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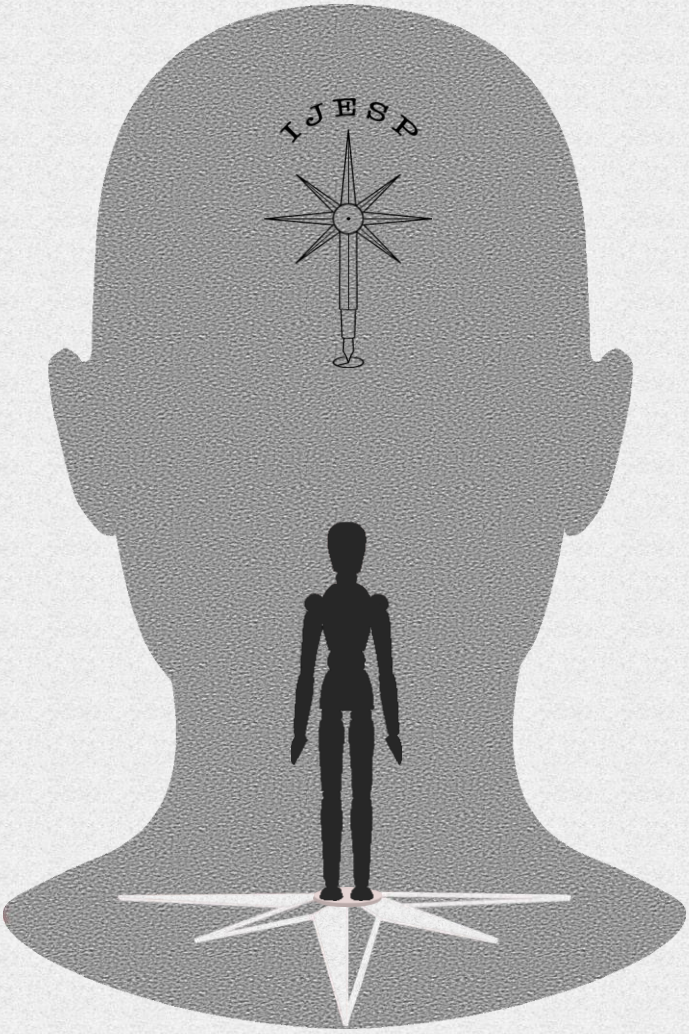

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CONTENTS

Introduction	i-iii
Articles	**Pages**
Action Research on the Development of Curriculum Literacy and Curriculum Modeling Skills of Mathematics Teacher Candidates Through the Socratic Seminar Technique **Ali Yakar**	1-13
Investigation of Primary School Teachers' Views on Undesirable Student Behaviors Encountered within the Frame of Classroom Management **Ümit Gözel - Rukiye Gözel**	14-37
A Comparison of Mathematics Teacher Training and Elementary Mathematics Curricula in Finland, South Korea and Türkiye **Emine Can Yurt**	38-68
The Relationship between Organizational Trust and Job Satisfaction: A Meta-Analysis Study **Ali Tosun**	69-83
An Analysis of Teacher Self-Efficacy and Teacher Autonomy in Relation to A New Distance Learning Era **Işılay Ertay, Filiz Yalçın Tılfarlıoğlu**	84-101

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Action Research on the Development of Curriculum Literacy and Curriculum Modeling Skills of Mathematics Teacher Candidates Through the Socratic Seminar Technique*

Ali Yakar

ABSTRACT

The aim of this research is to develop curriculum literacy and curriculum modeling skills of pre-service mathematics teachers through the Socratic seminar technique. The research was designed as action research. The study was carried out with the participation of 13 teacher candidates studying at Muğla Sıtkı Koçman University, Türkiye, in the Faculty of Education, Department of Mathematics Teaching in the spring semester of the 2018-2019 Academic Year. In the study, which was designed using action research, the Socratic seminar technique was applied for a semester within the scope of the Curriculum Development and Instruction course taken by the pre-service mathematics teachers. For the purposes of the research, the data were collected through the Curriculum Literacy Scale developed by Bolat (2017) and the scores obtained as a result of the evaluation of the curriculum development models designed for the teacher candidates by the researcher. Throughout the process, the Curriculum Literacy scores of each teacher candidate participant were measured 7 times, the obtained scores were recorded and analyzed through graphs based on the change that occurred within itself. The curriculum development models designed by the pre-service mathematics teachers were examined throughout the studies carried out during the process, and the development of the participants' skills on this subject was monitored by evaluating them with 3 different scorings. Within the scope of the research, the Curriculum Literacy scores of the pre-service mathematics teachers were analyzed and the effect of the Socratic seminar technique on the change in these scores was examined. The findings obtained in line with the aims of the research showed that there was a desired change and increase in the Curriculum Literacy scores of the mathematics teacher candidates during the teaching process through the Socratic seminar technique. Another finding of the study was that mathematics teacher candidates' ability to create a curriculum model improved through the Socratic seminar technique.

Keywords: Socratic seminar technique, curriculum literacy, curriculum modeling skills, action research.

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Introduction

Curricula are developed and implemented with the aim of guiding learners in order to give direction to their learning experiences, to acquire the needed knowledge, values and skills, and to ensure their development in a holistic way (Yakar, 2016). Curriculum and teaching process are educational components that complement each other. The fact that teachers, who are the designers, implementers and evaluators of education and teaching, analyze these complementary components in appropriate ways and perform planning, implementation and evaluation processes transforms education and teaching into an effective one.

The quality of the objectives, content, learning-teaching process, and evaluation elements, which are the elements of the curriculum, determine the quality of the educational activities during the implementation of the curriculum. In the process of putting the curriculum into practice, it is considered important that teachers, who are experts in their fields, dominate all the components of the curriculum and reflect this dominance in practice for the determination of objectives, the organization of the content, the methods-techniques to be applied and the measurement-evaluation processes to be carried out.

Understanding all the components of a curriculum can be considered as a prerequisite for effective implementation. Curriculum literacy emerges as an important type of literacy that teachers and teacher candidates should acquire. Curriculum literacy is also expressed as programme literacy (Erdem & Eğmir, 2018). Curriculum literacy can be defined as understanding and interpreting the objectives, content, learning-teaching process and measurement-evaluation dimensions, analyzing the relationship between the four dimensions, reaching a synthesis, applying and adapting (Çetinkaya & Tabak, 2019). Curriculum literacy requires having knowledge of the elements of the curriculum (Bolat, 2017). In order for teachers to be able to understand a curriculum, they are expected to have knowledge about that curriculum, in other words, to be curriculum literate. Teachers understand the “what” and “how” of the curriculum from curriculum literacy (Kasapoğlu, 2020). Curriculum determines what is aimed in education, with what content these goals will be achieved, how to reach these goals and how to measure the level of reaching the goals. The most important guide for teachers who will carry out educational activities is curriculum. Teachers should have knowledge of certain subjects, contents, skills, goals, and all elements that make up the content of the curriculum (Çetinkaya & Tabak, 2019; Posner, 1995). An educator's knowledge of the curriculum is related to the choice of other programs and materials suitable for teaching the content, how the taught concepts are interpreted by the students, and the concept development of the student (Shulman, 1986). According to Bolat (2017), "to be able to distinguish which target dimension of the given target behavior relates, to write a target appropriate for the level of the student, to determine the relationship between the content and the targets, to create content suitable for the targets, to design learning-teaching processes, to measure and evaluate appropriate to the target" with curriculum literacy skills. According to Ustabulut (2021), curriculum literacy includes educators' having basic knowledge of the purpose, content, learning-teaching process, and evaluation components of the curriculum, making use of these elements in the teaching process and putting them into practice. According to Akyıldız (2020), there are two dimensions of the concept of curriculum literacy: "knowledge" and "skill". Knowledge dimension, understanding the curriculum, knowing the information about the application and evaluation processes; The skill dimension includes the skills related to the design, implementation and evaluation of the learning-teaching processes related to the implementation of the curricula.

The fact that teachers transform their knowledge about the implementation of curriculum into skills contributes to both the design, implementation, and evaluation processes. Within the competencies related to objectives and targets, curriculum content, learning-teaching process and measurement-evaluation, there is reflection of knowledge to skill.

The ability to create a curriculum model is proportional to the experience and level of knowledge of individuals on curriculum of all components to be found in a curriculum. In the process of creating a curriculum model, it is aimed to include the objectives, content, learning-teaching process, measurement-evaluation elements of the curriculum and other complements of the curriculum and to develop a model accordingly. According to Maaß (2006), modeling competencies include the knowledge, skills, and abilities necessary to carry out the modeling process appropriately, the desire to realize them, and having metacognitive skills. Modeling skills are the skills that can be considered as technical skills such as understanding the real-life situation, constructing a model and performing operations on the model (Yavuz Mumcu & Baki, 2017).

When related literature is examined, the effect of teacher idealism on curriculum literacy (Yar Yıldırım, 2021), 21st-century critical curriculum literacy (Schroeder & Curcio, 2022), examination of curriculum literacy phenomenon (Erdem & Yücel Toy, 2021), curriculum literacy scale development (Akyıldız, 2020; Bolat, 2017; Kasapoğlu, 2020; Keskin & Korkmaz, 2021; Yıldırım, 2019), determination of curriculum literacy levels of school administrators (Basar & Berilgen, 2021), predictive power of the curriculum literacy levels studies of pre-service teachers (Süral & Dedebali, 2021), teachers' levels of curriculum literacy (Kahramanoğlu, 2019; Saracaloğlu, Madran & Altın, 2019; Saracaloğlu & Gündüz Çetin, 2020; Sarıca, 2021), analysis of classroom teachers' curriculum literacy skills from an administrator's perspective (Erdamar & Akpınar, 2021) studies have been reached. However, most of the studies are aimed at determining the level of literacy in the curriculum. In the literature, no research has been found to develop such an important skill. Within the scope of the research, subjects related to curriculum development, curriculum evaluation, learning, teaching, and measurement-evaluation processes were covered in order to develop curriculum modeling skills. The entire research process focused on "curriculum literacy" and "curriculum modeling skills", which are important features or skills that are thought to be present in teacher candidates and teachers.

Aim of the Research

The aim of this research is to develop curriculum literacy and curriculum modeling skills of pre-service mathematics teachers through the Socratic seminar technique. Research questions within the scope of this purpose:

1. How does the Socratic seminar technique change the curriculum literacy scores of pre-service mathematics teachers?

2. How does the Socratic seminar technique change the scores of pre-service mathematics teachers' ability to build a curriculum model?

Method

Research Model

The research was designed in the action research pattern. According to Mills (2003), action research is a research approach that helps to find solutions to problems that arise in different fields. In this approach, teachers, researchers, administrators, and students etc. in the learning environment. how teaching is done in schools where stakeholders are present and what can be done to make teaching more effective, etc. It is used to determine the existing situations on the issues. According to Uzuner (2005), action research, which is one of the applied qualitative research models according to some classifications, is a pre-planned, organized and collaborative systematic review to improve the quality of life through critical reflection and inquiry. Johnson (2014) defines action research in five steps. Accordingly, the first step of action research is to ask questions, identify a problem situation or define an area of investigation. The second step is to decide which data should be collected, how and how often. The third step is to collect and analyze the data. The fourth step is to describe how the findings can be used and applied, in other words to plan for action. The fifth and final step is to share the findings, report them and carry out the planning with others. According to Glesne (2012), action research is research consisting of observation, reflection and action. Particularly during the reflection phase, researchers or collaborators interpret the data and share multiple perspectives with stakeholders in the process. Discussions on actions to be taken follow this process and include planning, implementation, and evaluation of the next stage of action. According to Yıldırım and Şimşek (2013), Dewey first suggested the use of action research in teaching in the 1930s. Action research can be done by the practitioner himself/herself or by an outside researcher. The researcher, who is a participant observer, cooperates with the practitioners in the research process and can contribute to the practice when necessary due to his field of expertise. Practitioners also contribute to the research by opening their own practices to the researcher. In such a research process, there is an intense interaction and sharing between the researcher and the practitioner (Saracaloğlu, & Eranıl, 2020; Yakar, & Saracaloğlu, 2019).

The use of the action research design in this research stems from the aim of developing teaching practices. The researcher, within the framework of scientific and ethical principles, was involved in the whole research process both as a teacher/practitioner and made in-depth examinations while making participatory observations. In addition, in order to ensure the validity of the research, methods such as long-term interaction, in-depth data, expert review, long-term observation, researcher participation, second observer, continuous questioning and supervision, detailed description, purposeful sampling were used. In addition to these studies, more than one researcher (observer) in order to ensure the reliability of the research, confirming the results with another researcher in data analysis, storage of raw data, clarity of researcher role, detailed description of participants, definition of data collection method and data collection. Methods such as the definition of analysis were applied.

Study Group

The study was carried out with the participation of 13 teacher candidates studying at Muğla Sıtkı Koçman University, Türkiye, Faculty of Education, Department of Mathematics Teaching in the spring semester of the 2018-2019 Academic Year. In the study, which was designed using action research, the Socratic seminar technique was applied for a period (14 weeks) within the scope of the Curriculum Development and Instruction course taken by the pre-service mathematics teachers.

Table 1. Information of the study group of the research

Participants	Age	Gender	Average Weekly Study Time for Curriculum Development and Instruction Course	Studying Areas of Interest
1	22	Female	1 Hour	Mathematics, Physics
2	21	Female	1 Hour	Mathematics, Physical Education
3	22	Female	1.5 Hour	Mathematics, English, Music
4	22	Male	1.5 Hour	Mathematics, Chemistry
5	23	Male	1 Hour	Mathematics, Music, Biology
6	22	Female	1 Hour	Mathematics, Literature
7	22	Male	1 Hour	Mathematics, Physical Education, Music
8	22	Female	1.5 Hour	Mathematics, Painting, Literature
9	22	Male	1.5 Hour	Mathematics, English
10	21	Male	0.5 Hour	Mathematics, Physical Education
11	22	Female	1.5 Hour	Mathematics, Music
12	22	Female	1 Hour	Mathematics, Painting
13	22	Female	1.5 Hour	Mathematics, Literature

Instruments and Data Collection

For the purposes of the research, the data were collected through the Curriculum Literacy Scale developed by Bolat (2017) and the scores obtained as a result of the evaluation of the teacher candidates curriculum development models by the researcher and experts. The Curriculum Literacy Scale consists of two factors called “reading” (15 items) and “writing” (14 items). The Cronbach Alpha internal consistency coefficient of the entire scale is .94. The validity and reliability of the scale was ensured by confirming that the two-factor structure of the scale consisted of 29 items in total (Bolat, 2017). As a result of this research, the Cronbach Alpha internal consistency coefficient of the scale was calculated as .92.

The curriculum development models designed by the pre-service mathematics teachers were examined throughout the studies carried out during the process, and the development of the participants' skills on this subject was monitored by evaluating them with 3 different scorings. For the curriculum model building skill scores used in the research, the participant teacher candidates were asked to design a curriculum development model at the beginning, middle and end of the process, and these models were scored by the researcher. Scoring was made by a team of 5 experts together with the researcher, and their averages were taken and reflected on the graphs. Within the scope of the research, the subjects related to curriculum development and teaching were handled and the data were collected during the 14-week teaching process.

Table 2. Topics covered and studies done in the teaching *(data collection)* process

Week 1	Curriculum, Features of Curriculum and Curriculum Literacy Reading: General Characteristics of the Curriculum Related to the Field
Week 2	Curriculum Development Models and Fundamentals of Programs Reading: Model and Fundamentals of the Curriculum Related to the Field
Week 3	Philosophical Movements and Educational Philosophies – Curriculum Design Approaches Reading: Philosophy and Design Approach of the Curriculum Related to the Field
Week 4	Program Development Process and Elements of Programs Reading: The Development Process and Elements of the Curriculum Related to the Field
Week 5	Objectives and Content in Curriculum Development Process Reading: Objectives of the Curriculum Related to the Field, Skills It Aims to Gain, Learning Areas and Topics
Week 6	Educational Situations and Assessment-Evaluation in the Curriculum Development Process Reading: Learning-Teaching Process and Assessment-Evaluation Approach of the Curriculum Related to the Field
Week 7	Curriculum Evaluation Models and Curriculum Development in the 21st Century Reading: 21st Century Skills, Qualifications for Teachers Today and in the Future
Week 8	Developing a Lesson Plan for Teaching a Selected Subject Related to the Field
Week 9	Developing a Lesson Plan for Teaching a Selected Subject Related to the Field
Week 10	Examination of Curriculum Development and Teaching Research Related to Field Teaching
Week 11	Examination of Curriculum Development and Teaching Research Related to Field Teaching
Week 12	Developing a Curriculum Development Model for the Field
Week 13	Developing a Curriculum Development Model for the Field
Week 14	Evaluation of Developed Lesson Plans and Curriculum Development Models

Data Analysis and Interpretation

The data obtained in the study were interpreted by analyzing the changes in each participant's own curriculum literacy scores. Throughout the process, the Curriculum Literacy scores of each teacher candidate participant were measured 7 times, the obtained scores were recorded and analyzed through graphs based on the change that occurred within itself. The curriculum development models designed by the pre-service mathematics teachers were examined throughout the studies carried out during the process, and the development of the participants' skills on this subject was monitored by evaluating them with 3 different scorings. For the curriculum model building skill scores used in the research, the participant teacher candidates were asked to design a curriculum development model at the beginning, middle and end of the process, and these models were scored by the researcher. For the reliability of this evaluation, the models scored by the researcher were evaluated by 4 experts working in the fields of mathematics (2) and curriculum and instruction (2), and these scores were averaged, and objectivity was tried to be increased. In the study, the development of these scores obtained by the pre-service teachers was examined through graphs, and the development of their curriculum modeling skills was revealed and interpreted together.

Results

The findings obtained after the data analyzed for the purposes of the research were revealed through the score changes of both the curriculum literacy and curriculum modeling skills of the participants.

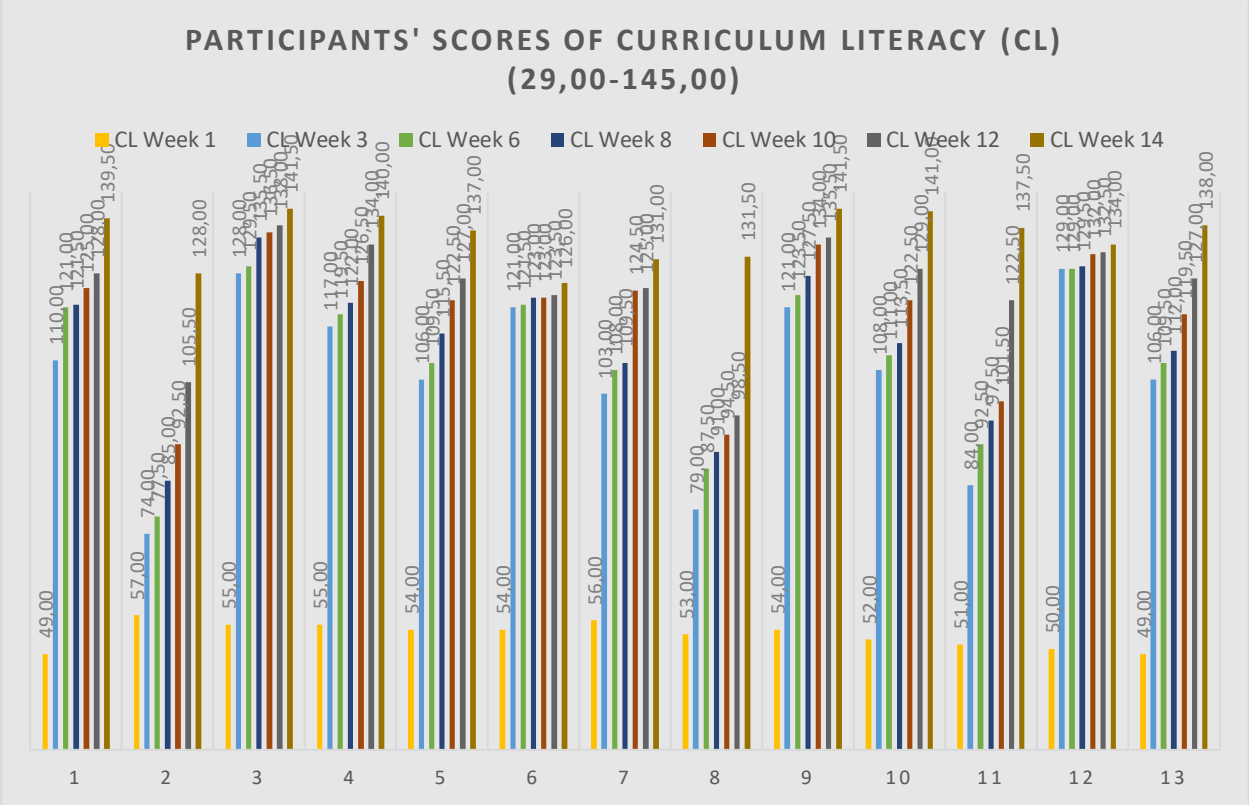

Figure 1. Graphs regarding the change in the curriculum literacy scores of the mathematics teacher candidates

When the 7 points of each participant regarding the curriculum literacy and the change of these scores were examined, it was determined that all of the participants increased the curriculum literacy score in the desired direction in the process. Changes in score and level considering initial and final data: +90.50 for participant 1 (Very Low --> Very High); +71.00 (Low --> Very High) for 2nd participant; +86.50 (Low --> Very High) for 3rd participant; +85.00 (Low --> Very High) for participant 4; +83.00 (Low --> Very High) for 5th participant; +72.00 (Low --> Very High) for 6th participant; +75.00 (Low --> Very High) for participant 7; +78.50 (Low --> Very High) for participant 8; +87.50 (Low --> Very High) for participant 9; +89.00 (Low --> Very High) for the 10th participant; +86.50 (Low --> Very High) for participant 11; +84.00 (Low --> Very High) for the 12th participant and +89.00 (Low --> Very High) for the 13th participant. Only one of the participants started the process with "very low level" curriculum literacy and reached "very high" curriculum literacy at the end of the process. It is noteworthy that during the implementation process, the other participants reached from "low level" curriculum literacy to "very high" curriculum literacy. According to the findings, it is seen that the literacy of the education program has improved considerably during the practices carried out using the Socratic seminar technique, in which the participants actively participated in the 14-week teaching process.

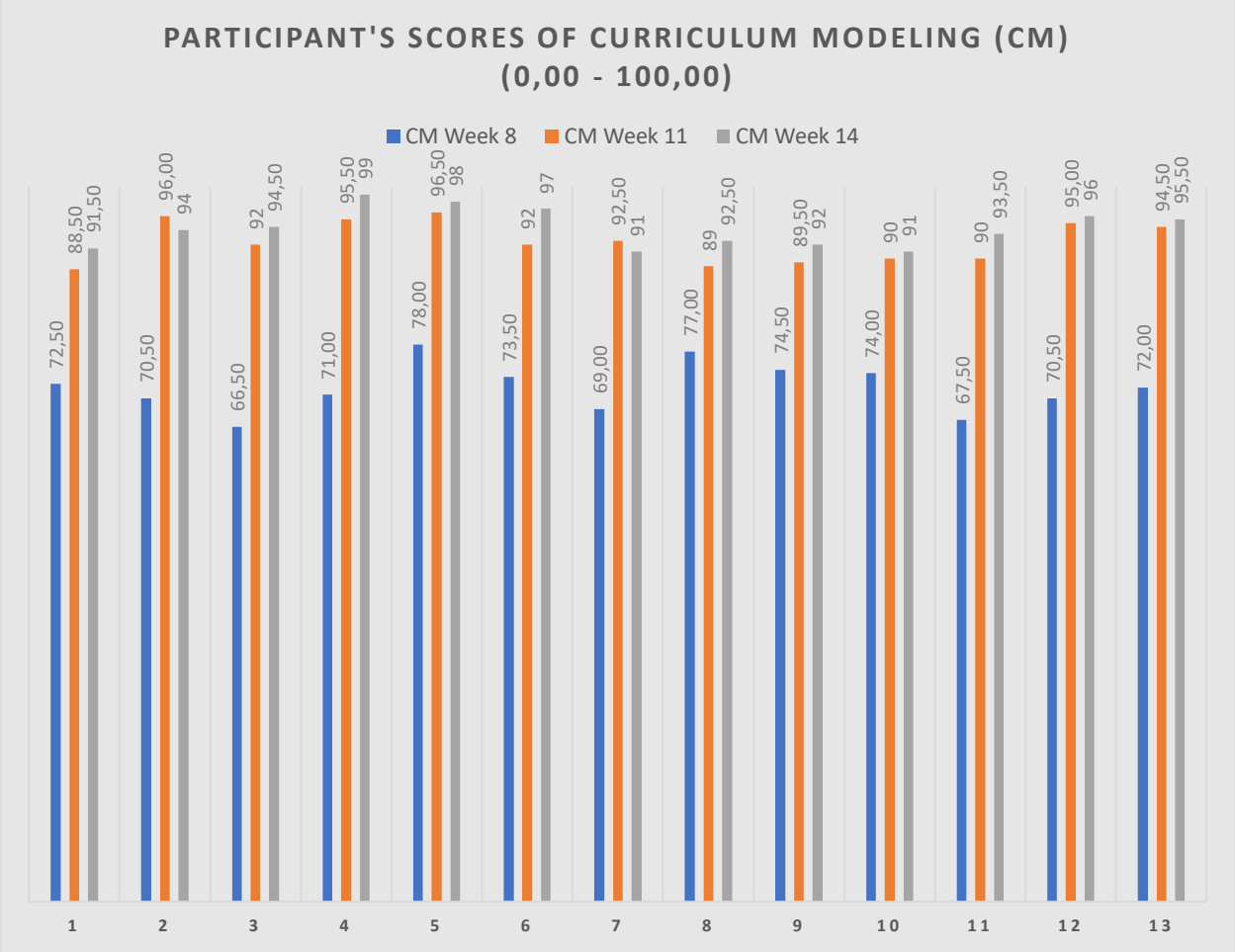

Figure 2. Graphs related to the changes in the scores of the mathematics teacher candidates in building a curriculum model

When the 3 points of each participant regarding the skills of creating a program model and the change of these points are examined, it has been determined that all of the participants have increased their curriculum model building skills score in the desired direction, even if there are small fluctuations. Changes in score and level considering initial and final data: +19.00 for participant 1 (High --> Very High); +23.50 for 2nd participant (High --> Very High); +28.00 for 3rd participant (High --> Very High); +28.00 for the 4th participant (High --> Very High); +20.00 (High --> Very High) for the 5th participant; +23.50 for 6th participant (High --> Very High); +22.00 (High --> Very High) for participant 7; +15.50 (High --> Very High) for participant 8; +17.50 (High --> Very High) for the 9th participant; +17.00 for 10th participant (High --> Very High); +26.00 for participant 11 (High --> Very High); +25.50 (High --> Very High) for the 12th participant and +23.50 (High --> Very High) for the 13th participant. All of the participants started the process with "high level" curriculum model building skills and at the end of the process, they reached "very high level" curriculum model building skills. It is seen that all participants achieved "very high level" curriculum model building skills scores during the implementation process. According to the findings, it was revealed that the participants developed their curriculum modeling skills during the practices carried out using the Socratic seminar technique, in which the participants actively participated in the 14-week teaching process.

