analyses are presented in the Findings section.

Ethical considerations

This study was approved by the Ethics Committee of the Bolu Abant İzzet Baysal University Protocol No. 2022/194. Participation was voluntary. Participants filled out the questionnaire and were asked not to disclose any information that would reveal their identities. The anonymity of the participants was thus achieved. There was no ethical violation of any kind.

Findings

The results will be presented in the following order. Firstly, the teachers' opinions on students' performance in four language skills and the implementation of the existing curricula will be presented. The section will continue with the recommendations made by the teachers regarding coursebooks, preparatory courses in Turkish, curriculum, the need for expert teachers to teach Turkish as a foreign language and basic Turkish literacy skills. This will be followed by the teachers' opinions on the sufficiency of instruction hours for students who have basic literacy skills in Arabic and limited Turkish knowledge. Findings regarding the problems experienced by the teachers will be next. The section will then present the opinions of the teachers regarding the skills taught successfully and with the least effectiveness. The teachers' opinions on the effectiveness of the in-service education they received in teaching refugee students will be presented next. The section will end with the teachers' opinions on the areas they would like to have information in.

Teachers' opinions on learners' performances in four language skills

In order to elicit the teachers' opinions on the language skills their Syrian students learned with ease and with difficulty, they were asked two questions to rank the students' achievement in the four language skills in Turkish. The teachers' rankings are given in Table 2 and Table 3. A glance at them would show that writing appears to be the most difficult skill to learn in both tables, followed by reading. The teachers' rankings clearly indicate that literacy skills must be given special importance in teaching Turkish to Syrian students.

Table 2. Language skill/s students learn with ease

Skill	*f*	%
1. Speaking	71	40,3
2. Listening	69	39,2
3. Reading	68	38,6
4. Writing	40	22,7

Table 3. Language skill/s students learn with difficulty

Skill	*f*	*%*
1. Writing	108	61,4
2. Reading	103	58,5
3. Listening	78	44,3
4. Speaking	52	29,5

Teachers' opinions on the implementation of the existing curricula

Some teachers believed that the existing curricula had some shortcomings and responded negatively to the question that asked their opinions on the efficiency of the implemented curricula. Table 4 shows the teachers' opinions regarding the efficiency of the current curricula, and Table 5 presents the recommendations made by the teachers and their frequencies in four areas which will be briefly discussed below.

Table 4. Effectiveness of the existing curricula

Efficiency of the curricula	*f*	**%**
1. Yes	61	34.7
2. No	115	65.3

Table 5. *Recommendations made by teachers who answered the above question "No"*

Recommendations	*f*	*%*
1. Coursebooks	41	
2. Turkish preparatory courses	28	
3. Curriculum	9	
4. Expert teachers	4	

Teachers' recommendations in four areas

Coursebooks

Forty-one teachers voiced the opinion that specifically designed coursebooks be prepared for teaching Turkish. The teachers stated that the language coursebooks used to teach Turkish to Syrian students had been prepared for native speaker students. However, they were not even suitable for those students as their contents were difficult and abstract for the children's age level. The language used in the available coursebooks was also above the Syrian students' Turkish proficiency level. Therefore, they recommended that Turkish language coursebooks be prepared for students whose native language was Arabic by taking the students' proficiency levels into account and that the literacy content of those books should be rich as the students could not read and write the Turkish alphabet. The contents of the books should include primarily listening and speaking activities and vocabulary students would use in their daily lives and less grammar than usual. In addition, to make the books more age-appropriate, the teachers recommended the inclusion of visuals. To help students overcome their problems with the Turkish alphabet, the teachers suggested the inclusion of more writing activities in the coursebooks. The final recommendation made by the teachers was that the new coursebooks should include smartboard applications.

Turkish preparatory courses

According to twenty-eight teachers, the Syrian students in schools should first learn Turkish. A proficiency test should be administered to determine the proficiency levels of the students. Children who prove to have an appropriate level of Turkish proficiency should be sent to regular schools to continue their education. For those with low proficiency, Turkish preparatory classes should be established to teach Turkish for at least one year. Preparatory language education should be given in separate schools. In the preparatory

program, classes should be formed according to proficiency levels. This intensive program should have more weekly hours of language classes and the focus should be placed on the teaching and development of four language skills. Students should first be taught to read and write. This training is important for students to eventually adapt to the current curricula. Orientation programs may follow preparatory language education. Afterwards, students may be sent to regular schools for their eventual integration with other students.

Curriculum

Nine teachers remarked that specifically designed curricula should be prepared for the Syrian students to learn Turkish. The teachers made two recommendations: Firstly, the new curricula should be prepared to help students read and write primarily in the teaching of the four skills. Secondly, the new coursebooks should include less grammatical information and have more smartboard-compatible visual components to ensure and increase comprehension.