Discussion, Conclusion and Suggestions

Within the scope of the research, the scores of mathematics teacher candidates' curriculum literacy and curriculum modeling skills were analyzed and the effect of the Socratic seminar technique on the change in these scores was examined. The results obtained in line with the aims of the research show that there is a desired change and increase in the curriculum literacy scores of the mathematics teacher candidates throughout the teaching process through the Socratic seminar technique. Another result of the research is that mathematics teacher candidates' skills in building a curriculum model were improved through the Socratic seminar technique. It was observed that there was a positive and desirable change in the curriculum literacy scores and curriculum modeling skills of the pre-service mathematics teachers throughout the teaching process carried out through the Socratic seminar technique.

One of the important types of literacy for teachers and teacher candidates is curriculum literacy (Schroeder & Curcio, 2022). According to Yar Yıldırım (2021) teachers must possess knowledge on the curricula, the ability to use this information and a positive attitude towards the process. This in turn, is related to teachers' curriculum literacy. On another study, according to Keskin and Korkmaz (2021) in the studies conducted in the field, it is understood that teachers make evaluations in the context of skills/proficiency while examining their understanding and application status of the curriculum, but the teachers' "valuation" dimension related to the implementation of the curriculum is neglected. Teachers' ignorance of the curricula may lead to the deterioration of the application unity of the program, and the emergence of a learning-teaching process that differs from its aims and application principles (Kahramanoğlu, 2019). Therefore, it is considered important that teachers have this skill. According to Sarıca (2021) the implementers of the current curriculum and the ones who bring the curriculum into effect are the teachers. Therefore, it is thought that it is important to investigate the curriculum literacy of teachers. Because the success of the education programs in particular and the entire education system in general is closely related to the effective implementation of the curriculum by the teachers. According to Yıldırım (2019) the fact that a teacher is literate in the curriculum related to her/his field will undoubtedly contribute greatly to the quality of teaching and student success. According to Erdem and Yücel Toy (2021) teachers' curriculum literacy skills are of great importance in terms of achieving the objectives of the curricula and increasing the quality of education curriculum literacy ensures that the difference between the official curriculum prepared and the curriculum in practice is reduced as much as possible by affecting teachers' reading, understanding and implementation skills, so makes it possible to achieve curriculum objectives and increase the quality of education (Aslan, 2019). Additionally, about curriculum literacy, according to Süral, and Dedebali (2021) further studies on pre-service teachers or teachers are needed to reach performance indicators that can determine the real competencies in the curriculum literacy and new studies based on qualitative data should be conducted to provide an in-depth examination.

In the action research conducted, the curriculum literacy and curriculum modeling skills of the participants were developed through the Socratic seminar technique. According to Wiggins (2004) the Socratic seminar technique is a collective inquiry into questions and issues that are often uncovered and animated through a reading activity or experience sharing. It also aims to develop each person's self-understanding through speaking, testing ideas, and reflection. In a comprehensive Socratic inquiry seminar, strategic decisions are made repeatedly on the continuation of the inquiry (Bahtiyar, 2019). Through reflection, reasoning and inquiry, the

participants contributed to the development of curriculum literacy and curriculum modeling skills. Thus, it was concluded that strategies for modeling a curriculum and developing literacy skills on this issue were used, and a decision was reached with the help of these strategies. In addition, Polite and Adams (1996) concluded that Socratic seminars are effective in developing higher-order thinking and, in general, Socratic seminars increase individuals' cognitive and social functions. Bozer Özsaraç (2019) found that the Socratic inquiry method is an effective method in developing students' higher-order thinking skills (Aktaş, 2022). In terms of developing higher-order thinking skills, it can be said that Socratic seminars improve literacy in a curriculum in both cognitive and social contexts. At the same time, it can be deduced that the Socratic seminar technique improves curriculum modeling skills through its effect on higher-order thinking skills.

As a result of this action research, it was determined that the Socratic seminar technique improved the curriculum literacy and curriculum modeling skills of mathematics teacher candidates. It is recommended that a similar study be carried out in an experimental design with a control group and repeated in different teacher education programs and at different grade levels. It is thought that conducting research and studies on such important skills in the teaching profession will contribute both professionally and in the context of creating a source of inspiration for future research.

Conflict of Interest

There is no conflict of interest for the study.

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Investigation of Primary School Teachers' Views on Undesirable Student Behaviors Encountered within the Frame of Classroom Management

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ABSTRACT

The aim of this study is to determine undesirable student behaviors that primary school teachers encounter within the framework of classroom management and to determine their solutions to these undesirable student behaviors. In the research, descriptive survey model was used in accordance with the nature of qualitative research selected as the method. The research was carried out in the province of Aydın, Türkiye in the spring semester of the 2021-2022 Academic Year. The participants of the study, for which ethical conventions are followed, consist of a total of 12 primary school teachers, each of whom is represented by at least three primary school teachers from lower, middle and upper social economic levels. The selection of the study group was made with reference to the maximum diversity sampling, one of the sampling techniques. The opinions of the participants were collected with the help of a semi-structured interview form and the data obtained from the interviews were analyzed using content analysis method. In line with the data collected and analyzed by 2 researchers, the findings were shared within the scope of 6 themes. As a result, while it was determined that undesirable behaviors in classroom management were mostly caused by students, individual learning speed and friend relations, it was determined that these result from the factors pertaining to the environment, friends, technology use and family. Although the participants appeared to have various coping methods for undesirable behaviors, they stated that there exist responsibilities especially of parents, school staff and students in order to eliminate and minimize the relevant problems.

Keywords: Undesirable behavior, primary school teacher, classroom management, primary school, student.

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Introduction

In the most general sense, education can be described as the process of changing the behavior of an individual. At the end of the process, what is required from the individual is essentially the desired behavioral change; however, the process sometimes does not work as desired and undesirable behavioral acquisitions may occur in the individual with latent factors. In this context, it can be said that the function of education is not only the process of changing desired behavior, but also the task of eliminating, suppressing or extinguishing undesirable behaviors.

Considering that a large part of the education and training process takes place in the classroom, how well in-class education and training services work is related to the targeted product and output gains. The biggest goals of educators are to equip individuals in terms of knowledge, skills, values and academics in line with the program. There may be some factors that make the process impossible. These factors can be listed as management, physical facilities of the school, teacher, student, parent and environmental relations. When we examine these factors, it can be encountered as factors that can make the teaching of the lesson impossible, distract the attention of teachers and students, and make it impossible to conduct the lesson and activities. Charles (1999) mentions five types of undesirable student behavior on which teachers agree. These; aggressive behaviors, immoral behaviors, challenging the authority, interrupting the lesson, avoiding taking responsibility (Sadık, 2008). Korkmaz (2002) and Çelik (2003) state that four basic criteria are used while expressing undesirable behaviors and these criteria are; it is defined as the behavior that prevents the student from learning himself or his classmates, that the behavior endanger the safety of the student himself or his friends, that the behavior harms the school tools and equipment or the belongings of his friends, and that the behavior prevents the student from socializing with other students.

In line with the explanations above, any behavior that hinders educational efforts at school can be called undesirable behavior. Some of the undesirable behaviors have the greatest impact on the person doing the behavior; but some of them adversely affect the teacher, the lesson and the whole class. Undesirable behavior in the classroom; it disrupts the classroom order and actions, prevents reaching the goals, and causes especially the misuse of time resources (Başar, 2003). According to Martin and Pear (1992), undesirable behavior is expressed as the difference between the expectations of the teacher and the behavior of the students. For example, while teachers expect students to show interest and attention towards the lesson, students may want to sleep (Sadık, 2008).

In order for education to reach its goals, the foremost feature is expected to be the quality of the education and training process. However, a desired citizen can be raised with a qualified education. When talking about the quality of a school, what is really meant is how well it responds to the needs of students, the environment and society. The quality of the education service regarding the students is measured according to what level they have acquired the desired behaviors (Şentürk, 2010).

Undesirable behaviors in the classroom negatively affect the learning and teaching process, time management and classroom management. Undesirable behaviors in the classroom play an important role in the teacher's good organization of the teaching environment and in providing the content to the students. Good organization and maintenance of instruction also affects undesirable behaviors in the classroom.

In general, the causes of undesirable behaviors in the classroom are as follows; the inadequacy of the physical characteristics of the classroom, the way of giving responsibility to the students, the teacher's classroom management skills, the reasons arising from the students, the inconsistency of the teaching activities with the needs and interests of the students, the lack of planning of the teaching activities, the presence of students in the classroom who need special education with problems, the problems arising from the changes due to the developmental characteristics of the students, are related to each other (Ada and Ünal, 2000; Akçadağ, 2009; Ataman, 2005; Durukan and Öztürk, 2005; Korkmaz, 2002).

The school is not only a place where students are equipped with knowledge and skills, but also a place where students are prepared for real life. Primary school is also the first educational step where students encounter a new school, a new classroom, new friends and a new teacher after pre-school education. School, education, friend, teacher, value, skill, etc. the place where their image is formed is primary school. For this reason, in addition to the personal development stages of children during education, there is the acquisition of desired behaviors and the elimination of undesirable behaviors.

Whether a behavior is desirable or not depends on the individual exhibiting the behavior, the person or group, the environment, time, and cultural perceptions and characteristics (Gündüz and Konuk, 2016). For this reason, different characteristics related to undesirable behaviors can be encountered. However, in general, students' undesirable behaviors can be defined as behaviors that disturb other students in the classroom, disrupt the order of the classroom, do not comply with school and classroom rules, create chaos in the classroom environment and do not want the teacher. Behaviors that endanger security, damage to material goods, disrupt teaching, disrupt order and prevent socialization in the classroom are also examples of undesirable behaviors (Alkaş, 2010; Başar, 1999; Pala, 2005).

One of the most important problems encountered in classroom management for many years has been undesirable behaviors. Since these behaviors negatively affect education and training, researchers have studied every term. The solution of the problem requires a multidimensional and in-depth research; because the reasons for the emergence of undesirable behaviors are varied and complex (Erdem, 2010).

Undesirable behaviors are one of the most important problems that hinder social communication and teaching in the classroom. For this reason, it is important to focus on the subject, to determine the new undesirable behaviors that emerge with the changing conditions and to discuss what attitude teachers should adopt to such behaviors. Since this issue is directly related to classroom management, it is thought that it will help teachers to increase their awareness and success in classroom management.

When the literature in the field of classroom education and educational sciences is examined, it has been determined that many studies have been done. Undesirable student behaviors are aimed at primary school students (Çankaya and Çanakçı, 2011; Çetin, 2013; Sayın, 2001; Tolunay, 2008; Yüksel, 2005), towards secondary school students (Ekici and Ekici, 2014; Özdaş, 2013), and towards high school students (Siyez, 2009; Şenkulak, 2010; Yıldırım and Aydın, 2019), for higher education (Dönmez and Cömert, 2009; Sarıtaş, 2006), for teachers (Erdem, 2016; Çelikkakeli and Avcı, 2015; Girmen, Anılan, Şentürk and Öztürk, 2006; Gündoğdu, 2013; Medikoğlu and Dalaman, 2018; Memişoğlu, 2005; Özer, Bozkurt and Tuncay, 2014; Pala, 2005; Pehlivan, 2012; Tanhan and Şentürk, 2011; Yılmaz, 2008; Yumuşak and Balcı, 2018) and managers (Gökyer and Doğan, 2016; Parlakkaya, 2010; Şenay, 2011; Şenay, 2011). It can be said

that the studies carried out are mostly related to the detection of the presence of undesirable student behaviors and that these studies mainly involve teachers. When the literature is examined, it has been determined that although there are studies on the subject, concepts such as the detection of undesirable behaviors, the causes of undesirable behaviors and solutions are not included in the same study and studies for primary school students. In addition, considering that the studies conducted are mostly shaped around a qualitative paradigm, it is thought that the problems and solution proposals identified in each study may differ, and the study conducted with the thought that each study will deal with a separate situation and study group will also contribute to the field.

In this frame of reference, the aim of this study is to determine the undesirable student behaviors that primary school teachers encounter within the frame of classroom management and to determine their suggestions for undesirable student behaviors. In line with the purpose of the research, answers to the following questions were sought:

1. How do primary school teachers perceive undesirable student behaviors encountered whilst managing their classrooms?
2. What are the causes of undesirable student behaviors encountered in the classroom according to primary school teachers?
3. According to primary school teachers, how can technology be used to reduce undesirable behaviors in the classroom?
4. According to primary school teachers, what are the methods of coping with undesirable behaviors encountered in the classroom?
5. According to primary school teachers, what role can parents play in dealing with undesirable behaviors encountered in the classroom?
6. According to the primary school teachers, how are the solutions to the undesirable behaviors of the students?

Method

In this section, the research model, participants, data collection, data collection tool, data analyses, procedures for validity and reliability and ethics committee aproval process analysis are explained.

Research Model

This study is a qualitative study designed in the descriptive survey model, which is a method (Creswell, 2016) that tries to give meaning by revealing the meanings attributed to social or human problems by groups or individuals. Within the scope of qualitative study, it is essential that the relationships between the methods used in observing, describing, and analyzing various dimensions of daily life are managed by the researcher (Dingwall and Miller, 1997).

According to Stewart and Cash, interviewing is a two-way and interactive communication process based on asking and answering questions, conducted for a predetermined and earnest purpose (Yıldırım and Şimşek, 2006). In the interview method, questions are set in advance and asked directly to the person (Yıldırım and Şimşek, 2006). In this research, which aims to explore the opinions of the primary school teachers involved in the research on undesirable student behaviors they encounter in classroom management, the descriptive survey model, one of the qualitative research methods, was preferred as part of the research to conduct.

Participants

The selection of the study group was made with reference to maximum variation sampling, one of the sampling techniques. The study group of the research consists of 12 primary school teachers, 4 of whom are teaching at each grade level, of 3 schools (lower-middle-upper) working in the province of Aydın, Türkiye in the 2021-2022 Academic Year. Demographic data of the study group are given in Table 1 below.

Table 1. Information on demographic characteristics of the participants

Participant Code	Gender	Age	Graduated School	Grade Level	Socio-Economic Level	Seniority Year	Institution Type
K1	M	47	Faculty of Education	2	Lower	25	Public School
K2	F	56	College	3	Lower	23	Public School
K3	F	56	College	3	Upper	30	Public School
K4	F	40	Faculty of Education	2	Middle	17	Public School
K5	M	46	Faculty of Education	4	Lower	22	Public School
K6	F	45	College	3	Middle	22	Public School
K7	M	55	Faculty of Education	2	Upper	13	Public School
K8	F	38	Faculty of Education	1	Upper	13	Public School
K9	F	45	Faculty of Education	4	Middle	19	Public School
K10	F	37	Faculty of Education	4	Upper	15	Public School
K11	F	34	Faculty of Education	1	Lower	13	Public School
K12	M	39	Faculty of Education	1	Middle	17	Public School

4 of the participants are male and 8 of them are female. Participants were selected equally from three different socio-economic (lower-middle-upper) levels and 3 participants represent each class level. In addition, all of the participants work in public schools, and 9 of them are graduates of education faculties and 3 of them are college graduates.

Data Collection

The data of this study, which aims to obtain the opinions of the primary school teachers about the undesirable behaviors seen in the students, the reasons for these behaviors, the methods used for the solution of the undesired behaviors and the solution proposal, were collected through a semi-structured interview form, which was finalized after the expert opinions. Interview is a very powerful method used to reveal people's perspectives, experiences, feelings, and perceptions (Bogdan and Biklen, 1992). As a result of the pilot applications, necessary arrangements were made, and the semi-structured interview form was determined as 7 questions.

The interviews were held in the teachers' room, in the administrators' rooms, in the school garden, at the participants' homes, by making an appointment with the participants. The interviews lasted an average of 35 minutes. Voice recordings were taken from the participants who gave permission for the interviews, and the data were recorded in the form of notetaking for those who did not give permission. After the interviews were completed, the audio recordings were transcribed. In order to check the accuracy of the data, the audio recordings were confirmed by an independent researcher.

Data Collection Tool

In this study, a semi-structured interview form was used as a data collection tool. Before the interview form was prepared, first of all, a literature review was conducted. Subsequently, an interview form was created by obtaining the opinions and approval of 2 faculty members from the ADU Basic Education Department, 1 faculty member from the Assessment and Evaluation Department, and 2 primary school teachers who completed their graduate education in the Classroom Education Program. In order to get the opinions of the participants about the undesirable student behaviors they encounter in the classroom management, to identify the problems they encounter and to determine the solution proposals, the interview form was piloted by interviewing one primary school teacher from different types of schools (lower-middle-higher) with different socioeconomic levels. As a result of the pilot application, some changes were made in the interview questions, and the changes made in the form were presented to the expert opinion again. Semi-structured interview form consisting of 7 questions, which was formed in line with expert opinions, was applied to a total of 12 participants from 3 different schools.

Analysis of Data

The data analyzes of the research were carried out in accordance with the content analysis technique, one of the qualitative research methods. Content analysis, first conceptualizing the collected data, then organizing it logically according to the emerging concepts and determining the theme that explains the data accordingly (Yıldırım and Şimşek, 2006); it is the process of defining, classifying, coding, and categorizing data (Hancock, 2002). Content analysis requires in-depth analysis of data and allows for uncovering themes that were not apparent before. The process performed in content analysis is to gather similar data within the framework of certain concepts and themes and to interpret them in a way that the reader can understand (Yıldırım and Şimşek, 2006). In this study, the analysis and interpretation of the data was carried out by the researcher as follows:

First of all, each interview form was coded as K1, K12… for teachers. The answers given to the questions in the interview form were meticulously examined by the researcher and coding was done with an inductive approach, adhering to the essence of the statements without a predetermined code content. While coding, attention was paid to determine the frequency of expression. The codes were brought together to examine their similarities and differences, and themes were formed by finding commonalities between similar codes. By reviewing the data, the codes and themes created by the researcher were compared, and the final version of the codes and themes were determined by referring to the expert opinion and defined in a language that the reader could understand.

All the data obtained during the interviews were analyzed independently by 2 researchers and the results were created. As a result of the content analysis, it was determined that the

percentage of agreement was 94%. In the presentation of the findings, some of the statements made by the participants individually are given. The data obtained were examined with cause-effect relationships and some judgments were reached (Yıldırım and Şimşek, 2006).

Procedures for Validity and Reliability

During the face-to-face interviews, it was tried to collect in-depth and real data by establishing closeness with the participants. In the study, besides the researcher himself, help was received from a different coder/faculty member working in the Department of Education Programs and Instruction at ADU. Direct quotations have been included to provide direct presentation of the data with a descriptive approach. Direct quotations were given regarding the findings in order to ensure the internal reliability of the research (Yıldırım and Şimşek, 2006). After 2 randomly selected interview forms were coded by the researcher himself and the other coder, the consistency between the analyzes was examined with the formula (agree/agree+disagree) x 100 (Miles and Huberman, 1994). The agreement coefficient was calculated as .94 for the teacher interview form. These results were accepted as reliable for the research. In addition, the reliability was tried to be increased by giving codes between the teachers K1-K12 in the participants.

Ethics Committee Approval

The ethics application for the study was made on 07/04/2022 and the research was carried out with the approval of Aydın Adnan Menderes University Ethics Commission dated 26/05/2022 and numbered 2022/09.

Results

How the undesirable behaviors experienced in primary schools are interpreted by the primary school teachers, how they are perceived, what the problems are and what solutions are offered for these undesirable behaviors were tried to be revealed through the interviews, and content analysis was made in line with the data obtained from the interviews with the participants, and the findings were divided into different categories under 6 themes and expressed in codes.

Theme 1: Problems Encountered in Classroom Management

The list of codes, categories and frequencies extracted from the answers given to the questions asked to the teachers in order to reveal how the undesirable behaviors encountered by the primary school teachers in classroom management are perceived by the teachers are given in Table 2.

Table 2. Views of primary school teachers on the problems they encounter in classroom management

Theme	Category	Code	f
Problems Encountered in Management	School	Excess class size	1
		Lack of classroom equipment	1
	Teacher/ Executive	Inconsistent behavior	1
		Speech without permission	6
		Blaming/complaining your friends	4
		Defying directives	4
		To lie	3
		Irregularity	2
		Come to school late	2
		Damage to school	2

Student	Stand up without permission	2
	Talk among themselves	1
	Go out without permission	1
	Deflecting the lesson from its goal	1
	Theft	1
İndividual Speed of Learning	Distractibility	3
	Readiness of students	1
	Lack of motivation	1
	Pre/prerequisite learning	1
	Socio-economic level difference	1
Friend Relations	Abusive speech	3
	Slang/vulgar speech	3
	Damege your friends' belongings	3
	Disrespect	2
	Aggressive behavior	2
	Rudeness	1
	Making hand gestures	1
	Hitting each other	1
	Insult	1
	Inability to empathize	1
	Using your friends' stuff without permission	1
	Lack of affection	1
	Making fun of	1
	Division into groups	1
	Tease	1

In the statements of the teachers who participated in the interview, it is emphasized that more than one source in classroom management causes undesirable behavior and discipline problems. Many of the participants' state that they have problems with classroom management, albeit for different reasons. Problems in classroom management; reasons arising from the school, arising from the teacher and the administrator, arising from the student, arising from the individual learning speed of the students and the reasons arising from the friend relations of the students were evaluated in 5 categories.

An example of the opinions of teachers who stated that the reasons for undesired behaviors encountered in classroom management arising from the school are the excess of the class size and the inadequacy of the classroom equipment are as follows:

"The fact that the rules are not adopted in the classroom; I think that the high number of class students poses a problem in terms of classroom management and time management." (K10)

An example of the opinions of the teachers who expressed the reason for the disciplinary problems experienced in classroom management stemming from the teachers and the administrators with the inconsistent behaviors of the teachers and administrators is as follows:

"...I think that the lack of consistent behavior by both teachers and administrators creates discipline problems in the classroom and causes problems for teachers to manage this process." (K7)

Disciplinary problems in the classroom are caused by the student; it is explained by the concepts of " Speech without permission, blaming/complaining your friends, defying directives, to lie, ırregularity, come to school late, damage to school, stand up without permission, talk among

themselves, go out without permission, deflecting the lesson from its goal theft". An example excerpt from a teacher's opinion on the subject is as follows:

> *"Being hyperactive in children leads to undesirable behaviors in the classroom. I can express them as some negative behaviors that can be encountered by behaving aggressively towards their friends, using their belongings without permission, damaging other people's belongings and classroom items, and scribbling on desks. In addition, behaviors such as speaking abusive, making gestures, coming to school late, not obeying the dress code, lying, stealing can be given as examples of some negative behaviors I encounter in classroom management." (K9)*

It is stated that some of the disciplinary problems experienced in classroom management are caused by the differences in the individual learning speeds of the students. The factors affecting the individual learning speed of students are also expressed with concepts such as "Students' readiness, lack of motivation, pre/prerequisite learning, distraction and socio-economic level difference". An example excerpt from the teacher's opinion supporting this view is as follows:

> *"Children who learn faster in class than their other friends are more bored. He disturbs his friend next to him, pulls his friend's hair in front of and behind him, scribbles on the desk, tears up his friends' and his own notebooks, eats something in the classroom, and says he will not write in his writing studies. (K5)*

It is stated that some discipline problems experienced in classroom management are caused by students' friend relations. The participants express the undesirable behaviors in the classroom arising from friendship relations with concepts such as "Abusive speech, slang/vulgar speech, damege your friends' belongings, disrespect, aggressive behavior, rudeness, making hand gestures, hitting each other, insult, inability to empathize, using your friends' stuff without permission, lack of affection, making fun of each other, division into groups and tease". An example excerpt from a teacher's opinion supporting this view is as follows:

> *"I think that with the digital age, children's communication skills are in trouble. We are faced with a generation that does not like to talk and read, who likes to listen even a little bit and gets bored quickly. For this reason, I try to analyze, manage, and evaluate my classroom management in line with the different developmental areas of children in proportion to the average age of the classroom." (K1)*

Theme 2: Causes of Undesirable Behaviors Encountered in Classroom Management

The list of codes, categories and frequencies extracted from the answers given to the questions asked to the teachers in order to reveal how the causes of the undesirable behaviors encountered by the primary school teachers in classroom management are perceived by the teachers are given in Table 3.

Table 3. Primary school teachers' views on the causes of undesirable behaviors encountered in classroom management

Theme	Category	Code	f
Causes of Undesirable Behaviors Encountered in Classroom Management	Parent/Family	Low family education profile	3
		Presence of unconscious parents	3
		Possible wrong role models of parents	3
		Inconsistent parental behavior	2
		Living difficulties	2
		Indulging the parents	1
		Conflict between parents	1
		Negative attitude of parents to school	1
		Parents' only academic expectations	1
		The oppressive family model	1
		Negative parental suggestions	1
		Increase in the number of divorces	1
		Parents' perspectives on education	1
		Not spending quality time with children	1
	Environment/Friends	Being a role model	4
		Peer bullying	2
		The desire for social acceptance and approval	2
		Blasphemy	1
		To lie	1
		Lack of empathy	1
		A lack of respect	1
		Selfishness	1
		Division into groups	1
		Reinforcing wrong behaviors	1
		Verbal violence	1
		Physical violence	1
		Wannabe	1
		Wrong choice of friend	1
	Use of Technology	Unconscious consumption of technology	5
		Unconscious time consumption	5
		Indifference of the parents	3
		Parents' lack of control	3
		Lack of control of technological channels	2
		Being the wrong role model	2
		Unconscious parents	2
		Decreased confidence in the street	1
	The Other	Subconscious fears	1
		Psychological problems	1
		Character structure	1
		Hormone and energizing foods	1
		Child's past life	1
		Developmental characteristics of the child	1
		Physical factors	1
		Inherited traits	1
		Family attitude	1
		Busy work life	1
		Parents who are unfollowed and lacking in locus of control	1

It is seen that primary school teachers explain the reasons for the disciplinary problems they encounter in classroom management as parents/family, environment/friends, use of technology and other reasons.

Some of the participants stated that the causes of disciplinary problems and undesirable behaviors in classroom management stem from parents/family. Participants express the undesired behaviors experienced in classroom management stemming from the parents/family with the concepts of " Low family education profile, presence of unconscious parents, possible wrong role models of parents, inconsistent parental behavior, living difficulties, indulging the parents, conflict between parents, negative attitude of parents to school, parents' only academic expectations, the oppressive family model, negative parental suggestions, increase in the number of divorces, parents' perspectives on education and not spending quality time with children". An example excerpt from a teacher's opinion supporting this view is as follows:

> *"The families are in the clear. In divorced families, the child goes to the mother and is praised there, then goes to the father and is praised. When this happens, it causes dissatisfaction in children. Uneducated families are also a big problem. Seminars given to teachers should actually be given to parents. In fact, it is necessary to take the children from the schools and bring the parents to the schools. Of course, it is very important at the academic level in families. There are also behavioral differences in children according to the education level of the family. There are differences between the behavior of children of primary school graduates and children of high school graduates. The second is the family's perspective on education. It affects whether the family sends the child to pre-school education. Behaviors of children with and without pre-school education. Be the best teacher as a teacher (although I don't know what a good teacher is) the child stays with us for 6 hours and spends the remaining 18 hours with his family. The child interacts more with his family. There is also the fact that if the child has willpower, the child is successful. Even in families with low academic success, the child can be successful if they are willing." (K5).*

Some of the participants' state that the discipline problems and undesirable behaviors in classroom management are caused by the environment/friends. Participants explain the reasons for the problems experienced in classroom management due to the environment/friends with concepts such as "Being a role model, peer bullying, the desire for social acceptance and approval, blasphemy, to lie, lack of empathy, a lack of respect, selfishness, division into groups, reinforcing wrong behaviors, verbal violence, physical violence, wannabe and wrong choice of friend." An example excerpt from a teacher's opinion supporting this view is as follows:

> *"The reason for most undesirable behaviors in the classroom environment is that children imitate their other friends. When a deterrent sanction is not applied to a student's mistake, other children also apply it. I have students who see and practice behaviors such as swearing, lying, and standing up from their friends. These include female students. Children who exhibit positive behavior are more effective than negative ones. I have observed that children exhibiting this negative behavior put pressure on their other friends and create fear. Even the child that I said would never do it, I see, he starts exhibiting negative behaviors." (K1)*

Many of the participants stated that the discipline problems and undesirable behaviors in classroom management are caused by the use of technology. It is seen that the participants explained the reasons of undesirable behaviors experienced in classroom management with

technology, with concepts such as "Unconscious consumption of technology, unconscious time consumption, indifference of the parents, parents' lack of control, lack of control of technological channels, being the wrong role model, unconscious parents and decreased confidence in the street". A sample quote from a teacher's opinion supporting these views is as follows:

> "*Television, tablet, computer, and phone shape children's behavior. Hit movies on television negatively affect children. They act like extraordinary characters. They imitate them. The games they play have a negative impact on the psychology of children. Students who spend more time in front of the computer are more antisocial. They're shutting themselves out. Their speech, discourse and behavior are similar to the game characters they play. These children also have trouble with writing. They misspell words. They act hastily. They have difficulty completing a sentence. They also become tired and sleepless. People no longer have time for children. For him, the parent directs the child to the television to the computer. There is no outside trust. But they don't know that using technology like this is very harmful to children." (K1)*

Some of the participants expressed the causes of disciplinary problems and undesirable behaviors in classroom management with other factors. It is seen that the participants who express the undesirable behaviors experienced in classroom management with other factors explain these factors with concepts such as "Subconscious fears, psychological problems, character structure, hormone and energizing foods, child's past life, developmental characteristics of the child, physical factors, inherited traits, family attitude, busy work life and parents who are unfollowed and lacking in locus of control". A sample quote from a teacher's opinion supporting these views is as follows:

"The causes of undesirable behaviors in classroom management; psychological state of the child, previous events, inability to show the developmental characteristics of the period, physical factors, etc. I can list other reasons." (K8)

Theme 3: Positive Use of Technology by Students

What can be done for primary school teachers to use technology positively by students? The list of codes, categories and frequencies extracted from the answers given to the questions asked to the teachers under the title of the question is given in Table 4.

Table. 4 Primary school teachers' views on students' positive use of technology

Theme	Category	Code	f
The Positive Use of T echnology by Students	School	Physical and technological facilities of schools should be increased	2
		Lessons should appeal to more than one sense organ	1
		Technology consumption should be taught purposef	1
	Parent	Parents must restrain, supervise and watch	5
		Parents should be good role models in consumption	2
		Parents should spend quality time with their children	1
		Technological games should be supervised and educational	1
		Parents should be aware	1
		Programs should be appropriate for the development of children.	1
		Parents should be educated about technology and its consumption	1
	Law/ regulation	There should be legal sanctions and inspections	1

Participants expressed their opinions by making suggestions about “School, parents and laws” about what should be done regarding the positive use of technology by students.

Participants think that with the positive use of technology by students, unwanted behaviors in school can be prevented. The participants made the following suggestions in order to prevent undesirable behaviors experienced in classroom education by using technology in a positive way. These are: “Physical and technological facilities of schools should be increased, lessons should appeal to more than one sense organ and technology consumption should be taught purposef.” An example excerpt from a teacher's opinion supporting the above views is as follows:

> *“Technological tools are very inadequate in terms of visual and software used in schools. Their content is insufficient, many of them cannot be reached. Play-style things that will attract the attention of children and that they will enjoy can be presented to students in a way that they can be watched in the classroom. It is necessary to prevent it from being seen as something unattainable by children. It is necessary to prevent children from watching negative things. Children should not be confined to the house. There are also many foods that increase energy. They usually eat them. The breaks must be long; the schoolyard area is insufficient. There should be environments where children can move freely, swing, run and play, so that children can release their energy there. Even children who are talented in visual arts cannot develop in this area. There should be a visual arts teacher and a visual arts workshop so that children can be encouraged in these aspects so that they can get rid of the negative effects of technology.” (K1)*

Participants talk about the points that parents should have in the positive use of technology by students. It is stated that parents should pay attention to the "Parents must restrain, supervise and watch, parents should be good role models in consumption, parents should spend quality time with their children, technological games should be supervised and educational, parents should be aware, programs should be appropriate for the development of children and parents should be educated about technology and its consumption" points in order to prevent undesirable behaviors in the classroom, at school or at home. A sample quote from a teacher's opinion supporting these views is as follows:

> *“Parents have a great role in gaining behavior and reducing or eliminating undesirable behaviors. A short-term reward can be placed after the desired behavior. It can make you watch a game or movie that your family has found and knows. It can enable the child to spend time in front of the computer and the phone in a controlled manner. He should definitely not leave the child alone with the computer or phone in his room or in another room. If he does, he should definitely go and check it every 15 minutes.” (K4)*

Participants state that there are points that should be included in laws and regulations in the positive use of technology by students. An example excerpt from a teacher's opinion, which states that laws are more controlling and sanctionable, is as follows:

> *“As long as TV programs, internet usage, general broadcasts are not supervised by the authorities of the state, and unsuitable programs and channels are not sanctioned, their damage to society will continue.” (K11)*

Theme 4: Methods of Coping with Undesirable Behaviors

The list of themes, codes and frequencies obtained from the opinions of primary school teachers on the methods of coping with the undesirable behaviors they encounter in classroom management is given in Table 5.

Table 5. Primary school teachers' views on coping with undesirable behaviors

Theme	Code	f
With Undesirable Behaviors Coping Methods	Suggestıon	3
	Collaborating with family	3
	Pause	2
	Paying attention to individual learning speed	2
	Referral to the guidance service	2
	Operating the reward and punishment system	2
	Awareness raising	1
	Excitation	1
	Creating the rules together	1
	Solution together	1
	Teaching how to be solution oriented	1
	Teaching to be fair	1
	Don't ignore	1
	Dialogue and empathy	1
	Being consistent	1
	Finding the source of the problem	1
	Correct diagnosis	1
	Good detection	1
	Right guidance	1

It has been determined that the participants explained their opinions about what can be done and what should be done about the methods of coping with the undesirable behaviors they encounter in the classroom management with the concepts of "Suggestıon, collaborating with family, pause, paying attention to individual learning speed, referral to the guidance service, operating the reward and punishment system, awareness raising, excitation, creatıng the rules together, solution together, teaching how to be solution oriented, teaching to be fair, don't ignore, dialogue and empathy, being consistent, finding the source of the problem, correct diagnosis, good detection and right guidance". An example quote from a teacher's opinion supporting these concepts is as follows:

> "*When there is a problem between friends, I want them to find a solution and talk first. If they can't find a solution, they come to me. I speak without taking sides. Then I send it to the guidance service. This way I solve many problems. In some cases, I also use the method of reward and punishment." (K12)*

Theme 5: Duties of Parents Regarding Undesirable Behaviors

The theme, code and frequency list indicating the opinions of the primary school teachers about the duties of the parents in coping with the undesirable behaviors they encounter in the classroom management are given in Table 6.

Table 6. Views of primary school teachers on parental duties regarding undesirable behaviors

Theme	Code	f
Duties of Parents Regarding Undesirable Behavior Problems	Parents must be consistent	4
	Parents should know their child well	3
	Parents should be good role models for their children	3
	Parents should spend good and quality time with their child	1
	Parents must be conscious	1
	Parents should identify the source of the problem well	1
	Parents and school should act together	1
	Should be ın cooperatıon wıth the parent and the school	1
	Control at school should be left to the teacher	1
	Parents should always check and supervise their child	1

It is seen that the participants explained their views on the duties of parents in coping with undesirable behaviors with the concepts of "Parents must be consistent, parents should know their child well, parents should be good role models for their children, parents should spend good and quality time with their child, parents must be conscious, parents should identify the source of the problem well, parents and school should act together, should be ın cooperatıon wıth the parent and the school, control at school should be left to the teacher and parents should always check and supervise their child". An excerpt from a teacher's opinion supporting these views is as follows.

> *"Parents must accept their child's behavior. My child needs to get away from the notion that he can't do it. Unfortunately, that behavior does not improve when the parent does not recognize his child and does not accept that he can do that behavior. In fact, when the parent does not believe, the child constantly repeats that behavior and can reach the level of disrespect." (K11)*

Theme 6: Primary School Teachers' Solution Suggestions for Undesirable Behaviors

The list of themes, codes, categories, and frequencies indicating the solution suggestions of the primary school teachers participating in the interview for the undesirable behaviors seen in the students is given in Table 7.

Table 7. Primary school teachers' solution suggestions for undesirable student behaviors

Theme	Category	Code	f
Solution Suggestions for Undesirable Behaviors in Students	Parent	Family-school should cooperate	5
		Family education should be given importance	2
		Child abuse should be prevented in the family	1
		Family should be good role model	1
	School	There should be an environment where children can release their energies	1
		There should be an environment where children can produce	1
		Psychological counselors should take charge instead of guidance teachers	1
		Subject teachers should attend arts and skills classes	1
		Reward system should be used	1
		There should be break rooms	1
		Correct behavior should be immediately reinforced	1
		Guidance services should be provided to students by experts	1
		There should be sanctions	1
		Always keep in touch with children	1
		Be fair and consistent in the classroom environment	1
		Rules should be clear and unambiguous	1
		"You" language should be preferred instead of "I" language	1
	Student	Children should be given responsibilities that they can do	1
		Children should be supervised/supervised	1
		Individual differences should always be considered	1

Primary school teachers who participated in the interview state that parents, school and students have separate duties and assignments in terms of preventing, minimizing or even eliminating undesirable behaviors seen in students. The participants explain the missions for parents with the concepts of "Family and school should cooperate, family education should be given importance, child abuse should be prevented in the family and family should be good role model" in their proposals for solutions for undesirable behaviors. An excerpt from a teacher's opinion supporting this view is as follows:

> *"There should be close cooperation with families. Children are treated unfairly at home, they are beaten, children are pressured about success. Families should be consulted on these issues, necessary training should be given, and serious sanctions should be imposed on the parents of children who are exposed to beatings and slang words. The reward system for students who behave correctly should be implemented effectively." (K5)*

It is seen that the participants expressed the missions for the school with the concepts of "There should be an environment where children can release their energies, there should be an environment where children can produce, psychological counselors should take charge instead of

guidance teachers, subject teachers should attend arts and skills classes, reward system should be used, there should be break rooms, correct behavior should be immediately reinforced, guidance services should be provided to students by experts, there should be sanctions, always keep in touch with children, be fair and consistent in the classroom environment, rules should be clear and unambiguous and "you" language should be preferred instead of "I" language" in their suggestions for solutions to undesirable behaviors. The opinion of a teacher who supports this view is as follows:

> *"In schools, there should be an environment where children can throw their energies and produce new things. There should be sanctions for primary school students by the Ministry of National Education. There should be branching on the basis of courses. Specialized teachers should attend classes such as physical education, painting, and music. Psychological counselors and pedagogues should be appointed rather than guidance services in schools. In fact, they should always be present in such big schools. They should provide the necessary therapeutic support to the children. Family education should be given importance. Especially when some children's behaviors to the degree of illness are detected, trainings should be given to ensure that their families go through some education." (K1)*

It is seen that the participants explained the homework and duties of the students in the prevention of undesirable behaviors with the concepts of "Children should be given responsibilities that they can do, children should be supervised/supervised and ındividual differences should always be considered". A sample quote from a teacher's opinion supporting these views is as follows:

> *"It is essential to make the student feel valued first. The source of the problem should be determined by knowing the student very well and analyzing it well. The child shows these behaviors, but whether he/she does it or is it the expression of different reasons, these should be analyzed very well. The problem should be solved by the counselors on the spot and on time before it gets too big. Collaboration should be made with the family. Students should be shown consistent and fair behavior in the classroom environment. It should not be ignored that each student has a different inner world. Individual differences should be taken into account. In terms of how both justice, consistency and individual difference will be at the same time, the student should be discussed and explained individually, again. Of course, they should be supported by the family. Problems that can be solved more easily with motivation in the classroom environment or by getting support from friends in a different way. The basis of all of these consists of correct determination and following the most correct way." (K12)*

Discussion and Conclusion

In this research, which was conducted with the aim of "examination of the views of primary school teachers about the undesirable student behaviors they encounter in classroom management", it is emphasized that there are undesirable behavior and discipline problems arising from the causes of more than one source in classroom management. It has been determined that the participants explained the behaviors that cause undesired student behaviors in the classroom with concepts such as " Excess class size, lack of classroom equipment, ınconsistent behavior, speech without permission, blaming/complaining your friends, defying directives, to lie, ırregularity, come to school late, damage to school, stand up without permission, talk among themselves,go out without permissioni deflecting the lesson from its goal, theft, distractibility,

readiness of students, lack of motivation, pre/prerequisite learning, socio-economic level differenc, abusive speech, slang/vulgar speech, damege your friends' belongings, disrespect, aggressive behavior, rudeness, making hand gestures, hitting each other, insult, ınability to empathize, using your friends' stuff without permission, lack of affection, making fun of division into groups and tease". When the literature was examined, similar findings were found and as undesirable behaviors encountered by teachers in the classroom; disobeying classroom rules, abusive speech (Gürşimşek and Saygılı, 2008; Keleş, 2010), speaking without permission in class (Balay and Sağlam 2008; Elban, 2009; Şenay, 2011; Yıldız, 2006), shyness, hyperactivity and lack of attention (Yüksel, 2006), problems arising from watching violent programs on television (threatening), selfishness, hurting their friends (Dönmez and Çömert, 2009; Keskin 2009; Şenay, 2011), students trying to attract attention, high self-confidence, complaining about each other (Dönmez and Çömert, 2009; Kapucuoglu Tolunay, 2008; Neyişci Karakaş, 2005; Yüksel, 2006), students' eating whenever they want, habits from the kindergarten (singing and playing with play dough in the lesson), students' unwillingness to leave their families, parents' excessive devotion to their children, students' disrespect to the teacher (Çankaya and Çanakçı, 2011) and absenteeism (Dönmez and Çömert, 2009; Gürşimşek and Saygılı, 2008; Keleş, 2010; Neyişci Karakaş, 2005) has been spotted.

As for the reasons for the disciplinary problems encountered in classroom management, the participants indicated "Low family education profile, presence of unconscious parents, possible wrong role models of parents, inconsistent parental behavior, living difficulties, indulging the parents, conflict between parents, negative attitude of parents to school, parents' only academic expectations, the oppressive family model, negative parental suggestions, increase in the number of divorces, parents' perspectives on education, not spending quality time with children, being a role model, peer bullying, the desire for social acceptance and approval, blasphemy, to lie, lack of empathy, a lack of respect, selfishness, division into groups, reinforcing wrong behaviors, verbal violence, physical violence, wannabe, wrong choice of friend, unconscious consumption of technology, unconscious time consumption, ındifference of the parents, parents' lack of control, lack of control of technological channel, being the wrong role model, unconscious parents, decreased confidence in the street, subconscious fears, psychological problems, character structure, hormone and energizing foods, child's past life, developmental characteristics of the child, physical factors, ınherited traits, family attitude, busy work life, parents who are unfollowed and lacking in locus of control". When examined in the literature, similar findings were encountered. As Çelik (2003) stated; parents' beliefs, attitudes and behaviors, reward and punishment system, school disciplinary policies, students' beliefs, attitudes and expectations, school ethical rules, teacher's beliefs, attitudes and expectations, teacher's management style, social, cultural and economic factors, teaching techniques and methods, it has been determined that reasons such as the national program and physical environment are considered as undesirable behavior in classroom management.

When the categories of the concepts that cause undesirable behaviors are examined, it is seen that there are parents/family, environment/friends, technology use and other options. Due to the fact that the 21st century is the age of technology, the existing borders on the world have been removed and it has become possible to reach the desired information at any time. Online or written/printed resources have had their share of information pollution, and the groups that consume unconscious technology have been affected the most. In order to prevent this within the scope of the research, a great burden falls on schools, parents, the state (laws, regulations, judiciary, and other legal entities), especially for the positive use of technology. At school, teachers

want everyone to pay attention to " Physical and technological facilities of schools should be increased, Lessons should appeal to more than one sense organ, technology consumption should be taught purposef, parents must restrain, supervise and watch, parents should be good role models in consumption, parents should spend quality time with their children, technological games should be supervised and educational, parents should be aware, programs should be appropriate for the development of children, parents should be educated about technology and its consumption and there should be legal sanctions and inspections" issues in order to reduce or eliminate the undesirable behaviors they encounter.

While the participants expressed the solution suggestions for the undesirable behaviors seen in the students with concepts such as “Family-school should cooperate, family education should be given importance, child abuse should be prevented in the family, family should be good role mode, there should be an environment where children can release their energies, there should be an environment where children can produce, psychological counselors should take charge instead of guidance teachers, subject teachers should attend arts and skills classes, reward system should be used, there should be break rooms, correct behavior should be immediately reinforced, guidance services should be provided to students by experts, there should be sanctions, always keep in touch with children, be fair and consistent in the classroom environment, rules should be clear and unambiguous, “You” language should be preferred instead of “I” language, children should be given responsibilities that they can do, children should be supervised/supervised and ındividual differences should always be considered” ,similar findings were also found in the literature. When the literature is examined, the suggestions for solutions regarding the undesirable behaviors that teachers encounter in the classroom; Expressed as "giving punishment and reward (Alkan, 2007; Çankaya and Çanakçı ,2011; Sipahioğlu, 2008), warning (Alkan, 2007; Kapucuoglu Tolunay, 2008; Yıldız, 2006; Yüksel, 2006), ignoring (Elban, 2009; Kapucuoglu Tolunay, 2008; Sarıtaş, 2006), be more sincere to students, integrate students with activities, guidance service (Kahraman, 2006; Keleş, 2010; Sarıtaş, 2006), assigning tasks (Çankaya and Çanakçı 2011; Kahraman, 2006), making students sit close to themselves , playing games, informing parents (Keleş, 2010), involving students in the lesson, explaining the importance of friendship, having activities, being understanding to students, giving place to current issues, listening to students, teaching the rule of eating at feeding time, playing games for children to get used to school, first allowing parents to come to school every week, raising awareness of parents and children about respect, communicating with parents, telling students that they should speak up, giving responsibility (Elban, 2009; Kapucuoglu Tolunay, 2008; Sarıtaş, 2006) and listening to students (Keskin, 2009)".

Suggestions

Although undesirable student behaviors in classroom management take place in the classroom, more than one factor has emerged that causes these undesirable behaviors. When these factors are examined, it has been determined that the factors that cause undesirable behaviors are caused by external factors (family, environment, technology and alike). Therefore,

- ✓ Primary school teachers should analyze the negative behaviors and unwanted student behaviors in the classroom,
- ✓ The causes of undesirable student behaviors in the classroom should be well analyzed,
- ✓ Parents, schools, and the environment should cooperate in order to reduce and eliminate undesirable student behaviors in the classroom,
- ✓ Incorrect use of technology, which is thought to cause undesirable student behaviors, should be turned into positive use,

- ✓ Primary school teachers should be directed to academic studies and trainings on classroom management,
- ✓ The duties and working styles of school guidance services should be reviewed,
- ✓ Parents should be educated on the subject through different trainings and meetings and awareness should be raised,

In addition, based on these results, the causes of undesired behaviors can be investigated in depth. Similar studies can be conducted in different provinces of our country. By doing mixed research and action studies on undesirable behaviors in the classroom, both in-depth research and more specific research can be done.