Expert teachers

Four teachers stated that they were professionally competent to educate students whose native language was Turkish, but they did not have experience in teaching Turkish as a foreign language and basic Turkish literacy skills to Syrian students. In those teachers' opinion, there certainly was a need for teachers who were experts in both teaching Turkish as a foreign language and basic Turkish literacy skills. They reported that it was challenging for them to teach the school subjects in the curriculum and teach Turkish to the Syrian students and develop their basic literacy skills in the meantime.

Sufficiency of the number of hours of instruction for students with basic literacy skills in Arabic and limited Turkish knowledge

Three opinions were expressed by the teachers regarding this issue. Some teachers stated that the language problem could be solved by providing additional weekly language instruction to the students. Some commented that a year-long preparatory Turkish course was essential. A small group of teachers mentioned that assessing the proficiency of the students in Turkish should be foremost and that, based on the results of that assessment, decisions could be made as to whether students should be handled within the current curricula or be directed to attend a preparatory Turkish language course. Table 6 presents the teachers' opinions in numerical form.

Table 6. Recommended weekly hours of instruction

Recommended number of hours per week	*f*	*%*
1. 5-8	27	15,9
2. 10-15	30	17,0
3. 20-30 preparatory class	24	13,6
4. To be determined on students' level of proficiency in Turkish	7	3,9

Problems teachers experienced while teaching Turkish

The seven categories in Table 7 below summarize the teachers' answers to an entirely open-ended question that asked them to report all problems they experienced in teaching Turkish. The problems are discussed in detail.

Table 7. Problems experienced by teachers while teaching Syrian students

Problems	*f*	*%*
1. Students' lack of language competence	33	18,7
2. Difficulties in learning Turkish	28	15,9

3. Adaptation problems that stemmed from students' behaviors and cultural differences	25	14,2
4. Lack of level-appropriate classes	9	5,1
5. Ineffectiveness of the current coursebooks	5	2,8
6. Lack of parental concern and financial problems of families	3	1,7
7. Use of mother tongue outside the school	3	1,7

Students' lack of language competence

Thirty-three teachers stated that the Syrian students experienced communication problems such as not understanding, misunderstanding, or incomplete understanding that stemmed from their lack of language knowledge. Those teachers remarked that they faced fundamental problems in literacy education and that the sources of those problems were the students' knowledge of the Arabic alphabet and writing from right to left in Arabic. They added that low language proficiency in Turkish caused the students to have difficulties in comprehending speech, pronouncing some sounds, and experiencing problems in making sentences primarily in speech and writing. Because of their low language proficiency, the students also were not able to do and turn in homework assignments. This meant that they were not able to spend time to revise the material they learned in the class. The teachers also mentioned that it was very difficult to teach Turkish grammar and words with multiple meanings and work on improving the students' pronunciation while continuing to teach subjects in Turkish to all students in the class. They pointed out that it was not realistic to assume that the Syrian students would understand and be able to use everything they had learned satisfactorily soon after teaching. Thus, as the Syrian students did not have sufficient language proficiency, not only they were unable to perform academically satisfactorily, but they failed to interact with their Turkish classmates and teachers as well.

Another problem reported by the teachers was that the students had difficulty understanding what their teachers had written on the board. The teachers added that the students also experienced difficulties understanding what their teachers were saying and that at times when they spoke fast in the class, they noticed that the Syrian students almost immediately stopped listening, believing they would not understand a word of that fast speech. Because of the Syrian students' language problems, the teachers reported that they could not delegate responsibility equally among all students while doing practice activities in their classes as the students failed to understand what they were expected to do. Low language proficiency caused the feeling of alienation in the Syrian students who could not fully understand the subjects and rules and could not interact with the people in their immediate environment. This was followed by increased attendance and eventual dropping out of school.

Difficulties in learning Turkish

Twenty-eight teachers reported that their Syrian students had difficulties in learning Turkish in seven areas which were grammar, pronunciation, word and sentence stress, intonation, writing, speaking, listening, and reading skills. The teachers added that because of the influence of Arabic, their students tended to read Turkish texts from right to left. The students also did not use suffixes at the end of words in writing. The teacher stated that their students experienced major problems in learning Turkish spelling and writing accurately. Those difficulties and limited vocabulary knowledge prevented the students from speaking Turkish to make even simple requests for repetition which eventually caused them to become withdrawn and shut themselves down in classrooms.