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A Comparison of Mathematics Teacher Training and Elementary Mathematics Curricula in Finland, South Korea and Türkiye

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ABSTRACT

The aim of this study is to carry out a comparative analysis of the student selection for mathematics teacher training institutions pre-service education, employment conditions, in-service training activities in Finland, South Korea and Türkiye as well as that of the curricula used in these countries for elementary mathematics teacher training courses. Document analysis as a qualitative research method and Bereday's comparative model in education were used. The data has been organized, assigned to sub problems and analysed as to the Bereday Method. According to the findings, the importance that Finland and South Korea gives to the selection of applicants for teacher training institutions; their meticulousness for professional development and the place of problem solving and thinking skills in mathematic curricula as of elementary level bring success in mathematics at international exams. In Türkiye, it is recommended to introduce additional criteria covering social work activities and other sorts of activities conducted in high school in addition to the calculation of exam scores for student admission to education faculties, and to enhance teaching practices in terms of both duration and quality. In addition to this, it is considered that it is insufficient to make teacher appointments according to scores obtained, and accordingly, it is necessary to add applied course presentations to the existing appointment criteria.

Keywords: Comparative education, Bereday model, mathematics teacher training, mathematics curriculum

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Introduction

Although students think of mathematics as only a lesson learnt at school, it is actually a discipline that is intertwined in every aspect of our life such as architecture, art, literature, economics, science and technology. Mathematics helps individuals develop their higher-order thinking skills like problem solving, curiosity and critical thinking. Thus, just like every country Türkiye gives great importance to mathematics education.

Since 2006 in Türkiye, the aim has been to develop mathematical reasoning skills and problem-solving skills with the mathematics curricula prepared with a constructivist approach. It has been found that the importance of these skills was underlined in the curriculum revision of 2013 (Bukova Güzel et al., 2016) and descriptions related to the learning outcomes related to these skills were inserted in 2018 (Ministry of National Education [MoNE], 2018a, 2018b).

It's crucial that teachers as individuals who implement the curricula in the classroom can organize the curricula according to the cognitive skill levels of the class. Therefore, the teacher must have subject-matter content knowledge, pedagogical content knowledge and curricular knowledge (Shulman, 1986). While subject-matter content knowledge depends on the teachers' competence in the field, their pedagogical field knowledge is part of the teacher's pedagogical reasoning process between their teaching field knowledge, way of associating pedagogical knowledge and field knowledge (Cochran, DeRuither and King, 1993). According to Shulman (1986), curricular knowledge consists of four components. The first component of curricular knowledge (Programs and materials) contains the existing curriculum and related material knowledge which is used for teaching the given content. The second component (indications and contraindications) is the knowledge of different curricula and materials and their awareness that contain information on the curriculum and material's efficiency and their effects for certain contexts. The third component (lateral) consists of the content for the other courses (lateral curriculum knowledge) and the knowledge of the relevant materials; the fourth component (vertical) refers to the knowledge on how these subjects are taught under a certain curriculum (vertical curriculum knowledge). Blömeke et al. (2015) included the cognitive processes which shape the teachers' behaviour and actions in the classroom. PID skills, the model named after perception (perceive), interpretation and decision (decision-making) skills create a balance between content knowledge and teaching behaviour in class (Metsäpelto et al., 2022).

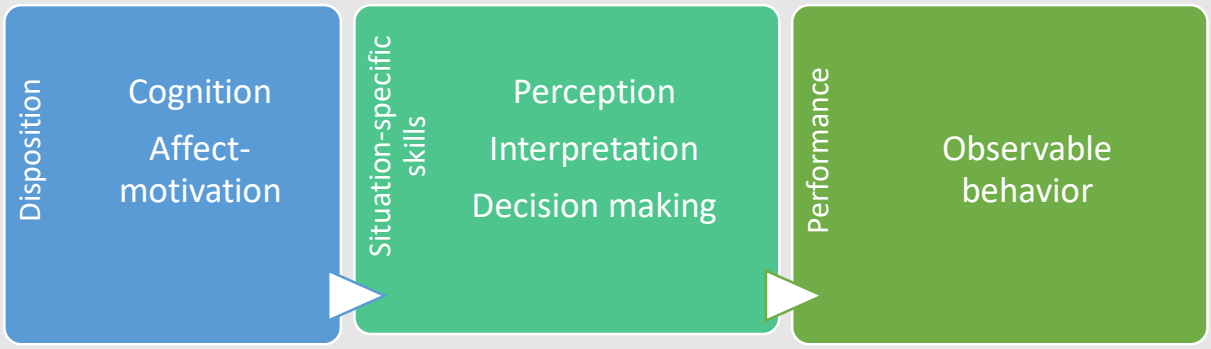

Figure 1. A model of competence

A Multidimensional Adapted Process Model of Teaching-MAP put forward by Metsäpelto et al. (2022) and A model of competence by Blömeke et al. has been reviewed in detail, as shown in Figure 1.

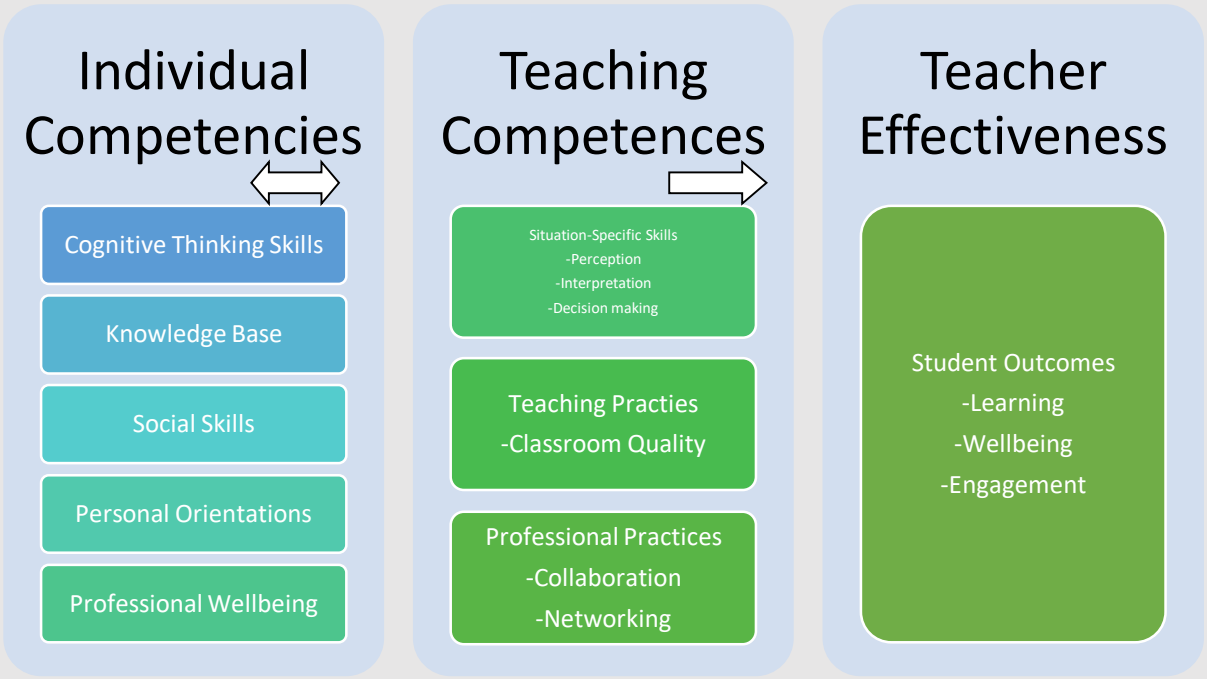

Figure 2. A Multidimensional Adapted Process Model of Teaching-MAP

The term teacher effectiveness in Figure 2 refers to the student's learning outcomes and objectives as well as enabling the motivational, social, and affective outcomes and student's participation (Seidel and Shavelson, 2007). Besides process and summative assessments, assessments that reflect a student's in class experience can also be indications of teacher effectiveness. Because of this, alongside teacher subject matter knowledge, the skill to transmit the subject matter in the best way and manage the learning process also comes into prominence (Goe et al., 2008). With these skills, it is thought that not only the individuals cognitive and affective background but also their university training has a huge impact.

It stands out that there is a low average especially in mathematics in Türkiye while passing from elementary to secondary education and from secondary education to higher education. For example, the mathematics average in the 2022 High School Entrance Exam is 4,74 out of 20 questions (MoNE, 2022). In the 2022 Higher Education Institutions Examination (HEIE), in the first session- the Basic Proficiency Exam- the mathematics average is 8,17 out of 40, in the second session- Field Qualification Test- the average is 7,72 out of 40 questions (Measuring, Selection and Placement Center- [ÖSYM], 2022). According to the results taken from the results evaluation of the education process guided by curricula prepared with constructivist education, it is obvious that there are some deficiencies. When examined Türkiye's TIMSS (Trends in International Mathematics and Science Study) and PISA (Programme for International Student Assessment) exam results, as per the TIMSS 2019 report in the 4th grade mathematics Türkiye ranked the 23rd out of 58 countries and for the 8th grade it was the 20th out of 39 countries (MoNE, 2020). According to the 2018 PISA (Programme for International Student Assessment) report Türkiye ranked the 42nd place out of 79 countries for mathematical literacy. In comparison with the ranking of other participating countries, Türkiye's average in mathematics is at a good level. While researching the reason for Türkiye's ranking in these exams, it is thought that firstly the teacher training for mathematics must be reviewed. Because teachers are key to implementing curricula effectively. While technology may become a superior vehicle for transmitting knowledge, the

relational aspects of teaching – being a good coach, a good mentor – will remain human capacities of enduring value (Schleicher, 2018) Thus the teacher teaching these mathematic curricula, must be an individual who has communicative skills, general knowledge, professional education and skills at a high level, who is open to development, who can use technology and work in collaboration. Through education and evaluation- unlike the traditional learning- in the modern teaching model which encourages student participation, learning is constructed with the student. By this, the student attains a sense of purpose and takes ownership for their learning. In order to achieve this, teachers need support in undergraduate education to design environments which support effective student participation (OECD, 2019).

Due to the leaps in technology and the global pandemic, the 21st century in which education has changed characteristics, in Türkiye, like every other country, teacher education has been dwelled on. A teacher education which includes educational software and web tools in educational environments and with these technologies enables student participation and can promote teacher qualifications and increase these qualifications, is a matter which must be emphasized (Saracaloğlu, 2022). Like in every other area with the rapidly developing technology and science has a direct and indirect effect on the field of education. Not staying idle by such effects increases a country's level of development. In order to form educational forms of higher quality with the self-proving change movements and to determine solutions for potential problems, comparative education studies are utilized (Yıldırım and Türkoğlu, 2018). Comparative educational studies are important so as countries can gain a different perspective on countries and have clearer view of their current situation in comparison to the other countries (Saracaloğlu, 1992). When the success in mathematics for school students at elementary and secondary education level in Türkiye is considered, making comparisons with countries that have proved themselves in this field will enable us to develop a different perspective to the existing problem.

Consequently, in this study the countries South Korea and Finland which stand out with their high level of student performance for mathematics in international exams like TIMSS and PISA have been examined in terms of mathematics teacher selection, their teacher training and education system and their primary and middle schools' mathematics curricula compared to Türkiye and it is aimed to reveal the similarities and differences. For this aim, answers have been searched for the questions below:

1. How is the selection process for institutes training mathematics teachers in Finland, South Korea and Türkiye?
2. How is the pre-service education process for training mathematics teacher candidates in Finland, South Korea and Türkiye?
3. How are the employment conditions for the mathematics teacher candidates in Finland, South Korea and Türkiye?
4. How are the in-service training activities for mathematics teachers in Finland, South Korea and Türkiye?
5. What are the similarities and differences in mathematics curricula for primary and middle schools in Finland, South Korea and Türkiye?
6. What are the similarities and differences in mathematics teacher training systems and mathematics curricula in Finland, South Korea and Türkiye?

Method

Research Model

This study is a comparative education research. This is a comparative educational study which aims to reveal the similarities and differences between Finland and South Korea which have proved their success in TIMSS and PISA exams and Türkiye in terms of mathematics teacher selection and training systems, employment conditions and elementary school mathematics curricula. Comparative education study is a field which researches the education systems of different countries in order to find solutions for potential problems in the field of education in a society (Cramer and Browne, 1965). The constant change in education depending on the changing dynamics and technology enabled research on education to develop in this direction. Thus accordingly, there are various approaches which are used in comparative educational research and depending on these approaches there are different models and methods (Silova, 2019). When looking at the literature, the approaches used in comparative education research in general are examined under eight headings as quantitative (statistical), descriptive, sociological, analytical, synthetic (Özdil, 2021), historical and juxtaposition approaches. Depending on these approaches, it is seen that Jullien, historical, problem analysis, Bereday model, quantitative-statistical, functional, eclectic, Bray and Thomas cube models and methods are used (Saracaloğlu, 2022).

The three countries' mathematics teacher training and educating institutions student selection, the undergraduate education, teacher employment, the in-service training and primary, middle school curricula in the study have been analyzed with the quantitative research method document analysis method and the Bereday model from the comparative education approaches. In the Bereday model, the relevant subject is analyzed by going through the four steps description of data, interpretation, juxtaposition and comparison (Bereday, 1964; Bray, Adamson and Thomas, 2007. *Description step:* In this step the data belonging to each variable is categorized clearly and described. *Interpretation step:* The collected data is analyses with different methods. While analyzing the variable must be evaluated according to their environment. *Juxtaposition step:* In this step, the data collected for two or more countries must be juxtaposed and they must be compared in terms of similarities and differences. *Comparison step:* In this last step, in order to make a final comparison, the aim is to reveal all the data and reach an objective conclusion (Bereday, 1967).

Collection of Data and Analysis

In this study, the data has been collected with the document analysis method of quantitative research models. Document analysis method is a qualitative research method used to analyze written documents systematically (Wach, 2013).

Table 1. 2015, 2018 PISA and 2015, 2019 TIMSS mathematics results

	PISA 2015		PISA 2018	
Country	**Average score**		**Average score**	
Finland	511		507	
South Korea	524		526	
Türkiye	420		454	
OECD average	490		489	
	TIMSS 2015		**TIMSS 2019**	
Country	**4th grade average**	**8th grade average**	**4th grade average**	**8th grade average**
Finland	535	-	532	509
South Korea	608	606	600	607
Türkiye	483	458	523	496
OECD average	500	500	500	500

Source: TIMSS (2015, 2019) and MoNE (2015, 2019)

In Table 1 results from the two terms PISA and TIMSS exams, Finland and South Korea were included in this study because of their ranking and their location, being in different geographical regions. The written documents used in this study are the theses, books, articles, seminars on Finland, South Korea and Türkiye's mathematics teacher selection, training-education systems and the mathematics curricula, the OECD reports and these countries' Ministry of Education official websites. According to Bogdan and Bilken (2007), curricula and guidelines can also be sources of data to be used in the document analysis. Following the literature review, the relevant documents have been compiled into every sub problem. To analyse the data obtained, the comparative education research model: Bereday model was used. With the Bereday model, the variables included in the research have been examined in great detail and compared (Yüksel and Sağlam, 2012). There are four steps: description, interpretation, juxtaposition, comparison (Bray, Adamson and Thomas, 2007). In the first step, data on the mathematics teacher training systems and primary education mathematics curriculum of the selected countries were collected and presented descriptively. In the second step, the relevant variables of the three countries were analyzed. In the third step, the collected data were brought together and tabulated to determine their similarities and differences. In the last step, a final comparison was made from all the data obtained and recommendations were made. Finland, South Korea and Türkiye's mathematics teacher selection and education system, employment conditions, in-service training and current elementary school curricula has been analyzed.

Results

In this part of the research, information has been given on the three countries' mathematics teacher candidate selection for teacher education and training institutions, the employment conditions, in-service training, and current primary and secondary school curricula.

The student selection process for mathematics teacher education in Finland, South Korea and Türkiye

Students who want to become a teacher in Finland enter a university entrance exam called Marticulation Examination which is held twice a year one in spring and one in fall term. This exam which is prepared by the Board of University Entrance Exam consists of five tests. Mother tongue (Finnish, Swedish), second national language, foreign language, mathematics, humanities and natural sciences. The mother tongue language exam is compulsory, then the candidate must complete four more test from at least three other area's tests (Ylioppilastutkintolautakunta, 2022). Following the competency exam, the students enter another exam which consists of three stages. The first stage of this exam measures the student's research, critical thinking and interpretation skills, while the second stage is an interview in which it is decided whether the candidate has a character suitable for being a teacher as a profession. The last stage of the exam is towards evaluating the student's trial lesson, diction and presentation skills (Abbasioğlu, 2017). The candidates who complete the three exams successfully are accepted to the education faculties. Only 10-15% of the candidates to the faculty of education get accepted to the program (Sahlberg, 2007). Out of the 14 universities in Finland, 8 of them have a Faculty of Education (Abbasioğlu, 2017).

In South Korea, like the other countries there is an exam candidate must enter, this exam called “Daehak Suhak Neungluk Siheom” (College Scholastic Aptitude Test- CSAT) is held every November (National Centre for Entrepreneurship in Education [NCEE], 2015). This exam prepared by Korea Institute for Curriculum and Evaluation (KICE) consists of six tests: language arts, mathematics, history of Korea, English, social sciences/physical sciences/ professional education and second foreign language. The students enter the tests according to which field they would like to specialize in (KICE, 2021). For acceptance to the universities not only CSAT points but also their high school averages, portfolios, out of class activities, recommendation letters are taken into consideration (Nuffic, 2016). In South Korea there are 13 Education Institutions for primary School (Gülsoy Kerimoğlu, 2019), for middle school there are 368 in total (Ingersoll, 2007) and 4 different institutions for secondary schools (Kim, 2007, in Altıntaş, 2016). There are 41 universities with mathematics teaching programme in the faculties of education (Kwon, 2004).

In Türkiye, for a student to be placed in a mathematics teaching programme, with the change made in 2018, the candidates must enter HEIE, a two-stage exam which consists of Basic Proficiency Test (BPT) and Field Qualification Tests (FQT) and is held in June once a year. Students who want to enter the first step of HEIE which is prepared by ÖSYM must enter the BPT exam which consists of 40 Turkish, 20 social sciences, 40 mathematics and 20 science questions; students who want to enter FQT must enter an exam of a 40-question mathematics test and a 40-question science test. The students' high school grade point average is multiplied by 0,12 and added their points they receive from the exam; the candidates get placed in the mathematics teacher training undergraduate programmes according to their superiority of points. In 1997 the mathematics education was separated as elementary and secondary school mathematics teacher programmes (Higher Education Council**)** [YÖK], 2017). In Türkiye while there are 13 universities with secondary mathematics teacher training programmes, in 104 universities there are elementary mathematics teacher training programmes (YÖK Atlas, 2022).

Table 2. Comparison of countries' mathematics teacher training systems

	Finland	South Korea	Türkiye
Exam name	Matriculation Examination	College Scholastic Aptitude Test	Higher Education Institutions Examination
Institution Responsible for Examination	Board of University Entrance Exam	Korea Institute for Curriculum and Evaluation	Measuring, Selection and Placement Center
Subtests of the Exam	It consists of five tests. *Mother Language (Finnish, Swedish) Test *Second National Language Test *Foreign Language Test *Humanities and Natural Sciences Test *Math Test	It consists of six tests. *Language Arts Test *Math Test *Korean History Test *English Test *Social Sciences/Physical Sciences/ Professional Education Test *Second Foreign Language Test	In TYT, which is the first stage and compulsory for all students, *Turkish Test *Social Sciences Test *Maths Test *Science Test in AYT *Math Test *Science Test
Type of University Admission	The mother tongue test is compulsory for all applicants, after which they must complete four more tests, which must belong to at least three different groups. After the proficiency exam, students take another three-stage exam. *The first step measures students' research, critical thinking and interpretation skills. *The person's suitability for the teaching profession is decided by the interview made in the second step. *The last step measures the diction and presentation skills of students with sample lectures. Candidates who successfully complete all three exams are accepted to education faculties.	High school grade point averages, portfolios, extracurricular activities, letters of recommendation are also taken into account in addition to the score obtained after taking the desired test from the College Scholastic Aptitude Test.	It is compulsory for all students in TYT, which is the first stage of YKS. For mathematics teaching, it is necessary to take the mathematics test and science test at AYT. Students choose a university with the total score obtained by multiplying the secondary education success score by a coefficient of 0.12 and adding it to the numerical score obtained from the exam.
Number of Education Faculty	Eight of the 14 universities in Finland have a Faculty of Education.	In South Korea, there are 13 Education Institutions for primary School, for middle school there are 368 in total and 4 different institutions for secondary schools' field of study. There are 41 universities with mathematics teaching programme in the faculties of education.	While 13 universities have secondary school mathematics teaching programs, 104 universities have elementary mathematics teaching programs.

Mathematics Teacher Candidates Pre-service Education Process in Finland, South Korea and Türkiye

In Finland there are two models used consecutively and simultaneously for mathematics teacher training at primary and secondary school level. In the consecutive model that lasts 5-6 years, the teacher candidates who have completed their master's degree in the mathematics field can then apply to the education department. After completing pedagogical work, they can receive their teaching certificate. In the simultaneous model, the teacher candidate applying for the mathematics field education can also apply for the teacher education programme. Pedagogical lessons start at the end of the second year. In both models the education process ends with a master's degree (Sahlberg, 2021). The middle school and high school mathematics education is given by a branch who has been educated in Mathematics and Natural Sciences Faculty. In the faculty, students get education in teaching mathematics, physics and information technologies. For middle school mathematics teachers, mathematics undergraduate training doesn't have to be their main field. Teacher training candidates accumulate 180 ECTS and 120 ECTS master's degree credits, adding up to total of 300 ECTS (Sahlberg, 2015). Their education process ends in a master degree of their own field (Malaty, 2004). 80% of the 300 ECTS (240 ECTS) are mathematics field lessons, 20% (60 ECTS) are based on pedagogical education (Çınar and Doğan, 2019). In Finland's teacher training system, there is just as much emphasis put on theoretic lesson as application lessons. The teacher candidates have application training for two years, consisting of four stages: three in faculties of education and one in state schools (Aras and Sözen, 2012). With a decision taken in 1974, teacher training in Finland has been restricted to education faculties only (Abbasioğlu, 2017).

In South Korea the faculties of education (Teacher Colleges), the teacher training classes at universities, education departments and education institutes train secondary education mathematics teachers (Kim, 2007). Education lasts four years. The variety in institutes for secondary education create small differences in curricula. However generally the core curriculum consists of pedagogical knowledge, mathematics field knowledge, pedagogic content knowledge, general knowledge and teaching practice (Kim, Ham and Paine, 2011). In the education colleges, the necessary credits for graduating for the secondary education mathematics teaching curriculum is between 130- and 150-hour credits; 20% are liberal arts, 60% are mathematic branch field (mathematics curriculum study, pedagogical content knowledge, general pedagogic and teaching practice) and 20% is elective lessons. For example, while at Seoul National University which is one of the most prominent universities in South Korea there are 18 field lessons (78.26%), 5 pedagogical knowledge lessons (21.74%), Ewha Women's University has 12 field lessons (60%), 8 pedagogical knowledge lessons (40%) that are taught (Kwon, 2004). The teaching practices vary depending on the university, ranging from 6 to 9 week with credits varying between 3 to 5 credits. In teaching application lessons, lessons observation, classroom management and lecturing skills are practiced (Ingersoll, 2007).

In Türkiye there are three types of programmes that train mathematics teachers: 4-year elementary school level mathematics teaching programme, with YÖK's 18.04.2014 dated decision as of 2014-2015 academic year the secondary mathematics teaching programmes was reduced from 5 years training to 4 years (YÖK, 2020) and the pedagogical formation/ teacher professional knowledge certificate programme which lasts at least two terms.

Table 3. The professional knowledge, general culture and field subject lesson at secondary and elementary mathematics teaching undergraduate programs

Mathematics Teacher Training Programs	Professional Knowledge	General Culture	Field Education
Elementary Mathematics Teacher Training Programme	56 (34%)	28 (18%)	69 (48%)
Secondary Mathematics Teacher Training Programme	56 (34%)	28 (18%)	71 (48%)

Source: YÖK (2018a)

The secondary mathematics teaching and elementary mathematics teaching programmes are divided into three: professional knowledge, general knowledge and field education. As seen in Table 1, both programmes have a curriculum based on field education. There are field and education lessons with the 240 ECTS taken in the four years. In both undergraduate programmes the teaching practice lesson is given in the last year under the names of Teaching Practice 1 and Teaching Practice 2 and is two hours a week in theory, six hours in practice with an trainee at state schools (YÖK, n.d). Until 2014 the pedagogical formation certificate programme had 20 hours theoretical and 10 hours practical lessons adding up to 30 hours of lessons (25 credits), however with the Rules and Procedures of Pedagogical Formation Education dated 27.09.2021, this pedagogical formation education was updated to 24 hours theoretical and 12 hours practical lessons adding up 36 hours of lessons (30 credits-60 ECTS) (Turan, 2021). In order to work as a teacher at any level, being a undergraduate is sufficient. There is no obligation for postgraduate education. However, it is optional for elementary and secondary education mathematics teacher to take their postgraduate education in their own field, in educational administration, assessment and evaluation with or without a thesis.