Adaptation problems that stemmed from students' behaviors and cultural differences

Twenty-five teachers stated that they encountered adaptation problems that stemmed from the students' behaviors and cultural differences between the two societies. The teachers remarked that when some of their Syrian students did not understand what the teacher was teaching or talking about, they began to busy themselves with other things and stopped listening. This behavior sometimes resulted in disrupting the classroom environment and caused the teacher to stop teaching in order to restore order. This negative behavior became a habit in time for some Syrian students. Also, some Syrian students displayed violent tendencies in classes and caused discipline problems. Such behaviors formed psychological barriers that prevented the students from adapting to their new living environments. The causes of those violent behaviors were the students' being exposed to traumatic events such as war, death, or losing one or both parents at a very early age. Violent behaviors and extreme sadness which are also observed in some Syrian students were reported as major reasons that prevented those students from focusing on the lesson and adapting to the Turkish society which, in some cases, led to their eventual exclusion by other students in their classes. Classroom management, thus, appeared as one of the most problematic issues for teachers.

Culturally speaking, a major problem the teachers observed was the prejudice against learning Turkish among students: Many of the students were worried about losing their own culture when they learned Turkish. This caused reluctance to learn Turkish. According to the teachers, another reason why the Syrian students were reluctant to learn Turkish was that they did not feel the need to learn Turkish because they did not think they would permanently stay in Türkiye. For those students, the Presidency for Turks Abroad and Related Communities scholarship was the only motivating factor to learn Turkish. The students living in temporary protection centers were also very reluctant to learn Turkish because they were able to communicate through the interpreters there.

Lack of level-appropriate classes

Nine teachers noted that the mammoth language proficiency gap between the Syrian students and Turkish students was a major obstacle for the Syrian students who had to learn Turkish and school subjects taught through it simultaneously. The inclusion of the two groups in education caused the classes to become crowded as well. The teachers stated that their Syrian students fell behind because they were using the same textbooks prepared for Turkish students in the same classrooms with their Turkish peers. These two factors quickly caused the Syrian students to prefer to sit in the back rows in the class and lose their interest in the lesson and their concentration. The teachers added that when they intended to ensure that the Syrian students would understand the subjects or increase their participation in the activities, they lost a significant portion of the class time during which the Turkish students were getting bored. As the remaining time was short and the Syrian students' level of readiness was very low, they were neither able to understand the subject as much as the teachers desired, nor were they able to complete the activities.

Ineffectiveness of the current coursebooks

Five teachers expressed the opinion that the current coursebooks used were for native speakers of Turkish and were above the Turkish language proficiency levels of the Syrian students and suggested that specific coursebooks be prepared for those students.

Lack of parental concern and financial problems of families

Three teachers reported that they were experiencing problems in establishing communication with the students' parents. The teachers remarked that they commonly observed a lack of concern by the parents and that the parents considered school mainly as a source of receiving financial aid from the Turkish state.

Use of mother tongue outside the school

Three teachers who expressed their opinions on the issue stated that the Syrian students neither revised the subjects they had learned nor used the new Turkish words in their daily lives. The teachers noted that as the students spoke Arabic at home and among themselves and as their parents did not encourage them to learn Turkish, they quickly forgot the subjects and words they had learned at school and did not show any significant improvement in terms of language proficiency which resulted in permanently low academic performance.

Skill/s taught successfully by the teachers

Table 8 below shows the teachers' opinions on the skill/s they taught successfully. For this question, the teachers were asked to choose as many options as they desired instead of one option only. The results showed that in terms of frequency, speaking was the skill the teachers taught most successfully. Teaching of vocabulary, reading, writing, listening, pronunciation and grammar followed speaking in terms of frequency respectively.

Table 8. Skill/s and area/s teachers taught successfully

	f	*%*
1. Speaking	87	49,4
2. Vocabulary	85	48,3
3. Reading	82	46,6
4. Writing	53	30,1
5. Listening	51	28,9
6. Pronunciation	49	27,8
7. Grammar	40	22,7

Skill/s taught least effectively by the teachers

The teachers' answers regarding the skill/s they taught least effectively are given in Table 9. As was the case in the previous question, the teachers were asked to choose as many options as they wanted instead of one option. A considerable number of teachers reported writing as the skill they taught least effectively. In terms of frequency, writing was followed by speaking, grammar, listening, reading, pronunciation, and vocabulary respectively.

Table 9. Skill/s and area/s taught least effectively by teachers

	f	*%*
1. Writing	82	46,6
2. Speaking	54	30,7
3. Grammar	46	26,1
4. Listening	40	22,7
5. Reading	35	19,9
6. Pronunciation	31	17,6
7. Vocabulary	14	8

Effectiveness of in-service education on teaching refugee students

Table 10 reports the number of the teachers who attended workshops, seminars, or similar activities that would help them teach Syrian students more effectively. Seventy-four teachers mentioned that the professional development activities made positive contributions to their professional knowledge in educating Syrian students. One hundred and two teachers stated that they had not participated in professional events about teaching Turkish to Syrian students.