Table 4. Comparison of pre-service education processes of mathematics teacher candidates in countries

	Finland	South Korea	Türkiye
Institutions/ Programs with a Teaching Diploma	Education faculties	Education faculties (teacher colleges), teacher training classes in universities, education departments and training institutes	Education faculties, pedagogical formation training programs
Education Time	In teacher training, which has two models, sequential and simultaneous, only in education faculties and the education period is 5-6 years.	In education faculties (teacher colleges), teacher training classes in universities, education departments and training institutes, the education period is four years.	In education faculties, primary and secondary education mathematics teaching continues for 4 years, and formation / teaching professional knowledge certificate programs continue for at least two semesters.
Postgraduate Requirement at the End of Education	In both models, at the end of the education process, they have a master's thesis prepared in their field of teaching process.	There is no postgraduate thesis requirement at the end of the education process.	There is no postgraduate thesis requirement at the end of the education process. A teacher who graduates optionally can continue postgraduate education.

Content of the Instruction	Mathematics teaching in secondary and high schools is given by branch teachers trained in the Faculty of Mathematics and Natural Sciences. In this faculty, students study for teaching mathematics and teaching physics or information technology. Mathematics teacher candidates complete 300 ECTS credits, 180 ECTS undergraduate and 120 ECTS postgraduate education. In addition, 80% (240 ECTS) of these 300 ECTS includes mathematics courses and 20% (60 ECTS) pedagogy education.	The diversity of institutions for secondary education branches creates small differences in the curriculum. But in general, the core curriculum; It consists of pedagogical knowledge, mathematics content knowledge, pedagogical content knowledge, general culture and teaching practices. The required credits for graduation from the secondary mathematics teaching curriculum of the colleges of education range from 130 to 150 hours; 20% liberal arts, 60% mathematics major (mathematics curriculum study, pedagogical content knowledge, general pedagogy and teaching practice) and 20% elective courses.	In the mathematics teaching program, the courses are divided into three as vocational knowledge, general culture and field education. Of the 240 ECTS courses taken, 34% consists of vocational knowledge, 18% general culture and 48% field education. In pedagogical formation education certificate programs, there are a total of 36 hours of courses (30 credits-60 ECTS), 24 hours of theory and 12 hours of practice.
Internship Period	For two years, teacher candidates participate in practical training, which consists of four stages, three of which are in practice schools affiliated to education faculties and one is in public schools.	Teaching practices vary from university to university, generally lasting six to nine weeks and having three to five credits. In practice courses, studies such as observation, classroom management and lectures are carried out.	In the undergraduate program, the teaching practice course is given in the last year as "Teaching Practice 1" and "Teaching Practice 2", two hours of theory and six hours of internship in public schools.

Mathematics Teacher Candidates' Employment Conditions in Finland, South Korea and Türkiye

In Finland an employment exam doesn't exist unlike Türkiye. The provinces and local administration are responsible for employing teachers and in some school connected to the municipalities the teacher selection process is done by the school principal or school institutions. In the employment of mathematics teachers, the teacher's teaching skills, a postgraduate degree and traineeship training play an important role (Aksoy and Karagözoğlu, 2021). To become a teacher, the mathematics teacher candidates, apply directly to the local administration or schools. Although the candidacy period changes according to the local administration, it is at least one year (Kalkan, 2021).

In South Korea, the mathematics teacher candidates have to enter a two-stage employment exam prepared by the state/province education offices in order to work in public enterprises. While the first stage (30%), of the exam consists of educational sciences and field subjects the second stage (70%) of exams assessing article writing knowledge, interview, classroom management and informatics knowledge (Mete, 2013). Similar to Türkiye, after the Ministry of Education has determined the number of teachers to be hired from the branch of mathematics, the teacher candidates apply and get appointed according to their points superiority (Boran Yılmaz et al., 2019). In South Korea, there is no obligation for postgraduate education in order to work as a teacher. The trainee teachers starting to teach have a two-month education in the schools. In the first six months of starting their traineeship, trainee teachers have to take an education which includes teaching practice, classroom management and guidance (NCEE, 2015). The novice

teachers in South Korea have a second-degree teaching certificate. After 3 years of teaching experience and 15 credits in-service education and training they become entitled to receiving a first degree certificate.

In Türkiye the mathematics teacher candidates must enter a Public Personnel Selection Exam (PPSE) prepared by ÖSYM in order to start working for public service the exam consists of General Culture (15%), General Ability (15%), Educational Sciences (20%) and formation knowledge for mathematics field (50%) tests. According to the candidate points, they get invited to an interview. The selection is done with the total score taken by adding the candidate's exam score and interview score. The teacher candidates are placed by the Ministry of National Education according to their score superiority. As per the Law on Teaching Profession enacted on the 3rd of February 2022; teachers have four different career steps which are novice teacher, teacher, chartered teacher and head teacher. (Republic of Türkiye Official Gazette, 14 February 2022, issue: 31750). The candidacy period for the teacher candidates who have been appointed is less than a year and within no longer than two years they are subject to a Novice Teacher Training Programme. The novice teacher status for teachers who are found to be successful is removed by the Candidacy Evaluation Commission.

Table 5. Comparison of employment conditions of mathematics teacher candidates in countries

	Finland	**South Korea**	**Türkiye**
Employment Exam	There is no employment exam.	A two-stage employment exam prepared by state/provincial education offices is taken. The first stage (30%) consists of educational sciences and main subjects, while the second stage (70%) consists of exams that measure article writing, interview, classroom management and informatics knowledge.	The mathematics teacher candidates must enter a Public Personnel Selection Exam prepared by ÖSYM in order to start working for public service, the exam consists of general culture, general ability, educational sciences and formation knowledge for mathematics field tests. According to the candidate points, they get invited to an interview.
Getting Started	While state and local governments are responsible for teacher employment, in some municipal schools, teacher selection is made by school principals or school boards. Teaching skills, graduate, and internship training play an important role in the employment of prospective mathematics teachers. Mathematics teacher candidates apply directly to local governments or schools in order to become a teacher.	After the number of teachers to be recruited from the Mathematics branch is determined by the Ministry of National Education, teacher candidates are appointed and applied according to their score advantages.	The selection is done with the total score taken by adding the candidate's exam score and interview score. The teacher candidates are placed by the Ministry of National Education according to their score superiority.
Time of Candidate Teaching	Although the duration of candidacy varies according to local governments, it is at least one year.	Trainee teachers who start teaching receive two-month training within the school. In addition, trainee teachers have	The candidacy period for the teacher candidates who have been appointed is less than a year and

	to receive training on teaching practices, classroom management and guidance for the first six months of their employment.	within no longer than two years they are subject to a Novice Teacher Training Programme. The novice teacher status for teachers who are found to be successful is removed by the Candidacy Evaluation Commission.
Career Ladder	A new teacher in South Korea holds a second-degree certificate. After 3 years of teaching experience and 15 credits of in-service training, a first-degree certificate is awarded.	According to the Teaching Profession Law, mathematics teachers; It is organized in four different ways as candidate teacher, teacher, expert teacher, and head teacher.

The In-Service Training for Mathematics Teachers in Finland, South Korea and Türkiye

In Finland the professional development programmes are usually school orientated. In addition to the schools, municipalities, occupational organizations, and universities are responsible for planning in-service training (Mete, 2013). The National Government makes it obligatory that every municipality has a fund for a minimum three days of compulsory professional development programme. Furthermore, the government doesn't organize the content and the type of this professional development which is provided to the teachers (NCEE, 2015). In Finland teachers gather for at least an hour in order to share their opinions on curricula development, effective teaching methods and techniques (Hazır, 2015). In Finland, in-service training is generally based on collaboration between teacher and with this in-service continuing training the aim is that the teachers develop themselves and thus great importance is given to these trainings. According to TALIS 2018 Data: 9% of the teachers participated in a collaborative professional learning at least once in a month (OECD average is 21%) and 34% of the teacher participated in the team teaching at the same frequency (OECD average is 28%) (OECD, 2018).

The in-service training in South Korea is prepared by the government. These trainings last at least 180 hours and 30 days and it is compulsory to take these in-service trainings. After every training, the teachers who completes the training following the evaluation held in a scale of 100 points is given a certificate. With these certificated teachers can get additional points and an increase in salary (Orakçı, 2015). According to TALIS 2018 Data: 13% of the teachers participated in a collaborative professional learning at least once in a month (OECD average is 21%) and 19% of the teacher participated in the team teaching at the same frequency (OECD average is 28%) (OECD, 2018).

As of 2011 the General Directorate of Teacher Training (ÖYGM) is responsible for in-service training in Türkiye (ÖYGM, 2019). There are two types of in-service trainings: central and regional activities. In our country, participation for the in-service training planned in many different areas, at the beginning of the school year, is voluntary or obligatory. There is compulsory one-week in-service training in September, November, April and June. Also, the appointed teacher is given compulsory in-service training of 645 hours which is under *the Novice Teacher Training Programme* (MoNE, 2021). According to TALIS 2018 Data: 29% of the teachers participated in

a collaborative professional learning at least once in a month (OECD average is 21%) and 23% of the teacher participated in the team teaching at the same frequency (OECD average is 28%) (OECD, 2018).

Table 6. Comparison of in-service training practices of mathematics teachers in countries

	Finland	**South Korea**	**Türkiye**
Institution(s) Responsible for In-Service Training	Professional development programs are often school-centered. Apart from schools, municipalities, professional organizations and universities are also responsible for in-service training planning for professional development.	In-service trainings are prepared by the government.	The General Directorate of Teacher Training and Development has been responsible for in-service training since 2011.
Whether in-service training is compulsory or not	The national government requires each municipality to fund at least three days of compulsory professional development each year. At least one hour a week, teachers meet among themselves to share their views on effective teaching methods and techniques and improving curricula.	These trainings are at least 180 hours and 30 days, and it is obligatory to take these in-service trainings.	Two types of in-service training are planned as central and local activities. Participation in in-service activities planned at the beginning of the academic year in our country is either optional or compulsory.
In-Service Training Process	In-service training generally aims to improve teachers' self-development through continuous on-the-job training based on cooperation between teachers, and such training is given great importance.	At the end of each training, a certificate is given to the teachers who complete the program as a result of the evaluation with a 100-point scale. With these certificates, the teacher receives additional points and increases their wages.	There is one-week compulsory in-service training in September, November, April and June. In addition, there are 645 hours of compulsory in-service training for the novice teachers who are appointed within the scope of the Novice Teacher Training Program. GDoTT organizes trainings in various fields. Teachers can participate in optional trainings in areas where they feel lacking.
Participation In In-Service Training	According to TALIS 2018 data; it is reported that 9% of teachers participate in cooperative professional learning at least once a month (OECD average 21%) and 34% participate in team teaching at the same frequency (OECD average 28%).	According to TALIS 2018 data, 13% of teachers report that they participate in collaborative professional learning at least once a month (OECD average 21%) and 19% participate in team teaching at the same frequency (OECD average 28%).	According to TALIS 2018 data, 29% of teachers report that they participate in collaborative professional learning at least once a month (OECD average 21%) and 23% participate in team teaching at the same frequency (OECD average 28%).

The Mathematic Curricula in Finland, South Korea and Türkiye

In this section during the compulsory education period in Finland, South Korea and Türkiye, because the mutual period for all three countries is elementary school (primary school and middle school), the objectives, tasks and learning domain of all three countries' elementary mathematic curricula have been introduced.

The objectives of mathematics lesson according to Finland's educational understanding.

- To support the student's development in thinking mathematical in a logical, accurate and creative.
- To create a foundation through teaching and learning to improve their problem-solving skills, to comprehend the mathematical concepts, structures and to process information.
- To advance in teaching systematically due to mathematics cumulative nature.
- A concrete and functional approach forms the basis while teaching and learning mathematics.
- Learning is supported through the use of information and communication technologies.
- Mathematics teaching supports students to have a positive attitude towards mathematics and their positive self-image.
- Communication enhances interaction and co-operative skills.
- Studying mathematics is a permanent search towards a goal.
- Students take responsibility for their own learning.
- Education guides students to understand the benefit of mathematics in their own life and in a wider perspective for the society.
- Teaching and learning processes improves student's capacity of using and applying mathematics in multiple ways (FNBE, 2014).

Table 7. The mathematics teaching mission according to class level in Finland

Primary School (1st and 2nd Grades)	**Primary School (3rd -6th Grades)**	**Middle School (7th -9th Grades)**
***** The Mathematics teaching mission is to provide various experiences which help the students build a foundation for the mathematical concepts and the structures formulation. * Teaching and Learning use different senses. * Teaching and Learning develop the students' skills to express their mathematical thoughts through concrete tools, speaking, writing, drawing and interpretation. *Mathematics education builds a strong foundation to comprehend numbers and the decimal system concept and learn arithmetic skills.	* Mathematics teaching and learning provides experiences in which students are able to improve their understanding of mathematical concepts and structures. * The education supports the development of skills for presenting their mathematical thinking and solution in different ways with different tools to others. * Solving various problems independently and in a group, comparing the different solutions is crucial for teaching and learning. * Students are enabled to widen their understanding and comprehension of numbers and the decimal system. * Students can also improve their fluency in arithmetic skills.	* Mathematics education's mission is to strengthen general knowledge and talent in mathematics. * Education encourages students to help deepen their understanding of mathematical concepts and the relations between one another, to discover mathematics in their own life and use it. * It helps them acquire mathematical modeling and problem-solving skills to relate mathematics to their own lives. * Students are encouraged to present their solutions and discuss in group work.

Source: National Core Curriculum for Basic Education (FNBE, 2014)

Table 8. Mathematics content areas by grade level in Finland

Grades 1-2	Grades 3-6	Grades 7-9
* Thinking skills	* Thinking skills	* Thinking skills and methods
*Numbers and operations	* Numbers and operations	* Numbers and operations
*Geometry and measuring	* Algebra	*Algebra
* Data processing and statistics	* Geometry and measuring	*Functions
	*Data processing and software, statistics, and probability	*Geometry
		*Data processing, statistics and probability

Source: National Core Curriculum for Basic Education (FNBE, 2014)

Table 9. Purposes of primary school (1st and 2nd grades) mathematics teaching in Finland

Objectives of instruction	Content areas related to the objectives
Significance, values, and attitudes	
Support the pupil's enthusiasm for and interest in mathematics and the development of his or her positive self-image and self-confidence	All Content Areas
Working Skills	
Guide the pupil to improve his or her ability to make mathematical observations and to interpret and use them in different situations	All Content Areas
Encourage the pupil to present his or her solutions and conclusions through concrete tools, drawings, speech, and writing, also using information and communication technology	All Content Areas
Guide the pupil to develop his or her reasoning and problem-solving skills	All Content Areas
Conceptual objectives and objectives specific to the field of knowledge	
Guide the pupil to understand mathematical concepts and notations	All Content Areas
Support the pupil in developing an understanding of the concept of numbers and the principles of the decimal system	Numbers and operations
Familiarize the pupil with the principles and features of basic arithmetic operations	Numbers and operations
Guide the pupil to develop fluent basic arithmetic skills using natural numbers and to use different mental arithmetic strategies	Numbers and operations
Familiarize the pupil with geometric shapes and to guide him or her to make observations on their characteristics	Geometry and measuring
Guide the pupil to understand the principle of measurement	Geometry and measuring
Familiarize the pupil with tables and diagrams	Data processing and statistics
Support the development of the pupil's competence in formulating step-by-step instructions and following instructions	Thinking skills

Source: National Core Curriculum for Basic Education (FNBE, 2014)

Table 10. Purposes of primary school (3rd -6th grades) mathematics teaching in Finland

Objectives of instruction	Content areas related to the objectives
Significance, values, and attitudes	
Maintain the pupil's enthusiasm for and interest in mathematics and to support a positive self-image and self-confidence	All Content Areas
Working skills	
Guide the pupil to perceive and understand connections between the things he or she has learned	All Content Areas
Guide the pupil to develop his or her skills in posing questions and making reasoned conclusions based on his or her observations	All Content Areas
Encourage the pupil to present his or her conclusions and solutions to others through concrete tools, drawings, speech, and writing, also using information and communication technology	All Content Areas
Guide and support the pupil in developing his or her problem-solving skills	All Content Areas
Guide the pupil to develop his or her skills in assessing whether the solution is reasonable and meaningful	All Content Areas
Conceptual objectives and objectives specific to the field of knowledge	
Guide the pupil to use and understand mathematical concepts and notations	All Content Areas
Support and guide the pupil to strengthen and expand his or her understanding of the decimal system	Numbers and operations
Support the pupil in expanding his or her understanding of the concept of numbers to positive rational numbers and negative integers	Numbers and operations
Guide the pupil in achieving fluent mental and written arithmetic skills, making use of the properties of operations	Numbers and operations
Guide the pupil to observe and describe the geometrical properties of objects and figures and to familiarize the pupil with geometrical concepts	Geometry and measuring
Guide the pupil in estimating the magnitude of a measured object, selecting a suitable tool and unit for the measurement, and considering whether the result is reasonable	Geometry and measuring
Guide the pupil in preparing and interpreting tables and diagrams and using statistical key figures as well as to offer experiences of probability	Data processing and software, statistics, and probability
Inspire the pupil to formulate instructions in the form of computer programs in graphic programming environments	Thinking skills

Source: National Core Curriculum for Basic Education (FNBE, 2014)

Table 11. Purposes of primary school (7^{th} -9^{th} grades) mathematics teaching in Finland

Objectives of instruction	Content areas related to the objectives
Significance, values, and attitudes	
Strengthen the pupil's motivation, positive self-image, and confidence as a learner of mathematics	All Content Areas
Encourage the pupil to take responsibility for learning mathematics both independently and together with others	All Content Areas
Working skills	
Guide the pupil to perceive and understand connections between the things he or she has learned	All Content Areas
Encourage the pupil to develop his or her verbal and written mathematical expression	All Content Areas
Support the pupil in solving mathematical assignments that require logical and creative thinking and in developing skills needed in it	All Content Areas
Guide the pupil to evaluate and develop his or her mathematical solutions and to examine critically whether the result is reasonable	All Content Areas
Encourage the pupil to also mathematics also in other subjects and in society	All Content Areas
Guide the pupil to develop his or her information management and analysis skills and to instruct him or her in critical examination of information	Thinking skills and methods Functions Data processing, statistics, and probability
Guide the pupil to apply information and communication technology in learning mathematics and problem-solving	All Content Areas
Conceptual objectives and objectives specific to the field of knowledge	
Guide the pupil to strengthen his or her reasoning and mental arithmetic skills and to encourage the pupil to use his or her arithmetic skills in different situations	Thinking skills and methods Numbers and operations
Guide the pupil to develop his or her ability to calculate basic arithmetic operations using rational numbers	Numbers and operations
Support the pupil in expanding his or her understanding of the concept of numbers to real numbers	Numbers and operations
Support the pupil in expanding his or her understanding of percentage calculation	Numbers and operations Data processing, statistics, and probability
Guide the pupil to understand the concept of the unknown and to develop his or her skills in solving equations	Algebra Functions
Guide the pupil to understand the concept of the variable and to acquaint him or her with the concept of the function. To guide the pupil to practice interpreting and producing the graph of a function	Algebra Functions
Support the pupil to understand geometric concepts and connections between them	Geometry
Guide the pupil to understand and utilize properties related to the right-angle triangle and the circle	Geometry
Encourage the pupil to develop his or her skills in calculating circumference and volume	Geometry
Guide the pupil in determining statistical key figures and calculating probabilities	Data processing, statistics, and probability
Guide the pupil to develop his or her algorithmic thinking and skills in applying mathematics and programming in problem-solving	Thinking skills and methods

Source: National Core Curriculum for Basic Education (FNBE, 2014)

The four targets in the mathematics curriculum of South Korea

1. Through representation of mathematics and discussion, through reflection actions and explaining ideas, students acknowledge the importance of communication in learning and using mathematics.
2. In order to develop mathematical thinking and reasoning skills, students use induction or analogy to reveal mathematical facts and provide justification or prove them.
3. So as to feed mathematical creativity, students are encouraged to think differently and use mathematical tasks for generating different ideas.
4. For the purpose of cultivating the student's character, the students respect different solution methods and views that are presented by their peers (Pang, 2014).

Table 12. Mathematics content areas by grade level in South Korea

Grades 1-6	Grades 7-9
*Numbers and Operations	*Numbers and Operations
*Shapes	*Geometry
*Calculation	*Probability and Statistics
*Probability and Statistics	*Variables and Expressions
*Pattern and Problem Solving	*Functions

Source: Hwang and Han (2013)

Table 13. The content of learning domain in primary school mathematics curriculum in South Korea

	1st Grade	2nd Grade	3rd Grade
Numbers and Operations	*Numbers up to 100 *Comprehension of addition and subtraction with one digit and double-digit numbers	*Numbers up to 1000 *Addition and subtraction with two digit and three-digit numbers *Understanding the term fraction	*Numbers up to 10000 *Addition and subtraction with four-digit numbers *Division and multiplication *Fractional and Decimal Numbers
Shapes	*Recognition of 2D and 3D shapes	*2D shapes *Building solid shapes	*The term angle *The conversion of a flat shape * Properties of circle
Measurement	*Comparison of amounts *Reading	*Time, Hour, length calculation	*Length, time, capacity, weight calculation
Probability and Statistics	*Grouping objects	*Creating graphic and table	*Information characteristics *Organizing information
Patterns and Problem Solving	*Understanding the concept of patterns *Create a pattern according to a certain rule *Making a pattern with numbers up to 100 *Finding the missing parts of pattern *Solving problems by using various ways	*Making a pattern with different variables *Creating a pattern with times table *Using structural expressions *Finding the unknown	*Creating a pattern according to rules *Problem solving according to tables

Source: Altıntaş (2014)

Table 14. The content of learning domain in primary school mathematics curriculum in South Korea (Continued)

	4th Grade	5th Grade	6th Grade
Numbers and Operations	*Five-digit numbers *Addition and subtraction for fractions *The term decimal fraction *Addition and subtraction with decimal fractions *Basic arithmetic operations with natural numbers	*Multiplication and division *Decimal numbers and fractions *Addition and subtraction with fractions *Multiplication and division with decimal numbers	*Division with fractions and decimal numbers *Four operations with fractions and decimal numbers
Shapes	*Types of angles and triangles *The term polygon	*The features of the geometric shapes rectangle, parallelogram, cube * The term symmetry *Congruent	*The features of prism, cylinder and other solids
Mesaurement	*Calculating angles *The area of a rectangle and square *Calculating an approximate value	*Area calculations	*Surface area *Area of a Cylinder
Probability and Statisctics	*Reading graphics *Line graphics	*Average *Use of symbols	*Introduction to graphic types
Patterns and Problem Solving	*Creating different patterns *Filling the gaps in the pattern *Pattern and compatibility *Expressing the problem-solving process *Logical reasoning	*Ratio and Proportion *Finding different solution to problems *Solving probability problems *Recognizing the information concerning the solution in the problem sentence	*Disequilibrium *Ratio expressions *Creating a new problem from problem features *Comparing problem solving methods

Source: Altıntaş (2014)

Table 15. The Content of learning domain in middle school mathematics curriculum in South Korea

	7th Grade	8th Grade	9th Grade
Numbers and Operations	*Understanding prime factorization *Finding the greatest common divisor and the least common multiple *The terms whole number, rational number, the comparisons and four operations	*Understanding repetitive decimal numbers *The relation between rational numbers and repetitive decimal numbers *Approximated values' expressions	*Understanding square roots *Understanding irrational numbers *Comparing real numbers *Four operations with real numbers
Geometry	*Understanding points, lines, faces and angles *The geometric relation between points, lines and planes *The features of parallel lines *The term Triangle and its features	*The features of isosceles triangle *Understanding the perimeter of a triangle and its center *Features of tetragons *Features of Similar shapes	*Understanding Pythagoras theorem *Finding Trigonometric ratios *Chord of a circle and tangent features *Features of inscribed angles

	*The features of polygons, finding central angle, arc-length and area *Finding surface area and volume of solids	*Similar Triangles conditions *Finding the length of parallel lines and their ratio *Feature and operations of similar shapes	
Probability and Statistics	*Drawing Stem and Leaf Diagram *Histogram *Finding averages from frequency distribution tables *Understanding Dependent frequency distribution	*Understanding probability terms *Calculating probabilities	*Understanding Median modulo and average *Finding variance and standard deviation
Variables and Expressions	*Using variables *Statement values *Adding and subtracting linear statements *Operation of linear equations	*Features of exponential numbers *Adding and subtracting polynominals *Division and multiplication of polynominals *Solving linear equations and linear disequilibrium	*Factorization *Second degree equation
Functions	*The term function *Consecutive pairs and coordinates *Functions operations	*Drawing linear functions and understanding their features *Operations with linear functions *The relation between linear functions and linear equations	*Quadratic functions *Drawing quadratic functions' graphics and understanding their features

Source: Hwang and Han (2013)

The special objectives of the mathematic curriculum in Türkiye;

- The students will improve their mathematical literacy skills and are able to use them.
- They will be able to use mathematical concepts in daily life.
- They will be able to use their reasoning skills while solving a problem and express them.
- They will be able to use mathematical terminology correctly in order to express their ideas.
- They will be able to manage the learning process with their metacognitive knowledge and skills.
- They will be able to express the concepts using different forms.
- They will understand the relationship between mathematics, art and aesthetic.
- They will develop characteristics which enable them to be systematic, patient, and responsible (MoNE, 2018a).

Table 16. Mathematics content areas by grade level in Türkiye

Grades 1-4	Grades 5-8
*Numbers and Operations	*Numbers and Operations
* geometry	*Algebra
*Measuring	*Geometry and Measurement
*Data processing	*Data processing
	*Possibility

Table 17. Goals in mathematics curriculum by grade level in Türkiye

Primary School (1st -4th Grades)	Middle school (5th -8th Grades)
**Numbers and Operations;* Natural numbers, fractions and four operations are aimed to be taught. **Geometry;* The student is expected to recognize geometric shapes and angles, use expression used while giving direction in daily life and discover patterns. **Measurement;* The student is expected to use the correct measurements in Daily life for length, area, time, liquids weights and recognize money(coins/notes). **Data Processing;* The student is expected to Show different data with various graphic types and deduce from the graphics.	**Numbers and Operations;* The student is expected to be able to make sense of integers, real numbers and irrational numbers from the new set of numbers together with natural numbers, fractions and decimal numbers, and to be able to make operations, and to solve percentage, Greatest common divisor, least common divisor problems. * *Algebra*; expand their operations skills to the concepts of equality and equations with their algebraic expressions and use these expressions in a meaningful way **Geometry and Measurement*; Adding polygon, rectangle, parallelogram, rhombus and trapezoid to the geometric shapes learned in primary school is expected to be able to calculate the perimeter, area and volume of these shapes, and to solve problems related to the circle, Pythagorean relation, translation and reflection. **Data Processing;* It is required to collect data, show it with column and line graphs, and use different statistics related to graphs. **Probability;* this is only for the 8th grades; The students are expected to be able to calculate the probabilities of simple events.

Source: MoNE (2018a)

Conclusion and Suggestions

In this study the mathematics teacher training institutions student selection system, pre-service training process, employment conditions, in-service training and mathematics curricula in Finland, South Korea and Türkiye has been analyzed. Depending on the findings comparative results were given, the interpretation and results suggestions were put forward.

The Similarities and Differences Between the Teacher Training System and Mathematics Curricula in Finland, South Korea and Türkiye

In the three countries examined, in order to be placed in a mathematics teacher training programme students in Finland take a Marticulation Examination, in South Korea students take a College Scholastic Aptitude Test and in Türkiye students take the Higher Education Institutions Examination. The central examinations held once a year in South Korea and Türkiye are held twice a year in Finland. Students who want to get placed in teaching training programmes in the three countries have to pass different stages. Following the Marticulation Examination, the students in Finland must enter another exam which consists of three stages. The first stage of this exam measures the student's research, critical thinking and interpretation skills, the second stage is an interview which checks whether the candidate has a character suitable for being a teacher as a profession and in the last stage of the exam evaluates the student's trial lesson, diction and presentation skills. Those who complete the three stages successfully shall be placed in the Education Faculties. In South Korea for acceptance to the universities not only CSAT points but also their high school averages, portfolios, out of class activities, recommendation letters are taken into consideration. The students' high school (secondary) grade point average is added to their points they receive from the exam and with the total score the candidates get placed in the education faculties according to their superiority of points. It can be said South Korea and Finland which are successful in PISA, TIMSS exams are much more meticulous while selecting teacher candidates. Especially in Finland while selecting teacher candidates, the fact that the teaching skills are taken into consideration and the undergraduate/ postgraduate education is built on the basis of these skills plays a fundamental role in designing learning environments which support student participation in professional life and brings out curiosity or in other words plays an essential role in the quality of education.

In Türkiye mathematics teacher training programmes are based on field lessons and are programmes which last four years. The teacher candidates take 240 ECTS lessons in the four years and while taking pedagogical lessons they additionally take teaching practice lesson in their final year. As part of this lesson, there is a two-hour theoretical lesson and a six-hour traineeship in state schools. Apart from education faculties, students graduated from the mathematics department can also become a mathematics teacher with a 36-hour certificate programme consisting of 24 hours of theory and 12 hours of practice. In order to become a mathematics teacher in Türkiye, there is no obligation to have a postgraduate education. However, in Finland there is a necessity to have a postgraduate education to become a teacher. In Pre-service training, just like in Türkiye there are two ways that exist. The first is to get a teaching certificate, a teacher candidate, who has completed a master's degree in mathematics, can apply to the education department and after one year of pedagogical work and become a teacher; in the second way the teacher candidate, who has applied to education in the field of mathematics, can simultaneously apply to a teacher training programme and take the pedagogical lessons which start at the end of the second year to receive a teaching certificate. The training lasts 5-6 years and consists of 180 ECTS undergraduate and 120 ECTS master's degree credits. The difference between Türkiye is that the candidates have a four stage

traineeship, for two years they have work at three practice schools connected to the faculty and at one state school. By this result, it is seen that the school experience in Türkiye and the fact that the teaching practice is left to the last year results in the teacher candidates in Türkiye being insufficient in self-development in comparison with Finland. South Korea similar to Türkiye has an education duration of four years and has no obligation for postgraduate education. In South Korea, different from the other two countries there are more institutions that train mathematics teachers: teacher colleges, the teacher training classes at universities, education departments and education institutes. The number of institutions brings about differences in curricula. Generally speaking, the curricula are made up of pedagogical knowledge, mathematics field knowledge, pedagogical field knowledge, general culture and teaching practice. So as to graduate from the colleges' secondary mathematics teacher training programmes, the necessary credits range from 130 to 150 hours. The teaching practices can also be different depending on the university and usually last between six to nine weeks.

Out of the three countries that were analyzed, in Türkiye and South Korea mathematics teacher candidates have to take an employment exam before starting their duty. However, there are significant differences between these two exams. In Türkiye the exam is centrally prepared, it is a multiple choice test and consists of three sections: general culture-ability, educational sciences and mathematics field knowledge. According to the candidate's score, they are called to the interview and by adding the interview score, they make a selection. In South Korea the exam prepared by the state/province education offices consists of two stages. The first stage consists of the exam on educational sciences and field subjects, the second stage consists of exams assessing article writing knowledge, interview, classroom management and informatics knowledge. With the total score, similar to Türkiye, the candidates are appointed to the announced vacant positions as per score superiority. Finland has no employment examination. The mathematics teacher candidates directly apply to the local administration and schools. The local administration and school principals are responsible for hiring teachers. Whilst hiring teachers, teaching skills, traineeships play an essential role. Mathematics teacher candidates in Finland aren't subject to an exam, this shows the fact that the supply and demand equilibrium in this area has been balanced. In our country, the number of graduates from mathematics teacher training programmes and the lack of number of appointments result in the supply surpassing the demand.

The newly appointed mathematics teacher is given the title Novice Mathematics Teacher. The candidacy/novice period is one year and within a year the teacher must take Novice Teacher Training Programme. The novice teacher’s status as is removed by the Candidacy Evaluation Commission for the mathematics teachers who are found to be successful. During their career teachers must take one-week in-service training every year in September, November, April and June. The teachers voluntarily apply to the in-service training held by ÖYGM centrally and regionally. There is no inspection mechanism for this. In Finland the in-service training is usually school orientated and with this it differs from Türkiye. Each teacher has compulsory in-service training once a year for at least three days. The government doe not organise the type or content of professional development. It is only held obligatory for the municipalities to provide funds for these in-service trainings. In South Korea, there is a difference in term of having the in-service training prepared centrally. At least 30 days in-service training must be taken. After the evaluation held following each training, the teachers are given certificates. Thanks to these certificates, teachers can earn additional points and get an increase in wage. In our country so as to find a solution for teacher and school needs, the in-service trainings aren't prepared centrally but regionally and in fact in some cases they are prepared depending on the schools. Because it is

thought that with this type of preparation, there will be an increase in the teachers' motivation towards the trainings.

Although in Türkiye it is aimed that with the mathematics curricula which is prepared according to the constructivist education understanding, problem solving skills of the students will improve, the learning domain of thinking skills at the primary and middle school level in Finland is remarkable. In Finland and Türkiye there are four learning domains for primary school, whereas in South Korea there are five learning domains. One of these is the learning domain of building and problem solving. While in South Korea this learning domain at primary school level consists of building and problem solving, in our country this is a sub learning domain within primary curricula. Also, while geometry is a learning domain at every grade in both Türkiye and Finland, it is only taken as a learning domain in South Korea as of middle school. When we look at the objectives and content of elementary mathematics education curricula in Finland and South Korea, it can be seen through concrete experience as of the first grade so as to develop problem solving skills a learning by doing learning model approach is used. The mathematical curriculum of our country has the same objective. However, in order to accomplish this, it is thought that in curricula this matter must be included in a clearer manner. Problem solving skills are not only useful in mathematics but every part of our life, these skills are crucial for the peace of the community. Thus, it is thought that the development of this skill is a matter that be emphasized. In PISA and TIMSS exam results it is clear that the students with problem solving and thinking skills are more successful.

As a result, it is thought that the most basic factor affecting Turkey's mathematics achievement is the choice of teacher candidates. Because teacher candidate selection is the first step of the pre-service and in-service training process. Only looking at the Higher Education Institutions Examination results at the entrance to the education faculties is missing in the selection of qualified teacher candidates. The teacher is not only the person who transfers the curriculum. It is the person who is in one-to-one communication with the students, who can create learning environments that are appropriate for the class level and that can increase the internal motivation of the students. Therefore, it is thought that in the selection of teacher candidates, attention should be paid to the selection of people who can carry the teacher qualifications, and to the teacher education practices that reveal and constantly improve these qualifications.

Suggestions

- In this study primary and middle school mathematics curricula has been examined. In relation to this subject high school mathematics curriculum can also be analyzed.
- In Turkey, it is recommended to introduce additional criteria such as social work activities and activities in high school in addition to exam scores for student admission to education faculties.
- The fact that supply exceeds demand in Turkey highlights quantity rather than quality. Teacher candidates should be trained in accordance with supply and demand.
- At the last year of university, teacher candidates go into a busy exam preparation which results in their teaching practice being of secondary importance. Hence it is suggested that in undergraduate education the teaching practice be not just one year but at least two years.
- In addition to exam results, in teacher appointments, choices should be made with practice studies to see communication skills and dominance in the classroom.

- Problem solving skills in mathematics teaching programs should be determined as a learning area starting from primary education and learning activities should be organized in a way to develop this area.

Conflict of Interest

There are no personal and financial conflicts of interest between the authors of the article within the scope of the study.

Author Contributions

Study Design: The study was carried out by the author and his consultant.

Data Collection: It was carried out by the author and his consultant.

Analysis: It was carried out by the author.

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The Relationship between Organizational Trust and Job Satisfaction: A Meta-Analysis Study

Ali Tosun

ABSTRACT

The aim of this study is to investigate the relationship between organizational trust and job satisfaction using the method of meta-analysis based on correlational studies in the literature. To achieve this goal, 33 studies from the literature that met the specified criteria were included in the study. The studies included in the meta-analysis consisted only of studies conducted in Turkey to ensure cultural subjectivity. The results of the funnel plot, Egger's linear regression test, and Begg and Mazumdar's rank correlation test indicate that there is no publication bias in the studies. The correlation coefficients of the studies were used in determining the effect size of the research. In accordance with this, the overall effect size of the study is high. It was also found that the studies included in the meta-analysis were heterogeneous. It was found that the reasons for the consequent heterogeneity were the COVID-19 pandemic process and workplace variables. As a result of the research, the COVID-19 pandemic process was found to negatively affect the relationship between employees' perceptions of organizational trust and job satisfaction levels. In the analyses based on the study fields in which the research was conducted, it was found that the relationship between the perception of organizational trust of employees working in educational institutions and their job satisfaction is at a lower level than employees working in other fields of the study. As a result of the study, it is suggested that organizational trust affects the development of positive organizational behaviors. Accordingly, administrators who want to develop positive organizational behaviors should primarily strive to promote employees' perceptions of organizational trust. Based on the finding that the COVID-19 pandemic affects the relationship between organizational trust and job satisfaction, it was suggested that it would be beneficial to take facilitative measures to regulate organizational life in order to normalize the new business life after the COVID-19 pandemic.

Keywords: Organizational trust, job satisfaction, job satisfaction, meta-analysis

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Introduction

Organizations wishing to be successful should take measures to eliminate the negative factors that may affect the performance of their employees and to increase their motivation. Arguably, employees' perceptions and levels of commitment towards their organizations are the most important determinants of achieving organizational goals. The most importantant one of these perceptions toward the organization is the concept of trust. As many studies in the literature demonstrate (Altaş and Kuzu, 2013; Büte, 2011; Turhan, Köprülü, and Helvacı, 2018; Yorulmaz and Karabacak, 2020), employees' feelings of trust towards their organizations and their performance are closely related. According to Lewicki, McAllister, and Bies (1998), the relationship between the concept of trust and employee performance is especially important in comparing the success of competing organizations. In other words, organizations seeking to increase their power of competition should have employees who trust each other (Demircan and Ceylan, 2003; Memduhoğlu and Zengin, 2011). As stated by Mishra and Morrisey (1990), this environment of trust provides advantages to organizations for the development of positive processes like an advanced communication network, openness, deconfliction, emotional unity, belief in success, and openness to criticism. In addition, the trust built in the organizational environment represents the employees' acting in good faith, being honest with each other, and believing that their colleagues will not cheat on them even if an opportunity appears. For this reason, in organizations with intense communication processes, the sense of trust constitutes the focus of organizational interaction (Cummings and Bromiley, 1996). On the other hand, the concept of trust represents a wider framework that is not to be restricted only to employee relationships. An important impact on the formation of organizational trust is based on the interaction between employees and administrators. According to Kim and Mauborgne (1993), one of the factors that constitute trust in an organization is employees' faith in their administrators. Therefore, it can be argued that there is a very close relationship between employees' feelings of trust towards themselves, their administrators, and their colleagues and achieving the organizational goals (Asunakutlu, 2002). Reason for this is that in an organizational environment with a high perception of organizational trust, helpfulness among employees increases, and thus organizational effectiveness is achieved by improving the efficacy of individuals (Robbins and Judge, 2013).

Many studies find that collective action increases and employee performance increase in organizations where employees have high levels of trust (Bryk and Schneider, 1996; Kahveci and Demirtaş, 2014; Tschannen-Moran and Hoy, 2000; Tschannen-Moran, 2001). On the other hand, a high level of employee trust in the organization reduces the risk of conflict within the organization (Hoy and Tschannen-Moran, 1999). This is because when employees' trust in the organization increases, their belief that the commitments made by other members will also be fulfilled increases (Gilberg and Tang, 1998). Therefore, it can be said that creating a trusting environment in organizations is the most important factor in developing positive organizational behaviors such as employee's performance (Büte, 2011), satisfaction (Kotaoğlu, 2019), motivation (Akpolat and Oğuz, 2022), and job satisfaction (İşcan and Sayın, 2010).

One of the most important factors in achieving organizational goals depends on the job satisfaction of employees (Yousef, 1998). Pursuant to the historical development processes, management theories have determined the factors that enable employees to be satisfied at work in different ways. Under classical management theory, employees' job satisfaction can only be achieved through monetary rewards. The neoclassical theory of management emphasizes the

importance of quality work and social rewards for job satisfaction. On the other hand, the modern theory of management argues that people's expectations and what they get from work are crucial for job satisfaction (Bateman and Snell, 2016). Therefore, according to the most contemporary researchers, job satisfaction is the emotional reaction of employees to their jobs (Dikmen, 1995). As a result of this emotional response, a number of positive managerial and behavioral outcomes occur in organizations (Sevimli and İşcan, 2005). Employees who are satisfied with their jobs have positive feelings about their jobs, they feel pleasure, and think they are in a happy working environment (Başaran, 2008; Cranny, Smith, and Stone, 1992; Robbins, 2005). Determining the level of organizational trust allows conclusions to be drawn about employees' job satisfaction (Zeffane and Connell, 2003), and administrators of organizations which have productive and satisfied employees try to build greater trust (Reina and Reina, 2006). In this context, arguably the concepts of organizational trust and job satisfaction contribute to the development of organizations through a reciprocal relationship. Based on this point of view, a meta-analysis study exploring the relationship between organizational trust and job satisfaction is considered important in order to gather many studies from the literature and reach a common conclusion. Furthermore, the fact that no meta-analysis in the literature gathers studies investigating the relationship between organizational trust and job satisfaction in Turkey is considered important for the study's originality. In this context, the study aims to investigate, through meta-analysis, the relationship between organizational trust and job satisfaction. Within this general objective, an in-depth analysis is sought by determining criteria such as the COVID-19 pandemic process, which affects organizational life as it does all areas of human life and the differentiation of employees' business fields.

The COVID-19 pandemic has led to rapid and profound changes in organizational processes. For example, production was halted in many companies, and educational processes in schools were conducted distantly. Therefore, the process of the COVID-19 pandemic was predicted to have affected the relationships between variables. In addition, another variable to examine the relationship between organizational trust and employees' job satisfaction was identified by holding separate educational organizations, whose output is human and where intense interpersonal relationships are experienced, from organizations in other work sectors, including manufacturing and services. In line with the above objectives, the study sought answers to the following questions:

- What is the overall effect size of the relationship between organizational trust and job satisfaction?
- Does the relationship between organizational trust and job satisfaction differ significantly by the pandemic process?
- Does the relationship between organizational trust and job satisfaction differ significantly by the field of the study?

Method

Research Model

This study used the meta-analysis method to investigate the relationship between organizational trust and job satisfaction. Meta-analysis means the combination of analyses or a 'meta' analysis. Statistically, ''meta-analysis'' is the analysis conducted to reach a general conclusion by combining the results of many different studies (Dinçer, 2022). According to Wolf (1986), ''meta-analysis'' is a statistical process in which the results of several separate studies are combined and reinterpreted. Glass (1976) defines this process as ''analysis of analyses.''

Study Group-Universe/Sample

Data for the study were obtained by searching for the keywords ‘’organizational trust,’’ ‘’job satisfaction,’’ and ‘’occupational satisfaction’’ in the databases of the Council of Higher Education (YÖK) National Theses Center, Google Scholar, and ResearchGate. In addition, studies with a qualitative research design were excluded from the search. The following criteria were established to determine which studies should be included in the study:

- The presence of a correlation coefficient expressing the relationship between organizational trust and job satisfaction in the study
- The study should be published in the last 25 years
- Indication of the study field from which the study data originate
- Inclusion of the study sample in the population of Turkey
- The study should be an article, a master’s thesis, or a doctoral dissertation

The PRISMA flow diagram describing the study selection process in accordance with these criteria is shown in Figure 1 (Liberati et al., 2009):

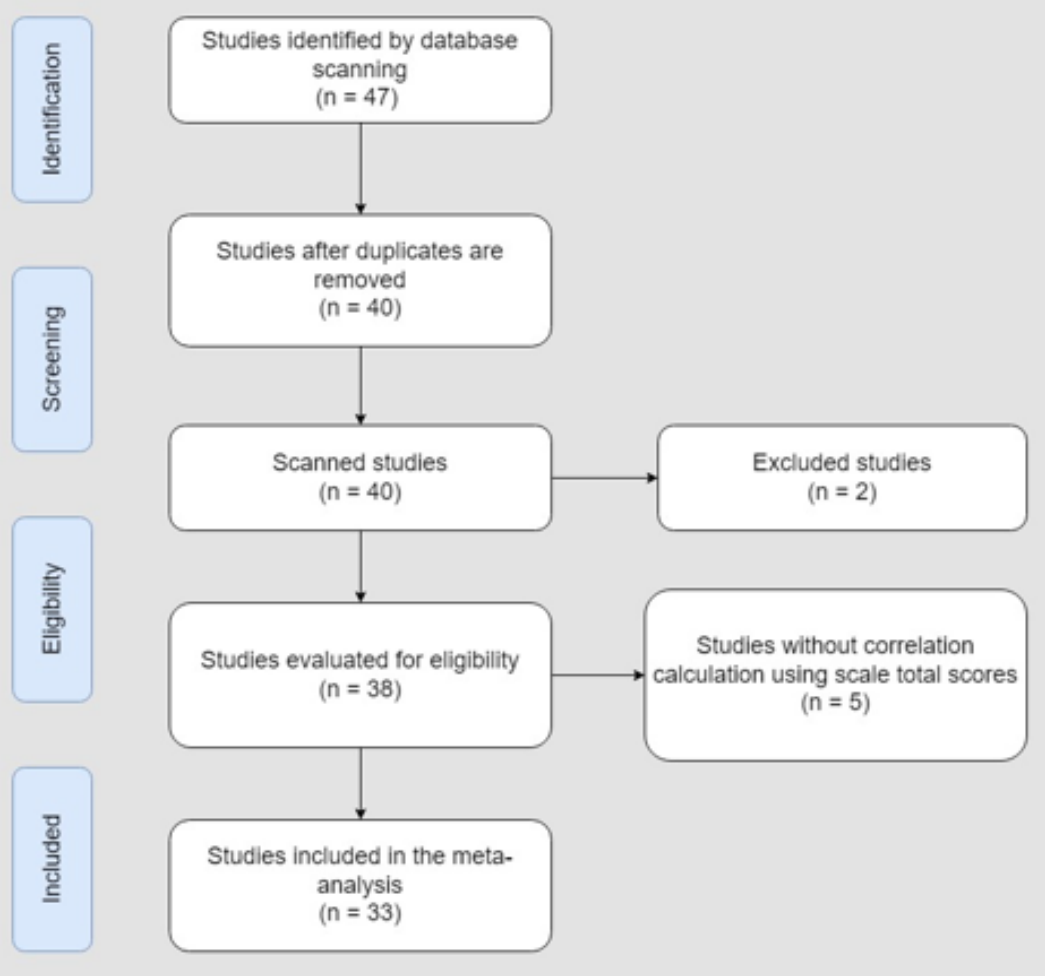

Figure 1. Study selection diagram

As a result of the research conducted under established criteria, it was determined that 33 studies could be included in the meta-analysis study (Appendix 1).

Data Analysis

Firstly, a coding form was created for the analysis of the 33 studies included in the meta-analysis. Statistical data on the publication years of the studies, the study fields in which the studies were conducted, and the correlation results were entered into this form. The fields of study were divided into two categories: ‘’education’’ and ‘’other.’’ The publication years of the studies were divided into two groups: before and after 2020, the beginning of the coronavirus pandemic, and the cause of the greatest change in the world order in recent history. In addition, correlation coefficients were used to calculate the effect sizes of the studies. According to Cohen (1988), the criteria that can be used in studies that use correlation in calculating effect size were classified as low (=0.10), medium (between =0.30 and 0.50), and high (=0.50). To ensure the reliability of the resulting effect sizes, the publication bias of the studies included in the study was examined. The results of the funnel plot, the Egger’s linear regression test ($p > 0.05$), and the Begg and Mazumdar’s rank correlation test ($p > 0.05$) were examined for publication bias.

Results

Analyses conducted as part of the research examined the results of publication bias and then the heterogeneity test. Meta-analysis studies which examine the results of publication bias of the studies included in the research to determine if the effect sizes are statistically reliable and valid. This is because a high degree of publication bias in a study can affect the average effect size and cause it to reach a higher statistical value than it should. In the most general sense, publication bias is defined as the tendency to publish positive and statistically significant studies over negative and statistically insignificant studies (Borenstein et al., 2013). In other words, publication bias is defined as the tendency to present statistically significant results compared to insignificant and null results (Petiti, 2000). The first outcome examined in relation to the publication bias of the studies included in the study is the funnel plot in Figure 2.