Table 10. Participation in professional events by MoNE or own institution

	f	*%*
1. Yes	74	42.0
2. No	102	58.0

Table 11 below gives the summary of the areas that helped the teachers professionally in those professional events. Of the 74 teachers, 41 reported that they learned new language teaching methods and techniques. The teachers stated that the professional events helped show them learn new ways of teaching grammar, vocabulary, listening, reading, and pronunciation and how to use drama in teaching. In those professional events, the teachers reported seeing examples of effective lessons, using games in young learner classes, and involving students more actively in the learning process as well.

Fifteen teachers mentioned that they learned how to interact with the Syrian students and manage their classes better. They noted that the events taught them how to establish rapport and communication with the Syrian students, create motivation in them, help them focus on the subject they were teaching, control violence caused by those students, manage the class and sustain discipline during classes.

Fourteen teachers remarked that they learned how to prepare effective materials for the Syrian students. They stated that they saw the contribution of those events the most in designing effective reading and writing activities, creating individual study plans for the students, and using Web 2.0 tools.

Four teachers said that they acquired practical knowledge of common problems such as dealing with adaptation and discipline problems experienced in language teaching and encouraging students to modify their attitudes towards school and education to perform academically well.

Table 11. Areas those professional events helped teachers in

Contribution of professional meetings	*f*	*%*
1. Language teaching methods and techniques	41	55,4
2. Interaction with students and classroom management	15	20,2
3. Preparing teaching materials	14	18,9
4. Knowledge of common problems in language teaching	4	5,4

Areas teachers would like to have information in

The teachers who remarked that they had not participated in any professional event that would help them in educating Syrian students listed four main areas of needs as given in Table 12. There were 102 teachers in that category. Sixty of those teachers stated that they needed information on how to communicate with students in the absence of a common language, how to teach Turkish most efficiently without using the mother tongue of the students and how to teach a foreign language to school-age children who did not speak Turkish. The teachers also wanted to know whether it was necessary to establish a connection in terms of similarities between the students' native language and Turkish in teaching, the methods, and techniques available to teach Turkish better, using body language effectively, and using drama and games in teaching Turkish.

Table 12. Areas teachers would like to have information in

Professional needs in	*f*	*%*
1. Language teaching methods and techniques	60	58,8
2. Preparing teaching materials	25	24,5
3. Interaction with students and class management	10	9,8

| 4. Knowledge of common problems in language teaching | 7 | 6,8 |

The teachers remarked that they needed information in the teaching and development of reading, writing, speaking, and listening skills and in the teaching and practice of grammar, pronunciation, and vocabulary. Regarding grammar teaching, the teachers expressed their need to teach grammar contextually and in an easy and fun way while keeping the motivation of the students high. They also wanted to know the techniques available for teaching affixes and making sentences in Turkish.

To continue professional learning individually and be updated on recent developments in teaching Turkish, the teachers wanted information about academic online platforms and also about software that would help their students learn and practice Turkish by themselves. Some teachers pointed out that they needed information about tools and methods to be used only for the assessment of Syrian students instead of using the same tools and methods they used for Turkish students.

Twenty-five teachers stated that they needed information on material selection, design, use, and smartboard applications in addition to information on how to select and use coursebooks and on ways to access more resources and content in terms of instructional materials.

Ten teachers stated that they needed information on how to establish and sustain communication with their Syrian students, classroom management, establishing working teacher-student relations with their students, and introducing culture and cultural values.

Seven teachers wanted information on how to solve the problems their Syrian students encountered while learning Turkish, how to support those students more in a way that would not lead the Turkish students to think that they were openly being favored, how to approach those students when the need arose, what should be done to establish a positive emotional bond with those students, and on what should be done to educate the Syrian students to become productive members of the society in the future.

Discussion and Conclusion

Teaching Turkish and school subjects in Turkish simultaneously to students who only knew Arabic was challenging for the teachers who realized the urgent need to teach the language by giving primary importance to basic literacy skills in Turkish. The teachers in this study reported that in a single classroom they had to teach Turkish to their Syrian students and the subjects in the curriculum to all students, making sure that each student understood the content. Miller (2009) remarks that in addition to low language proficiency, dealing with students who have a low level of literacy in their native language, who need to learn complex contents in a new language, and who have a limited vocabulary and conceptual development because their previous school life is interrupted creates a challenging pedagogical dilemma for teachers as also reported by Bulut, Kanat-Soysal, & Gülçiçek (2018) and Ciğerci & Güngör (2016). The students' knowledge of the Arabic alphabet, knowing to write from right to left in Arabic only, and limited basic literacy education in Arabic, coupled with the lack of literacy skills in Turkish also cause the students to have major difficulties in understanding what their teachers have written on the board and not use suffixes at the end of words in writing Turkish.

It is obvious from the findings that language appears as a major problem in the education of students who do not know the language of instruction. The lack of language competence to pursue academic studies in schools on the students' part adds an extra burden on teachers who are responsible not only for teaching but also managing the teaching process in their classes to ensure and increase success. This fact is underlined by Szente, Hoot, and Taylor (2006) who suggest teachers who educate refugee students need to help their students make the academic transition as problem-free as possible, build a positive teacher-parent cooperation and assist refugee students to overcome the traumas they were subjected to. Thus, teaching Turkish to Syrian

students to achieve an adequate level of language proficiency is essential because "when the language problem is solved, many problems disappear" (Erdem, 2017, p. 37). In this study language competence was identified as the most significant factor that affected the students' adaptation to their schools and the society as was pointed out in previous studies (Demir & Özgül, 2019; Eren, 2019; Güven & İşleyen, 2018).

To deal with the problem of not having a common language to use in education, the teachers made three recommendations. Two of those recommendations required the administration of a proficiency test in Turkish to determine the students' proficiency levels. The first recommendation based on the results of that test was teaching additional weekly Turkish classes for students who had limited proficiency in Turkish but received basic literacy education in their previous schools in Syria to help them improve their Turkish proficiency.

The second recommendation was for the students who had taken the same proficiency test and were assessed to know no Turkish at all and had not received basic literacy education in Arabic. The teachers recommended that those students be placed in a one-year intensive Turkish preparatory course.

The third recommendation was to employ expert teachers in the education of all Syrian students to teach Turkish and curriculum subjects together. Some points need to be considered in entertaining this recommendation. To begin with, as the students do not know the Turkish alphabet and reading in Turkish, some time prior to the regularly scheduled education calendar, instruction and practice need to be given to the students to familiarize themselves with the Turkish alphabet. To say the least, this step needs to be followed by teaching and giving practice in recognizing words and becoming familiar with Turkish spelling. Therefore, it once again appears logical to have the Syrian students take a proficiency test and be educated in a year-long preparatory Turkish course to learn and develop language skills in Turkish by giving primary importance initially to reading and writing.

The teachers also recommended that age-appropriate specific coursebooks be prepared for students whose native language was Arabic to teach them Turkish in the preparatory program. These books need to be prepared for two different student populations. The first group consists of young children who have not attended a school in Syria and do not know basic literacy skills even in their native language. The second group consists of students who have basic literacy skills in Arabic but do not know Turkish. For these groups, age-appropriate coursebooks with relevant content and learning activities were recommended by the teachers. They remarked that the education in the preparatory school should give primary importance to basic literacy skills because the students were experiencing significant problems in reading and writing Turkish. They also recommended that the books include vocabulary the students would need in their daily lives and that there should not be a heavy emphasis on grammar teaching.

In addition to the commonly observed lack of language competence, some students displayed negative attitudes towards learning Turkish. Many Syrian students thought that they would lose their culture and identity when they learned Turkish. Some students did not feel the need to learn Turkish, thinking they would not reside in Türkiye permanently. Some of the students in the temporary protection centers were also reluctant to learn Turkish, stating that they were able to communicate through the interpreters there. The inevitable outcome of such negative attitudes and reluctance is never-improving low language proficiency which will prevent the students from being successful academically in Turkish schools.

The analysis of the data pointed out five problems that arose due to the lack of language knowledge on the students' side: The first is the impossibility of realizing effective language education. The second is the students' being unable to participate in classes, turn in homework assignments, and falling behind other students academically. The third is the teachers' not being able to delegate responsibility equally among all students while doing activities in classes as the Syrian students fail to understand what they are to do. The fourth is the behavioral problems displayed by the Syrian students, stemming from cultural differences

because without participating in any orientation program to make a smooth transition, learning to live in a new society that has different cultural values and traditions has a negative effect on refugee students, their teachers, schools, and the education system in the host country. The fifth problem is the students' failing to understand, incompletely understand, or misunderstand their teachers and Turkish classmates and communicate with them which results in discipline problems that make their adaptation difficult. These disruptive behaviors make classroom management a major problem for teachers. It seems unlikely to solve these problems as long as communication cannot be established due to the lack of language knowledge.