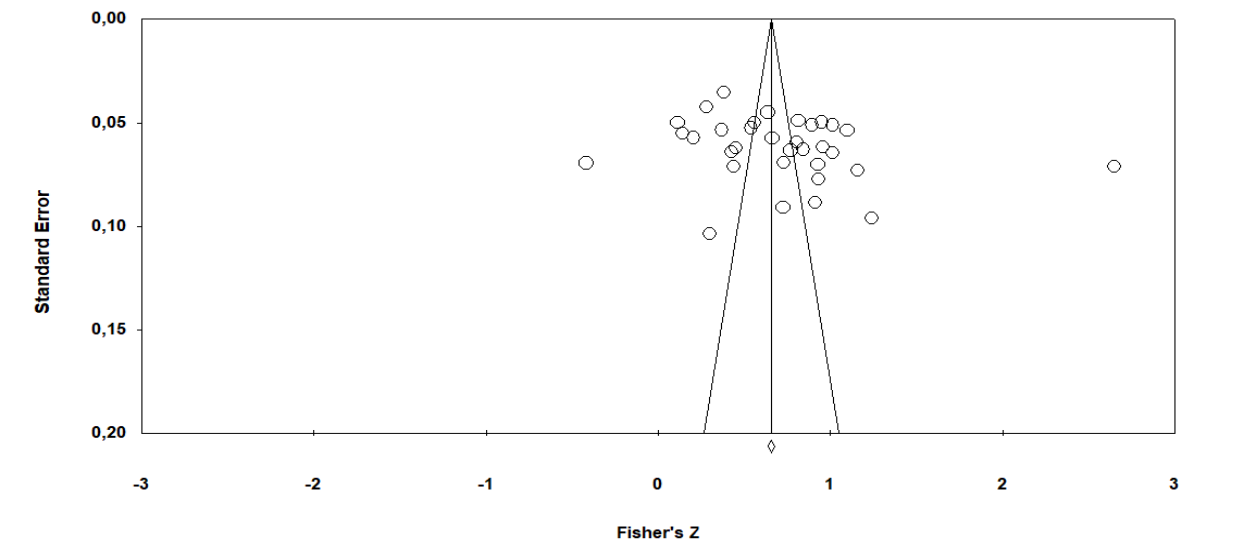

Figure 2. Funnel plot

The circle symbols in funnel plots should have a symmetrical appearance (Sterne, Becker, and Egger, 2005). In other words, the distribution of circle symbols should not have an asymmetrical appearance caused by clustering on one side (Cooper, Hedges, and Valentin, 2009). Accordingly, it can be said that the funnel plot in Figure 2 indicates that there is no publication bias in the study. Another finding related to publication bias is that the results of the Egger's linear regression test ($p = 0.10927$, $p > 0.05$) and the Begg and Mazumdar's rank correlation test ($p = 0.20389$, $p > 0.05$) were not significant, which are further indicators of the absence of publication bias. After determining that there was no publication bias in the studies included in the study, the heterogeneity test results of the study were examined.

Table 1. Heterogeneity test results

df	Q value	I^2	p
32	1883.555	98.301	.000

Depending on the results of the heterogeneity test in Table 1, the p-value is statistically significant. According to Şen and Yıldırım (2020), the Cochran Q statistic expresses the significant heterogeneous distribution of the effect size values of the studies involved in the meta-analysis, while the I^2 value is a statistical method that can be tested as a complement to the Q statistic. Accordingly, it can be said that the distribution of the effect size is heterogeneous, as the Q value is significantly larger than the value of about 45,000 (Q= 1883.555), which corresponds to 32 degrees of freedom in the chi-square table. The fact that the I^2 value, another value that can be used to determine heterogeneity, is 98.301 is another result that indicates that the study is heterogeneous. In the ongoing statistical studies, the random effects model in Table 2 was used to determine the effect size of the study. According to Field and Gillett (2010), using the random effects model is a more appropriate approach for psychology-based studies.

Table 2. Effect size of the study

Effect Size	Standard Error	95% Confidence Interval		p
		Lower Limit	Upper Limit	
0.611	.055	0.507	0.698	.000

Examination of Table 2 shows that the effect size of the study is 0.611 and is significant. While the lower limit of the effect size at the 95% confidence interval was 0.507, the upper limit was found to be 0.698. Given these statistical values, it can be said that there is a high degree of positive relationship between organizational trust and employees' job satisfaction (Sen and Yldrm, 2020). To determine the distribution of the study around the mean effect size, the forest plot in Figure 3 was examined.

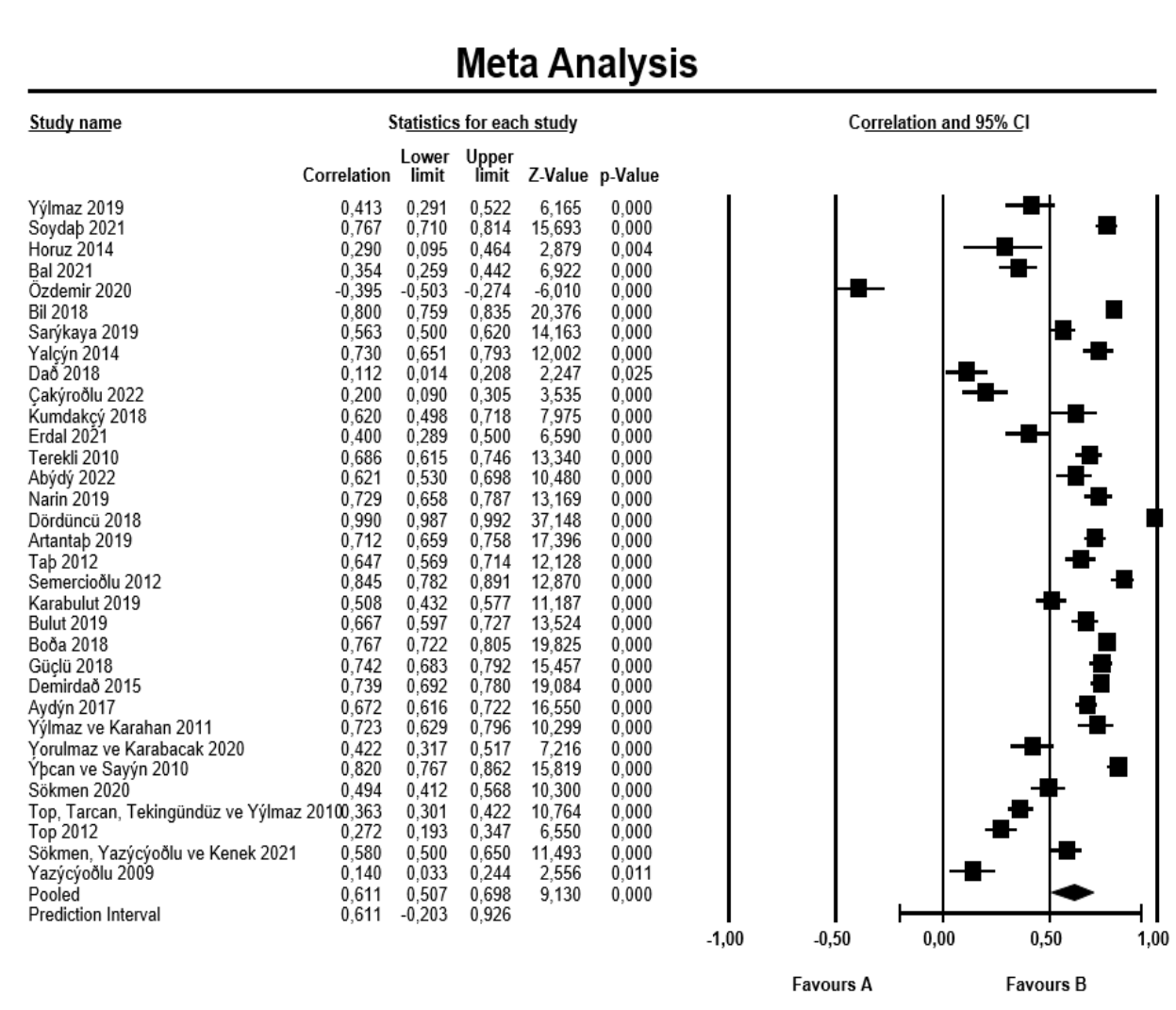

Figure 3. Forest Plot

When the forest plot is examined in Figure 3, it is clear that the diamond symbol at the bottom of the plot expresses the overall effect size of the study. The filled square symbols in the forest plot represent the individual effect size of each study. Accordingly, when the square symbols on the forest plot are examined, it is observed that many studies have effect sizes close to the overall effect size. The study by Dağ (2018) has the lowest effect size among them.

The study examined the variability of the relationships between the variables depending on some factors. Accordingly, the first factor considered was the pandemic process, which has been the most influential situation worldwide in recent times. The analyses conducted to determine the differentiation of the relationship between organizational trust and job satisfaction before and after the pandemic process are presented in Table 3.

Table 3. Effect sizes of studies according to pre- and post-pandemic processes

Pandemic Process	Number	Effect Size	95% Confidence Interval		Q_B	p
			Lower Limit	Upper Limit		
Pre-pandemic (Before 2020)	24	0.812	0.629	0.996	5,894	.015
Post-Pandemic (2020 and later)	9	0.442	0.206	0.678		

As can be seen in Table 3, the pandemic process, which has a large global impact, was divided into two groups, namely pre-pandemic and post-pandemic publications from 2020 onward. Analysis shows the effect sizes of the pre-pandemic and post-pandemic studies differ significantly from each other (p =.015). Accordingly, the effect size of the pre-pandemic publications was found 0.812, while the effect size of the post-pandemic publications was 0.442. In this case, it can be said that the COVID-19 pandemic process, which involves significant changes in business life, has a significant impact on the relationship between employees' perceptions of trust towards their organizations and their job satisfaction.

Another factor thought to affect the differentiation of relationships between variables in the study is the field of the study. The 33 studies included in the study were divided into two groups: ''education,'' where interpersonal relationships are very intense, and ''other,'' which includes other business sectors such as health, tourism, and banking. The effect sizes of the groups are presented in Table 4.

Table 4. Effect sizes of studies by study field

Study Field	Number	Effect Size	95% Confidence Interval		Q_B	p
			Lower Limit	Upper Limit		
Education	10	0.469	0.190	0.748	4.218	.04
Other	23	0.816	0.637	0.995		

In accordance with table 4, the effect sizes of the studies from the field of education and the studies from the field of ''other'' differ significantly (p =.04). The effect size of 10 studies from the field of education is 0.469, and the effect size of 23 studies from the field of ''other'' is 0.816. Accordingly, it can be said that the fact that employees work in educational institutions or in ''other'' fields is a significant variable in the relationship between organizational trust and job satisfaction.

Discussion, Conclusion and Suggestions

The results of the research, which aimed to show the relationship between employees' perception of organizational trust and the level of job satisfaction using the meta-analysis method, revealed that the effect size between organizational trust and employees' job satisfaction was high (Cohen, 1988). Thus, it can be said that there is a high correlation between employees' perceived trust in their organization and their job satisfaction. Accordingly, it can be said that employees' organizational trust levels are an important variable in their job satisfaction. The literature finds that there is a high effect size between the variables of organizational trust and organizational justice, which can be expressed as beneficial organizational behavior for organizations such as job satisfaction, and a medium effect size between organizational commitment and organizational citizenship behavior (Yorulmaz, Püsküllüoğlu, Çolak and Altınkur, 2021). In this context, it can be said that the perception of organizational trust is a variable that has a significant influence on the emergence of positive organizational behavior.

Another finding of the study is that the relationship between employees' perceived trust in the organization and job satisfaction changed after the COVID-19 pandemic. The analysis shows that the pandemic process negatively affected the relationship between employees' perceived trust in the organization and job satisfaction. It was found that the effect size of studies published before the COVID-19 pandemic was high whereas the effect size of studies published after the pandemic was medium. In other words, based on this result, it can be said that factors that weaken the relationship between organizational trust and job satisfaction occurred after the pandemic, which profoundly affected people's lives. The concept of organizational trust, which expresses a general perception for the organization and its administrators (Nyhan and Marlowe, 1997), provides a general framework that influences the organization with its all processes (Fukuyama, 2005). The problems that began with the pandemic COVID-19 also profoundly shook the quality of employees' working lives by affecting their indicators of healthy living (Güven, 2021). According to Morgeson, Mitchell, and Liu (2015), negative and sudden developments can create crisis situations for organizations as they make it difficult for routine processes to function. In this context, it can be said that it is a normal outcome that the relationship between organizational trust (Mishra and Morrisey, 1990), which is an important variable for the development of positive processes such as organizational communication and de-conflict, and the concept of job satisfaction (Luthans, 1995), which has an intense emotional aspect, is negatively affected by the COVID-19 pandemic process. This is because the COVID-19 pandemic process has inevitably changed the way organizations work, especially organizational relationships (Köroğlu and Semerciöz, 2022).

Another study finding is that the relationship between organizational trust and job satisfaction varies across study fields. Accordingly, the effect size of the relationship between the perception of trust in the organization and the job satisfaction of employees in educational institutions is medium. In contrast, the effect size of the relationship between the perception of trust in the organization and the job satisfaction of employees in study fields other than education is high. From this point of view, it can be said that various factors based on interpersonal communication processes influence the relationship between employees' feelings of trust towards their organizations and their job satisfaction in educational organizations where human relations are intense. According to Güçlü (2017), communication processes have an important impact on the organization's ability to achieve its goals, ensure the flow of information, and manage decision-making processes effectively. Especially when considering the intensive relationship processes of educational organizations with their environment (Gürses, 2006), it can be said that more factors

influence variables in educational organizations than in other organizations. Perhaps, the most obvious difference between other fields and educational organizations is that the input and output of educational organizations are people. In other fields of work, the effort to produce a product is replaced in educational organizations by the training of qualified people. In this respect, the relationships between variables in educational organizations are unique. As Bolat (1996) states, education is a communicative activity, and its healthy implementation depends on the realization of cooperation based on healthy communication.

Consequently, it can be said that organizational trust and employees' job satisfaction are two closely related variables. Accordingly, it can be assumed that people who work in organizations where organizational trust prevails develop a better perception of job satisfaction, which is an important variable for both work and family life. In other words, based on the correlation, it can be predicted that individuals whose job satisfaction improve will also improve their perception of organizational trust. Below are suggestions based on the results of the study:

- With reference to the findings of the study, organizational trust has an important influence on developing positive organizational behaviors. Accordingly, it can be suggested that administrators who want to develop positive organizational behaviors in their organizations should try to improve their employees' perception of organizational trust.
- Another finding of the research is that the pandemic process negatively affects the relationship between organizational trust and job satisfaction. To eliminate this negative effect, personnel support programs developed in accordance with the needs of the employees can be used.
- Based on the study results, the relationship between the organizational trust perception and the job satisfaction of employees working in educational institutions is lower than that of employees in other sectors. It can be said that this situation is due to the intense interpersonal relationships in educational institutions, where the input and output are human, and the communication processes are intense as well. In order to uncover this situation, researchers are advised to conduct qualitative research to deeply investigate the factors that influence job satisfaction and organizational trust in educational institutions.

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An Analysis of Teacher Self-Efficacy and Teacher Autonomy in Relation to A New Distance Learning Era*

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ABSTRACT

Distance learning is a new-born need for education because of emerging needs like those of the COVID 19 pandemic. Distance learning enables students and teachers to continue education as they do not have to be in the same place. The aim of the study is to find out the relationship among the teacher self-efficacy and teacher autonomy and the proficiency of EBA and its usage. In order to attempt this goal, 408 EFL teachers participated in the study. The participants work at Ministry of Education. The current study utilized quantitative approach. The Teacher sense of Self Efficacy Scale, Teacher Autonomy Scale and EBA proficiency scale were administered to the participants via online platforms. The results revealed that there is a positive correlation between teacher self-efficacy and EBA proficiency of the teachers. ($p<0.05$) Also, there is a positive relationship between teacher autonomy and EBA proficiency. ($p<0.05$) Multiple regression analysis indicates that both teacher self-efficacy and teacher autonomy explains 43% of the variance in EBA proficiency and its usage. In a nutshell, the teacher self-efficacy and teacher autonomy have a significant role in EBA proficiency scale. Based on these findings, implications for the research and recommendations for further studies are given.

Keywords: Teacher self-efficacy, teacher autonomy, distance learning, EBA

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Introduction

Technology is an indispensable part of our lives. It is an undeniable fact that it has been affecting our lives deeply for years. In fact, technology is oftentimes discussed with it advantages and disadvantages. That said, several other issues affect the lives of millions such as the wide-spreading deadly virus called COVID-19 To illustrate, the education system has changed to a great extent due to the pandemic. In fact, as a result of it, education is yet another area of our lives that has been changed to a considerable extent through the use of technology. For years we have been discussing the advantages of technology and as well as the disadvantages of the internet. Some believed that using technology in the classrooms is so helpful (Lai and Kristonis, 2006). The technology can make our lessons better because our learners are born as Zed Generations (Mamula, Radojević and Sljepčević, 2016). On the other hand, some studies emphasized the importance of traditional methods (Tang, 2013). To integrate technology to the available education system is a need considering the current state of the world. All the education intuitions are forced to use online databases to go on education. There is a beneficial online platform called EBA which was created to share and learn for free for the behalf of FATIH (please give the full form and the English version) project. Ten years later, EBA became a hero of our education system again owing to the Covid-19 pandemic process. The said platform has got educational contents.

To be able to use technology professionally means enhancing the quality of education in distance learning processes. Teachers try to adapt themselves to the new system. Before the virus, there was a distinction between experienced teachers and inexperienced ones. All the teachers became almost alike in terms of their experiences in the distance learning system though. These teachers have gained the right to decide what they can use for their teachings. Implementing technology into the lessons is so important for language learning processes as well. Technology usage gives chances to take advantage of images, videos, audios and texts for language teachers and the learners. English language teachers use technology for their lessons to promote student autonomy, to touch multiple intelligences (McKenzie, 2005). On the other hand, technology could be helpful for teachers to improve themselves (Saraç, 2005). It would be fair to state that language education is going on thanks to technological devices all around the world. Language education has adopted lots of methods and approaches such as Grammar Translation Method and Audiolingual ones. Howbeit, there is no doubt that it is now the distance learning era. That marks the new approach to the teaching and learning of foreign languages. Teachers have to depend on themselves nowadays. Who the teachers are and what their beliefs are about themselves will shape the second language education. Raising autonomous learners is seen one of these teachers' goals (Voller, 2014). There are some hypotheses that suggests there is a relation between learners' self-efficacy and learner autonomy. However, there seems to be no research on teacher autonomy and teacher self-efficacy in the distance learning in the literature. In the digital era, teachers are trying to find their own way. There is no book to read about some theories or no ways exist to consult more experienced colleagues. It is then high time to look at the term "self-efficacy" that all the teachers need. It is their right to see to what extents these variables, self-efficacy and autonomy, affect each other in that life-changing era. It is believed that bearing in mind Türkiye's literature on distance learning, the current study a promising one for foreign language education. Another era has started for education and the time is similar to what Göbeklitepe means for humanity and history, which is often handled with such a good metaphor entitled "zero point in time" (Volkan, 2018). The said time shows the zero point in language education and a sign of an opening of a new

era. It is a whole new question to see our road clearer in this new distance learning which comes with as a forceful result of the COVID-19 pandemic.

The study aims to put a light on the relation of the teachers' self-efficacy and self-autonomy with distance teaching. Teachers are the important parts of the teaching process. For years there have been lots of discussions about how self-efficacy and self-autonomy of learners influence the learning process of foreign languages (Tılfarlıoğlu and Çiftçi, 2011; Tabrizi and Saedi, 2015). The new era which comes along with the COVID-19 makes the distance teaching tools even more important for the education world (Brady and Pradhan, 2020). Digital literacy of teachers and learners are the essential factors that affect the quality of learning and teaching (Hassan and Mirza, 2021). In Türkiye teachers use EBA to continue education online. The pivotal question then is "what are the factors that predict the proficiency of EBA usage of the teachers?" The answer to the question is essential to comprehend teachers' effectiveness for language education for the upcoming years. The study's first aim is to find out the relation between teacher self-efficacy and teacher autonomy. After that, the study tries to find an answer as to whether any significant relationship exists among the teacher self-efficacy, teacher autonomy and the proficiency of EBA usage as well as whether teacher self-efficacy and teacher autonomy are the predictors of EBA usage of the teachers.

Statement of Research Questions

The current study aims to address the research questions listed below:

- Is there a relationship between teacher autonomy and teacher self-efficacy, teacher-efficacy and the proficiency of EBA usage, teacher autonomy and the proficiency of EBA usage?
- Do teacher efficacy and teacher autonomy predict the proficiency of EBA usage? If so, to what extent?

Literature Review

Teacher Autonomy

The term teacher autonomy is related to the school, education, theories, and practices. It is linked with the freedom of individuals. It indeed is basically about freedom for controlling teaching processes. Studies explain that to make a decision the teachers need to have got freedom (Blasé and Kirby, 2008). Another component of teacher autonomy is control. An ideal teacher possesses the ability to control their classrooms and the materials. Teachers control not only their classrooms but also the teaching experiences (Pearson and Moomaw,2006). So, teachers are also responsible for their professional development. In the literature, Smith (2003) defines teacher autonomy as the teacher's capacity of improving abilities, behaviors and information about anything on their own. Teachers are responsible for their developmental process in terms of career. On the other hand, learner autonomy is a term more popular than teacher autonomy. To understand teacher autonomy better, learner autonomy will need to be explained. Learner autonomy is about the students' taking responsibility over their own learning. Students have right to have their own opinion for their learning, planning the process and they feel safe to have an idea about their learning (Cotteral, 1995). The support of teachers is important for students' gaining their autonomy (Trebbi, 2008). As a matter of fact, it is found that there is a relation between teacher autonomy and learner autonomy. It can be said that the teachers can be helpful for enhancing enthusiasm for learning in their students, which is named as learner autonomy. There is a positive relationship between those terms (Thavenius,1999).

In the literature, there is no specific definition for teacher autonomy though. In this part, the definitions stated by the relevant studies are presented. Smith, Erdoğan, Lamb and Reinders, (2008) believe that there cannot be one definition for teacher autonomy. They separated the terms into dimensions. The exact definition of teacher autonomy is not clear but it could be expressed in the way that teachers have feelings about how they control themselves and the classrooms (Pearson and Hall, 1993). That said, these definitions change in time (Pearson and Mooaw, 2006). Autonomy is a term that can mean isolation when it is reviewed in the literature. In other words, teachers can use autonomy to appoint to freedom from supervision or it may mean to provide equal power to succeed tasks out of the classroom. There is a quotation in a study that expresses teacher's self-definition for autonomy. The belief describes one's own ability to reach their goals by means of being creative and productive (Sacks and Eisenstein,1979). Pitt (2010) emphasizes t autonomy is teachers' ability to not be influenced by outside factors. It is clear that autonomy means teachers' ability to make decisions on their own without being dependent to any effective factor. Autonomy is composed of mainly two things and there are lots of reasons for teachers to leave their professions. Most of the reasons include the lack of autonomy attributed to them (Pearson and Hall, 1993).

Hoyle and John (1995) define teacher autonomy as the freedom of teachers which helps to create personalized pedagogy consisting of educational details and the personal choices equally. It is also seen that freedom of teachers to plan and manage could be called as teacher autonomy. It could be said that giving the freedom to teachers is so important to make them autonomous in their teaching processes. Another researcher Little (1995) defines autonomy as having responsibility, competence, and freedom for control. An autonomous teacher can create a program and execute the same program. The latest definition of teacher autonomy emphasizes the importance of integration rather than isolation as what has been depicted earlier. It is more about making decisions for the sake of collective instead of thinking just on your own (Webb, 2002).

Teacher Self-Efficacy

Bandura (1997) defines self-efficacy in the following way: "Perceived self-efficacy is concerned not with the number of skills you have, but with what you believe you can do with what you have under a variety of circumstances (p. 37)". Verily, the term had already come up even before these times. The Social Cognitive Theory creates the basic underlying principle of the self-efficacy assuming that human behaviors are shaped thanks to internal and external reasons. (Bandura, 1977) As a result, individuals own a perception about themselves that is shaped by the old experiences, successes and failures. The consistency of their choices is linked with self-efficacy beliefs. Someone's own awareness of their potential ability to accomplish a task is called as self-efficacy rather than considering others' performances (Tschannen-Moran and Hoy, 2007). Teacher self-efficacy can be defined as the beliefs of teachers' capacity to empower the students' achievement even for the not expected ones (Tschannen-Moran and Hoy, 2001).

Bandura (1997) categorizes the sources of self-efficacy as mastery experiences, vicarious experiences, verbal experiences, verbal persuasion, and physiological arousal. Human-beings can evaluate their abilities to reach their own goals. Mastery experiences are related to people's old experiences that still shape the current situations of the people. The second one is vicarious experiences which are related to the observant that observe other ideal self-image. As the third one, verbal persuasion is about the role of receiving social feedback. The last category is physiological arousal which is about the being healthy in physical and psychological terms.

Distance Learning

Distance education is implemented by technological devices because there has to be some limitations to carrying on education face to face in the classrooms (Eygü and Karaman, 2013). Sadeghi (2019) states that distance education gives freedom to teachers in terms of numerous environmental factors. At the very beginning, distance education was carried out through televisions and radios and letters were used. Later, since the emergence of technological improvements, it has been mediated by the computer-based programs which enable a flexible and interactive learning environment to the educators and learners (İşman, 2011).

Distance education has entered our lives so fast because all the countries experienced challenges in relation to education with the school closures during the pandemic. All the countries use different kind of applications to help distance education. The countries implemented lots of procedures throughout the related processes. Online teaching tools get popular as well as radio and TV (Bozkurt ,2020). China chooses to use an e-learning platform which is called Rainbow Classroom. In the USA, there are free and paid teachings on EDx and Coursera. This shows that countries around the world turn to digital and online platforms with a view to letting education continue for all.