In order to avoid the reoccurrence of the problems described in this article, it appears that giving a proficiency test to new Syrian students at the beginning of each school year and placing them in proficiency-level appropriate classes to teach them Turkish in a preparatory language program is the logical starting point. Because the students speak Arabic at home and in the all-Arabic native-speaker refugee neighborhoods they live in Türkiye and their exposure to Turkish is mainly limited to the time in schools. This is a prominent factor that hinders their language development. In other words, as the students continue to live in Arabic-speaking neighborhoods, living in Türkiye does not necessarily improve their proficiency in Turkish. The students in the preparatory language programs should be learning Turkish, using specifically prepared age-appropriate coursebooks for learners whose native language is Arabic. As for the students who have limited proficiency in Turkish and basic literacy education in Arabic, additional language classes to improve their language proficiency appear as the viable course of action. These measures will aid teachers to focus on achieving their instructional goals instead of struggling individually to make sure that their refugee students who are obviously behind the native-speaker students understand the topics they teach in their classes.

REFERENCES

AFAD (Disaster and Emergency Management Presidency). *Nüfus hareketleri (Population Movements)* Retrieved 08.14.2020 from https://www.afad.gov.tr/nufus-hareketleri#menu_237589.

Ağır O., & Sezik, M. (2015). Suriye'den Türkiye'ye yaşanan göç dalgasından kaynaklanan güvenlik sorunları. *Birey ve Toplum Sosyal Bilimler Dergisi. 5* (1), 95-123.

Akay, S., Hamamcı, Z., & Kurt, M. (2018). Suriyeli öğrencilerle çalışan psikolojik danışmanların yaşadıkları sorunlar ve bu sorunlara ilişkin uyguladıkları çözüm yollarının incelenmesi. *Gaziantep Üniversitesi Eğitim Bilimleri Dergisi. 2* (1), 23-47.

Aydın, A., & Durgun, S, (2018). Kahramanmaraş'taki Suriyeli sığınmacıların yerel halk tarafından sosyo-ekonomik ve politik açıdan değerlendirilmesi. *Kahramanmaraş Sütçü İmam Üniversitesi Sosyal Bilimler Dergisi, 15* (2), 501-526.

Aydın, S., & Kurtulmuş, Z. (2018). Okul öncesi öğretmenlerinin göçmen çocukların eğitim sorunları hakkındaki görüşlerinin incelenmesi. *Türkiye Sosyal Araştırmalar Dergisi. 22* (3). 231-251.

Best, J. W., & Kahn, J. V. (2017). *Research in education* (10th Ed.). Pearson Education, Inc. Boston, MA, USA.

Bulut, S., Kanat Soysal, Ö., & Gülçiçek, D. (2018). Suriyeli öğrencilerin Türkçe öğretmeni olmak: Suriyeli öğrencilerin eğitiminde karşılaşılan sorunlar. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi. 7* (2), 1210-1238.

Ciğerci, F. M., & Güngör, F. (2016). The problems encountered by the foreign primary school students from the perspectives of classroom teachers (Bilecik sampling). *Journal of Education and Future. 10,* 137-164.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches. (3rd Ed.) SAGE. Los Angeles, CA, USA.*

Creswell, J. W. & Creswell, J. D. (2018). *Research Design Qualitative, Quantitative, and Mixed Methods Approaches. (5th Ed.) SAGE. Los Angeles, CA, USA.*

Culbertson, S., & Constant, L. (2015). *Education of Syrian refugee children: Managing the crisis in Turkey, Lebanon, and Jordan.* Santa Monica, Calif: RAND Corporation.

Demir, S. B., & Özgül, V. (2019). Syrian refugees minors in Turkey. Why and how are they discriminated against and ostracized?. *Child Indicators Research. 12,* 1989-2011.

Demircan, N. (2019). Suriyeli göçmen öğrencilerin sorunlarının giderilmesinde okul müdürü liderliği, *Uluslararası Liderlik Eğitimi Dergisi (ULED), 1*(1), 16-34.

Eğitim Bir-Sen (2016). *Eğitime bakış 2016: izleme ve değerlendirme raporu.* Retrieved 08.14.2020 from egitim_izleme_raporu.pdf.pdf (ebs.org.tr).

Emin, M. N. (2016). *Türkiye'deki Suriyeli çocukların eğitimi: Temel eğitim politikaları.* Retrieved 08.10.2020 from http://file.setav.org/Files/Pdf/20160309195808_turkiyedeki-suriyeli-cocuklarin-egitimi-pdf.pdf.

English, H. B. & English, A. C. (1958) *A comprehensive dictionary of psychological and psychoanalytic Terms. London: Longman.*

Erdem, C. (2017). Sınıfında mülteci öğrenci bulunan sınıf öğretmenlerinin yaşadıkları öğretimsel sorunlar ve çözüme dair önerileri. *Medeniyet Eğitim Araştırmaları Dergisi. 1*(1), 26-42.

Erdoğan, M. M. (2019). *Türkiye'deki Suriyeli mülteciler. Konrad adenauer stiftung.* Retrieved 02.08.2020 from https://www.kas.de/documents/283907/7339115/T%C3%BCrkiye%27deki+Suriyeliler.pdf/acaf9d37-7035-f37c-4982-c4b18f9b9c8e?version=1.0&t=1571303334464.

Eren, Z. (2019). Yönetici ve öğretmen görüşlerine göre göçmen çocukların eğitim sorunları ve çözüm önerileri. *Bolu Abant İzzet Baysal Üniversitesi Eğitim Fakültesi Dergisi, 19* (1), 213-234. https://dx.doi.org/10.17240/ai-buefd.2019.19.43815-476805.

Ertaş, H. & Çiftçi Kıraç, F. (2017). Türkiye'de Suriyeli göçmenlere yönelik yapılan eğitim çalışmaları. *Journal of Social and Technical Researches. 13*, 99-110.

Göç İdaresi Genel Müdürlüğü. (2013). *Law 6458 on foreigners and international protection (yukk) word version of law on foreigners and international protection.* Retrieved 10.29.2020, from https://en.goc.gov.tr/law-on-foreigners-and-international-protection-yukk.

Göç İdaresi Genel Müdürlüğü. (2020). *Yıllara göre geçici koruma kapsamındaki Suriyeliler.* Retrieved November 26, 2020 from https://www.goc.gov.tr/gecici-koruma5638.

Göç İdaresi Genel Müdürlüğü. *Göç tarihi,* Retrieved 08.10. 2020, from https://www.goc.gov.tr/goc-tarihi.

Güngör, F., & Şenel, E. A. (2018). Yabancı uyruklu ilkokul öğrencilerinin eğitim-öğretiminde yaşanan sorunlara ilişkin öğretmen ve öğrenci görüşleri. *AJESI - Anadolu Journal of Educational Sciences International*, *8* (2), 124-173. doi: 10.18039/ajesi.454575 124.

Güven. S., & İşleyen, H. (2018). Sınıf yönetiminde iletişim, iletişim engelleri ve Suriyeli öğrenciler. *Journal of Social & Humanities Sciences Research. 5* (23), 1293-1308. Retrieved 08.12.2018, from http://www.jshsr.org/Makaleler/261612814_23_2018_523.ID485.%20GUVEN&ISLEYEN_1293 1308.pdf.

İmamoğlu, H. V., & Çalışkan, E. (2017). Yabancı uyruklu öğrencilerin devlet okullarında ilkokul eğitimine dair öğretmen görüşleri: Sinop ili örneği. *Karabük Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *7* (2), 529-546.

Karaman, H. B., & Bulut, S. (2018). Göçmen çocuk ve ergenlerin eğitim engelleri, psikolojik sorunları ve çözüm önerileri üzerine bir araştırma. *Sosyal Politika Çalışmaları Dergisi, 40* (2), 393-412. https://doi.org/10.21560/spcd.vi.446297.

Kardeş, S., & Akman, B. (2018). Suriyeli mültecilerin eğitimine yönelik öğretmen görüşleri. *İlköğretim Online. 17* (3), 1224-1237. http://ilkogretim-online.org.tr/index.php/io/article/view/2253. Retrieved 11.16.2018.

Kaya, İ., & Yılmaz Eren, E. (2015). *Türkiye'deki Suriyelilerın hukuki durumu: arada kalanların hakları ve yükümlülükleri.* Siyaset, Ekonomi ve Toplum Araştırmaları Vakfı (SETA). http://file.setav.org/Files/Pdf/20151017001210_turkiyedeki-suriyelilerin-hukuki-durumu.pdf. Retrieved 11.16.2018.

Koçoğlu, A., & Yanpar Yelken, T. (2018). Suriyeli öğrencilere Türkçe dil becerileri kazandırma sürecinde ilkokul Türkçe dersi öğretim programları ile ilgili öğretmen görüşleri. *Eğitimde Nitel Araştırmalar Dergisi. 6* (2), 131-160. http://dergipark.gov.tr/download/article-file/517800. Retrieved 11.12. 2018.

Law 6458 on Foreigners and International Protection. Retrieved 11.29.2020, from https://en.goc.gov.tr/law-on-foreigners-and-international-protection-yukk.

Levent, F., & Çayak, S. (2017). Türkiye'deki Suriyeli öğrencilerin eğitimine yönelik okul yöneticilerinin görüşleri. *Hasan Ali Yücel Eğitim Fakültesi Dergisi, 14-1*(27), 21-46.

Miller, J. (2009). Teaching refugee learners with interrupted education in science: vocabulary. literacy and pedagogy. *International Journal of Science Education. 31*(4), 571-592.

Moralı, G. (2018). Suriyeli mülteci çocuklara Türkçenin yabancı dil olarak öğretiminde karşılaşılan sorunlar. *OPUS Uluslararası Toplum Araştırmaları Dergisi. 8* (15), 1-24. Retrieved 11.10.2018, from http://dergipark.gov.tr/download/article-file/524096. DOI: 10.26466/opus.443945.

Orhan, O., & Şenyücel Gündoğar, S. (2015). *Suriyeli sığınmacıların Türkiye'ye etkileri*. Ortadoğu Stratejik Araştırmalar Merkezi. Retrieved 11.18.2018, from http://tesev.org.tr/wp-content/uploads/2015/11/Suriyeli_Siginmacilarin_Turkiyeye_Etkileri.pdf.

Özer, Y. Y., Komşuoğlu, A., & Ateşok, Z. Ö. (2016). Türkiye'deki Suriyeli çocukların eğitimi: Sorunlar ve çözüm önerileri. *Akademik Sosyal Araştırmalar Dergisi. 4 (37)*, 76-110.

Öztürk, M., Tepetaş Cengiz, Şule G., Köksal, H., & İrez, S. (2017). *Sınıfında yabancı uyruklu öğrenci bulunan öğretmenler için el kitabı.* (Ed. Semih Aktekin). Millî Eğitim Bakanlığı Yayınları.

Paksoy, S., & Karadeniz, M. (2016). Kilis'te çalışan Suriyeli sığınmacıların sosyoekonomik yapısı üzerine bir araştırma. *Elektronik Sosyal Bilimler Dergisi. 15* (58), 785-798. DOI:10.17755/esosder.81867.

Rossi, A. (2008). The impact of migration on children in developing countries. *Youth migration conference.* 24-26 Nisan 2008. Bellagio: İtalya.

Şimşir, Z., & Dilmaç, B. (2018). Yabancı uyruklu öğrencilerin eğitim gördüğü okullarda öğretmenlerin karşılaştığı sorunlar ve çözüm önerileri. *İlköğretim Online. 17*(2), 1116-1134. Retrieved 11.19. 2018, from http://ilkogretim-online.org.tr/index.php/io/article/view/2833.

Solak, E., & Çelik, S. (2018). Türkiye'de eğitim gören mülteci öğrencilerin dilsel sorunlarının incelenmesi. *Uluslararası Sosyal Araştırmalar Dergisi. 11* (57), 425-432.

Szente, J., Hoot, J. & Taylor, D. (2006). Responding to special needs of refugee children: Practical ideas for teachers. *Early Childhood Education Journal*, *34*(1), 15-20. DOI: 10.1007/s10643-006-0082-2.

Tanrıkulu, F. (2017). Türkiye'de yaşayan suriyeli çocukların eğitim sorunu ve çözüm önerileri. *Liberal Düşünce Dergisi. 86*, 127-144.

Taşkaya, S. M., & Ersoy, G. (2016). Suriyeli sığınmacılara Türkçe öğretiminde sınıf öğretmenlerinin uygulamaları. *Çukurova Araştırmaları Dergisi. 2* (1), 130-138.

Taşkın, P., & Erdemli, Ö. (2018). Education for Syrian refugees: problems faced by teachers in Turkey. *Eurasian Journal of Educational Research*. *75,* 155-178. DOI: 10.14689/ejer.2018.75.9.

Taştan, C., & Çelik, Z. (2017). *Türkiye'de Suriyeli çocukların eğitimi: Güçlükler ve öneriler*. Ankara: Eğitim-Bir-Sen Stratejik Araştırmalar Merkezi. Retrieved 11.16.2018, from http://www.ebs.org.tr/ebs_files/files/Suriye_Rapor_TUKCE.pdf.

Tellal, E. (2015). Rusya Suriye'de ne arıyor?. *Ankara Üniversitesi SBF Dergisi. 70* (4). 1047-1050.

UNHCR. *What is a refugee?*. Retrieved 08.06.2021. https://www.unhcr.org/what-is-a-refugee.html#:~:text=Refugees%20are%20people%20who%20have,possessions%2C%20jobs%20and%20loved%20ones.

UNHCR. *Refugees and Asylum Seekers in Turkey.* Retrieved 18.01.2021 from https://www.unhcr.org/tr/en/refugees-and-asylum-seekers-in-turkey.

Yurdakul, A & Tok, T. N. (2018). Öğretmen gözüyle mülteci göçmen öğrenci. *Adnan Menderes Üniversitesi Eğitim Fakültesi Eğitim Bilimleri Dergisi*, *9* (2), 46-58.

Zayimoğlu Öztürk, F. (2018). Mülteci öğrencilere sunulan eğitim-öğretim hizmetinin sosyal bilgiler öğretmen görüşlerine göre değerlendirilmesi. *Anadolu Journal of Educational Sciences International. 8* (1), 52-79. DOI: 10.18039/ajesi.393879.