Distance education has its own positive sides such as fiscal advantages and the flexible learning hours letting education continue even under hard circumstances (Akinbadewa and Sofowora, 2020). On the other hand, when learners and teachers are not at the same place it makes instruction to be carried out harder (Thompson and McDowell, 2019). There are several problems in this regard. Not all the learners have internet access because of their socio-economic profiles or due to technical problems. Also eLearning cannot reach its aim all the time because people still do not have the necessary awareness of the importance of distance education. The reasons change from the regional factors to inadequacy of the existing technologies (Gökdaş and Kayri, 2005).

In the COVID-19 period, new studies were conducted on distance education. One of them investigated teacher perspectives about distance education. Arora and Srinivasan (2020) found that teachers have positive attitudes toward distance education and they are also aware of the reasons that make the process more difficult such as problems to access the Internet. Another study is about the perspectives of students on the pandemic education process. The students have positive thoughts for the process thanks to flexible learning hours (Lall and Singh, 2020). Another study emphasizes the importance of e-learning during the pandemic because it gives the students a chance to study independently (Xie andYang ,2020).

Education during distance education in Turkey

In Türkiye, as was the case all around the world, the schools were closed since face to face education was considered dangerous respecting the spread of the virus among people. The state preferred to use distance learning to reach students for all lessons staying away from high risks. Republic of Türkiye Ministry of National Education (MoNE) further developed the already accessible distance learning platform, Educational Informatics Network (EBA). Turkish Radio and Television and Corporation (TRT) support distance learning by broadcasting videos and required activities (Özer, 2020). TRT is a great chance for the students who do not have internet at home. Through the relevant TV channels, primary, secondary and high school students can take advantage of the daily lessons. Also, these channels support reviewing lessons as the programs replay the lessons given daily in the same order. EBA as a portal is strengthened too. The state provides free 8GB internetto the stakeholders. Thanks to free internet, students could connect EBA

and participate in the lessons. Moreover, EBA also enables the teachers to have online lessons via Zoom. EBA Assistant is an artificial intelligence instrument so it can answer the questions of the participants. It is a great way to inform the people who want to join EBA with ease.

Method

The main aim of the current study is to find out the relation among the teacher self-efficacy and teacher autonomy and the usage of a distance learning tool, the Education Information Network (EBA) in the new learning process of Türkiye. It is a quantitative descriptive research design that aims to explain the relationship among the variables. A descriptive study describes the data as numerically to answer the research questions (Kelleghan, Madaus and Airasian, 2012). In this study, to gather data, three questionnaires are used. The questionnaire is a mostly used instrument for data collection to investigate rather than observing directly. Therefore, the questionnaires are executed by online platforms. In other words, the data is collected through the surveys using Google docs via online social contacts and after the normalization of the country, the researcher visited the schools to reach the target population through hard copies of the mentioned tools. The findings of the current study are analyzed by SPSS.

Participants

408 volunteering EFL teachers participated in the study. The participants are the state school English teachers who use EBA program which is the only portal used in the COVID 19 period. The participants of the study are the English teachers who work at Ministry of Education in Gaziantep. These teachers work at primary, secondary and high schools. There is no age limitation in the study. When the genders of the teachers participating in the study are examined it seems that 86% are women and 14% are men. The participants are 351 females and 57 males. When the age distributions are examined, it appears that 23% of them are 22-26 of years old, 27.2% of them are 27-31 years old, 27.1% of them are 32-36 years old, 16.2% of them are 37-41 years old and 6.4% of them are 42 years old and above. When the years of service are examined it is understood that 38.5% are 1-5 years, 38.2% are 6-10 years, 14% are 11-15 years and 9.3% are 16 years and above. When the types of schools where teachers work are examined, it is figured out that 24.5% of them are primary school, 58.8% of them are secondary school and 16.7% of them are high school.

The convenience sampling method is used to collect data which will answer the research questions best. The research wants to contribute language learning and teaching so English Language Teachers are the participants. The participants for the study are selected according to the convenience sampling. The convenience sampling is the mostly used sampling type. It addresses participants available for the researcher. In that regard, the participants filled in the questionnaires with the kind request of researcher. The questionnaires delivered via online platforms as stated before and in the form of hardcopies taking into account the Covid-19 pandemic restrictions. To reach all the teachers who use EBA program in Gaziantep district, the state schools are reached via social chatting tools such as WhatsApp and other tools.

Instruments

To collect data, three types of questionnaires are used. To measure teacher self-efficacy, Tschannen-Moran and Hoy's Teacher Efficacy Instrument (2001) is used. It includes three sections: efficacy for student engagement, efficacy for instructional strategies and efficacy for classroom management. The teacher autonomy is measured by Teaching Autonomy Scale (TAS) by Pearson and Moomaw (2006), which is a further developed version of Pearson and Hall's

(1993). It includes two subsections which are called teacher autonomy and general curriculum autonomy. To measure the proficiency level of the teachers, a questionnaire is used which consists of 43 questions (Geçer, Topal, and Solmaz, 2018).

EBA Proficiency Scale

The scale is developed by Geçer, Topal and Solmaz (2018). Before performing the exploratory factor analysis, first of all, the suitability of the data set for factor analysis was examined. It is seen that the KMO value is .971 and the Bartlett's Sphericity test result is significant. These findings show that the data set is suitable for factor analysis. After the execution of factor analysis, it was seen from the results that the scale was more suitable for single-factor use. Analysis results showed that the scale consisted of a single factor structure with an eigenvalue of 29 and explaining 66% of the total variance. To determine the reliability of the scale consisting of 43 items collected under one factor, Cronbach's alpha value for internal consistency coefficient was found to be .98. This value indicates that the scale can be described as highly reliable. The information obtained is from the smallest to the largest on the scale (I absolutely cannot (1), I can't (2), I can partially (3), I can (4), and I definitely can (5) interpreted on a five-point scale.

Teacher Autonomy

Teacher autonomy is measured by Teaching Autonomy Scale (TAS) by Pearson and Moomaw (2006), which is the further developed version of Pearson and Hall (1993). The model resulted in a significant reduction of chi-square and indicated a better fit of the data to the model, $\chi 2(129, N = 171) = 195.38$, $p = .01$, CFI = .92, RMSEA = .05, adjusted good-ness of fit index = .85, normed fit index = .80, expected cross-validation index (ECVI) = 1.64, 90% confidence interval for ECVI = 1.44 to 1.88. Pearson and Hall (1993) used exploratory factor analysis with oblique rotation, which yielded an instrument with good internal consistency reliability ($\alpha = .80$) with two factors—curriculum autonomy and general teaching autonomy. We defined curriculum autonomy by the items that measured selection of activities and materials and instructional planning and sequencing. Also, we defined general teaching autonomy by the items that measured classroom standards of conduct and personal on-the-job decision making. Both dimensions were internally consistent ($\alpha = .81$ and .85, respectively), well defined by the items, and correlated ($r = .28$). It uses a 4-point, Likert-type scale, ranging from 1 (definitely false) to 4 (definitely true) to eliminate a neutral response. It recodes items that were is stated positively to reflect high scores on the attribute.

Teacher Self Efficacy Scale

The teacher self-efficacy scale is developed by Tschannen-Moran and Hoy (2001). There are 12 statements, and the scale originally consists of 9-point Likert type 1 (nothing) to 9 (a great deal). In the study, 5- point Likert type study is used. It ranges from 1 (nothing) to 5 (a great deal). To analyze the validity and reliability of the scale, a pilot study with 60 participants was conducted. The results show that the scale is valid and reliable as the Tschannem-Moran and Hoy's scale. To perform the exploratory factor analysis, first of all, the suitability of the data set for factor analysis was examined. It is seen that the KMO value is .783 and the Bartlett's Sphericity test result is significant. It is found that there are three factors that explain the 65% of the total variance. They are called as instructional strategies, classroom management, and student engagement. The reliability of teacher self-efficacy scale is measured as 0.946. Reliabilities for the teacher efficacy sub-scales were 0.91 for instruction, 0.90 for management, and 0.87 for engagement. Inter-

correlations between the subscales of instruction, management, and engagement were 0.60, 0.70, and 0.58, respectively ($p<0.001$).

Data Collection and Data Analysis

First of all, the demographic features of the teachers are analyzed compared to the Teacher Self Efficacy and Teacher Autonomy and EBA proficiency descriptively. Pearson correlation was conducted to identify whether any statistically significant relationship existed between teacher self-efficacy and teacher autonomy. Regression analysis is conducted to determine the extent to which self-efficacy and autonomy can predict the proficiency of EBA usage. Since the main assumption of running regression – normality of distribution and correlation between each pair of variables was observed to be significant.

Skewness and Kurtosis Values

Table 1. Skewness and kurtosis values

Scales and Subscales	Skewness	Std. D	Kurtosis	Std. error
Teacher Self-Efficacy Scale (TSES)	-0.32	0.121	-0.945	0.241
▪ Student Engagement	-0.317	0.121	-0.765	0.241
▪ Instructional Strategies	-0.514	0.121	-0.713	0.241
▪ Classroom Management	-0.361	0.121	-0.905	0.241
Teacher Autonomy	-0.454	0.121	-1.133	0.241
▪ General Teaching Autonomy	-0.328	0.121	-1.113	0.241
▪ Curriculum Autonomy	-0.467	0.121	-1.106	0.241
EBA Proficiency Scale	-0.512	0.121	-0.498	0.241

The skewness and kurtosis values of the normal distribution in numerical variables were found by calculating and are shown in Table 1. According to the rules of normal distribution, skewness values should be between ±1.5 (Tabachnick, Fidel and Ullman, 2007). In this context, it was observed that all scales exhibited a normal distribution.

Ethics committee approval process

The ethics application for the study was made on 04/08/2020 and the research was carried out with the approval of Gaziantep University Ethics Commission dated 19/08/2020 and numbered 35954.

Findings

Descriptive Statistics

Table 2. Descriptive statistical findings regarding the scales applied to teachers

Scales and Subscales	N	Mean	S.D.	Min.	Max.
Teacher Self-Efficacy Scale (TSES)	408	3.74	.81	2.17	5.00
Student Engagement	408	3.63	.93	1.00	5.00
Instructional Strategies	408	3.87	.85	2.00	5.00
Classroom Management	408	3.71	.88	2.00	5.00
Teacher Autonomy Scale (TAS)	408	2.80	0.72	1.33	4.00
General Teaching Autonomy	408	2.82	0.82	1.33	4.00
Curriculum Autonomy	408	2.79	0.72	1.33	4.00
EBA Proficiency Scale	408	3.78	.89	1.58	5.00

Descriptive statistical findings regarding the scales applied to the teachers were examined and are shown in Table 2. Teacher Self-Efficacy Scale mean score of the teachers participating in the study was 3.74, standard deviation value was 0.81, the lowest calculated score was 2.17, and the highest score was 5. The proficiency score of the teachers in student participation is 3.63, the standard deviation value is 0.93, the lowest calculated score is 1 and the highest score is 5. Teachers' efficacy score in instructional strategies is 3.87, standard deviation value is 0.85, the lowest calculated score is 2 and the highest score is 5. The teachers' efficacy score in classroom management is 3.71, the standard deviation value is 0.88, the lowest calculated score is 2 and the highest score is 5.

Teacher Autonomy Scale mean score of the teachers participating in the study was 2.80, standard deviation value was 0.72, the lowest calculated score was 1.33, and the highest score was 4. Teachers' general teaching autonomy score is 2.82, standard deviation value is 0.82, the lowest calculated score is 1.33, and the highest score is 4. Teachers' curriculum autonomy score is 2.79, standard deviation value is 0.72, the lowest calculated score is 1.33, and the highest score is 4. The mean score of the teachers participating in the study on the EBA Proficiency Scale is 3.78, the standard deviation value is 0.89, the lowest calculated score is 1.58, and the highest score is 5.

The relationship between teacher autonomy, teacher self-efficacy and EBA proficiency

Table 3. Relationship between teacher self-efficacy, teacher autonomy EBA proficiency scale

Variables		TSES	SE	IS	CM	EBA PS
TAS	r	**.582****	**.492****	**.534****	**.565****	**.521****
	p	**0**	**0**	**0**	**0**	**0**
GTA	r	**.554****	**.456****	**.517****	**.544****	**.467****
	p	**0**	**0**	**0**	**0**	**0**
CA	r	**.559****	**.480****	**.509****	**.540****	**.521****
	p	**0**	**0**	**0**	**0**	**0**
EBA PS	r	**.631****	**.519****	**.578****	**.629****	**1**
	p	**0**	**0**	**0**	**0**	**0**

*** Correlation is significant at the 0.01 level (2-tailed).*

TAS. Teacher Autonomy Scale. GTA: General Teaching Autonomy CA: Curriculum Autonomy, TSES: Teacher Sense of Self Efficacy Scale SE: Student Engagement IS: Instructional Strategies, CM: Classroom Management

The correlation levels between Teacher Self-Efficacy Scale, Teacher Autonomy Scale and their sub-scales scores were examined and are shown in Table 3. Pearson Moment Correlation is used to investigate the relationship between the teacher autonomy and the teachers' self-efficacy scale. A moderately positive relationship was found between teacher self-efficacy scale and teacher autonomy scale (r=.407), general teaching autonomy (r=.554) and curriculum autonomy scores (r=.559) ($p<0.05$).

A moderately positive relationship was found between teacher autonomy scale and teacher self-efficacy scale (r=.582), student engagement (r=.592), instructional strategies efficacy (r=.534), and classroom management efficacy scores (r=.565) ($p<0.05$). It means that the more teachers have autonomy, the more their self-efficacy increases. There is a positive meaningful relationship between teacher self-efficacy and teacher autonomy.

The relationship levels between teacher self-efficacy scale, its sub-dimension scores and EBA proficiency and were examined and are shown in Table 3. A moderately positive relationship was found between the EBA proficiency scale and teacher self-efficacy scale (r=.631), student engagement (r=.519), instructional strategies (r=.578) and classroom management (r=.629) ($p<0.05$). The teacher self-efficacy contributes to the proficiency of EBA usage.

The relationship levels between the Teacher Autonomy Scale, its sub-sales scores and the EBA-proficiency scale were examined and are shown in Table 3. A moderately positive relationship was found between EBA proficiency scale and teacher autonomy scale (r=.521), general teaching autonomy (r=.567) and curriculum autonomy scores (r=.521) ($p<0.05$).

Regression analysis results regarding the predicting the usage of EBA by teacher autonomy and teacher self-efficacy

In this study, the factors affecting the teacher proficiency scores related to EBA and the effect ratios of the factors are examined. In the model, teacher self-efficacy and teacher autonomy were determined as independent variables. Regression analysis is made for one dependent variable and the other changing variables (Sykes, 1993). The effect of these independent variables on the dependent variable of EBA proficiency was examined by multiple regression analysis. It was seen that the relationship between dependent variables and independent variables was linear. It was also observed that there was no multicollinearity problem, that is, there was no high level of correlation between the independent variables (VIF values <10). In the multiple regression analysis of this model, the model was found to be statistically significant (F (2,405)=154.9 p<0.01). The independent variables explain 43% of the changes in teachers' EBA proficiency.

Table 4. Multiple regression analysis for the factors affecting teacher efficacy related to EBA Scale

Variable	B	Std. error$_B$	β (Beta)	T	p	Tolerance	VIF
EBA	.940	.164		5.714	.000		
TSES	.543	.050	.495	10.775	.000	0.662	1.511
TAS	.287	.057	.232	5.056	.000	0.662	1.511
R=0.658	R^2=0.43		F (2.405)=154.9, *p=0.000*				

Multiple regression analysis was carried out for the variables affecting teachers' EBA proficiency scale, and it is given in Table 4. According to the standardized regression coefficient (β), the order of importance of the independent variables on teachers' EBA proficiency; teacher self-efficacy and teacher autonomy. When the t-test results of all independent variables were analyzed, it was seen that all variables had a significant effect on teachers' EBA proficiency scale. This model shows that as teacher self-efficacy and teacher autonomy increase, EBA proficiency of the teachers will increase. In other words, when all values in the model are kept constant, when teacher self-efficacy increases by one point, it is seen that there will be a 0.495-fold increase in teacher proficiency related to EBA. In addition, it has been observed that when teacher autonomy increases by one point, there will be a 0.232-fold increase in teacher proficiency related to EBA.

Discussion

In the current study, there is a significant relation between teacher self-efficacy and teacher autonomy. In the literature, there are studies which corroborates autonomy and self-efficacy. In a study, Skaalvik and Skaalvik (2009) found that the teacher autonomy and teacher self-efficacy is related to each other. In another study, Federici (2013) carried out an analysis with 1818 principals from Norwegian Population. The study states that there is a positive relation between self-efficacy and job autonomy. According to Social Cognitive Theory proposed by Bandura (1997) self-efficacy has an effect on the individuals', that is to say, on how they perceive the outside chances. Teachers with lower self-efficacy focus on more obstacles they face. On the other hand, efficacious teachers are more motivated to gain more autonomy by focusing on possibilities and taking necessary steps rather than limitations. Sökmen and Kılıç (2019) conducted a study with 716 primary school teachers with the aim of finding out the relation among the teacher self-efficacy,

autonomy, burn out, engagement and job satisfaction. The teachers with high self-efficacy have feelings about themselves related to that they can succeed anything easily in their jobs. The teachers take their own responsibilities for the outcomes as an autonomous individual. At the end of the analysis the findings show that teacher self-efficacy predicts the teacher autonomy positively (Boz, 2014; Mickel, 2015) To sum up and respond to first research question, the findings are in the same line with the literature.

Another result of the present study found out a statistically significant correlation between teacher self-efficacy and EBA proficiency scale. In the literature review, it is stated that there is no study on the relation between these variables. However, there indeed are some studies that can explain the results of the current study. Even though the earlier studies did not focus on EBA itself, the studies intended to explain the relation between the teacher self-efficacy and technology and digital dimensions. Guskey (1988) states that teachers who have high self-efficacy beliefs are open to use new teaching methods. It means that using new technological materials for teaching purposes is related to the teacher self-efficacy beliefs. In the same line with Tschannen Moran and Hoy (2001) corroborates the current studies' findings. The study claims that the teacher's effort for teaching is related to the teacher self-efficacy levels. Another study emphasizes that self-efficacy is a source for overcoming the negative situations in distance learning during the COVID-19 pandemic. It can be concluded that the high level of teacher self-efficacy contributes to the distance teaching procedures of the teachers in COVID 19 period. (Rabaglietti et al, 2021) Another study reveals that the teachers with high self-efficacy during the distance learning period received trainings about technology usage or they used actively these technological tools (Yasemin et al, 2021). It is in the same line with the beliefs of the teachers shaped by the old experiences. In the current study, the proficiency of EBA usage also affect the self-efficacy levels of the teachers in new era of the education. The research by Arpacı (2017) aims to investigate the role of the self-efficacy and the usage of distance education tool, called LMS. Although the tools are different from each other, the findings of the study supports the current findings that the teacher self-efficacy influences the perception of the usage easiness of the technology. In other words, the perception of teachers about themselves affect how the teacher's attitudes change towards the distance education tools. People who trust their capacity and competence see the difficult tasks as something to be achieved not as impediments to escape and they can heal themselves quickly after any failure (Bandura, 1997) Another research studies the role of self-efficacy while using technological programs (Blonder et al., 2013) The participants of the study attended sessions on video-editing and using YouTube in their classrooms. At the end of the study the teachers with high self-efficacy continue to use editing for their teaching even though all of the teachers have taken the same course. Zimmerman (2000) says that efficacy beliefs are strongly related to the future behaviors of the people and those beliefs are predictable for the behaviors of the individuals. The correlation is found in another study indictaing that self-efficacy beliefs of the teachers can be predictors of their technology usage and the other instructional things for teaching (Sangkawetai et al.,2020). In light of the findings of the current study teacher autonomy is significantly correlated with the EBA proficiency and usage of the teacher. Distance learning gains importance in each passing day. The relation between learner autonomy and the usage of distance learning or e learning tools have been studied and questioned for so many times. Nevertheless, the role teacher autonomy in distance learning is uninvestigated compared to the other dimensions of distance learning. In the literature review, it is seen that there are not many studies related to that question. Still, there are some studies which support the current findings of the study. Gupta and Pathania (2021) study the effect of Google Classroom on teacher education. The study states that thanks to the platform the students could access the learning materials easily. Thus, the students could have

the chance to improve their capacity of autonomy and follow the lesson materials at their own pace thanks to Google Classroom supported by the teachers' sharings which are handouts, assignments and asks. In the current study, the usage of EBA which is distance education tool and the teacher autonomy correlated positively. It means that teachers who carry the characteristics of autonomous teachers reflect it to their teaching choices such as using EBA discussions or sharing posts and enhance their students' learning activities by enabling the autonomy of the students. In the literature, self-autonomy can be defined as the capacity to operate the teaching with the help of inner competence of teachers. (Benson, 2011; Martinez, 2008) For that statement, it is the proof that autonomous teachers' responsibility is to give the learners freedom to improve their own learnings. Another study is conducted with the pre-service teachers with the aim of investigating the teacher autonomy and ICT competency. The results of the study show that the teacher autonomy and the ICT competency is related to each other positively (Wu and Wu, 2018). With regard to the correlation and regression analyses of data, it could be deduced that there exists a statically significant relationship between teacher self-efficacy and teacher self-autonomy in predicting the usage of EBA and its proficiency. There is a significant correlation among teacher self-efficacy, teacher autonomy and EBA usage and proficiency. In addition to that, the regression analysis shows teacher self-efficacy contributes significantly to EBA proficiency and also act as predictors of it.

Conclusion

The current study is different form the relevant studies because it tries to investigate the relation among teacher self-efficacy, teacher autonomy and EBA proficiency. In addition to that, the study is conducted in the distance learning era which is also caused by the COVID-19 process. In this regard, significant implications can be inferred from the current study. It is clear that teacher self-efficacy and teacher autonomy contribute to the EBA proficiency of the teachers. On that account, the teachers have to be careful about improving their autonomy and efficacy levels. Teachers should be aware of the importance of the technological tools and platforms for their jobs too. On the other way around, if teachers have difficulty with usage of online platforms, the teachers have to keep in mind it could be related to their self-efficacy and autonomy levels. Teacher education system has to emphasize the importance of teacher autonomy and teacher self-efficacy while teaching the design of curriculum. In the literature, lots studies show that it is important to have training for technology usage. The education system should aim to give teachers the required technological information. Thanks to these technological competences of the teachers supported by the education system of universities, teachers will improve their self-images in their belief system, and they will be more autonomous in taking their own decisions. This results in being more proficient in using technology for teaching purposes. In the current study, from the minor perspective, it is proved that the demographic variables do have effect on teacher self-efficacy and the teacher autonomy levels of the teachers. These variables are the contributors of the proficiency of EBA usage. Thus, teachers need to be careful about the demographical findings. The changing education system needs to be analyzed with its all subcomponents. The present study tried to investigate the usage of online education tool EBA because of the pandemic.

Recommendations

The present study carried out to find out the relation among the teacher self-efficacy, teacher autonomy and the usage of EBA. In the literature, there is no study which focuses on this perspective of the technology usage. Thusly, the present study foresees how important technology will become for future teachings. For the quality of distance learning, the policy

makers have to keep in mind that the teachers' usage of technological tools are correlated with their autonomy and efficacy levels. Teachers can get enough pedagogical knowledge for online teaching in the teacher training programs, which is actually one of the most important obstacles that lowers teacher self-efficacy levels. The program development studies can be studied for future research. Furthermore, assessment strategies can be developed for online teachings. In addition to that, another obstacle was not to have access to the internet and low literacy levels of the users who are teachers and the students. These technological problems can be solved, and assuring the efficacy and autonomy levels of teachers and students can be possible. (Moser et al.,2021) School administrators' self-efficacy and autonomy level correlations can be studied in relation to crisis management as well. At a micro level, school administrators can have an emergency plan so that they can apply this during any situation. Also, they have to attend trainings for crisis management or leadership in technological platforms because it is important for both teachers and students to see their path. They can be made aware of teacher efficacy and teacher autonomy related to the usage of the technological tools and it means that efficacy and autonomy is related to the quality of education and to even student achievement. School administrators can support teachers thanks to their feedback. This topic could be advanced by studying on different variables. As it is stated in the limitations, the study was conducted with only EFL teachers in Gaziantep. For this reason, prospective studies can concentrate on private school teachers and can be carried out in the other districts of the country. In this study, quantitative research method is used. For further research interviews or longitudinal approaches could be used. The study focused on the relationship among the teacher self-efficacy and the teacher autonomy and the proficiency of EBA. In the future, other variables related to teachers could be combined to get a better understanding for the success of distance learning. Although the study shares some important results, it has some limitations to be shared. Because the participants were selected through convenience sampling. The number of the participants (n=408) could be one of the limitations of the study. Nevertheless, the data is distributed normally. The current study is conducted in only Gaziantep district, Türkiye. As the study is about EBA, which is a program implemented in state schools, the participants were selected from state schools. No participants from private schools or universities were recruited in the study.

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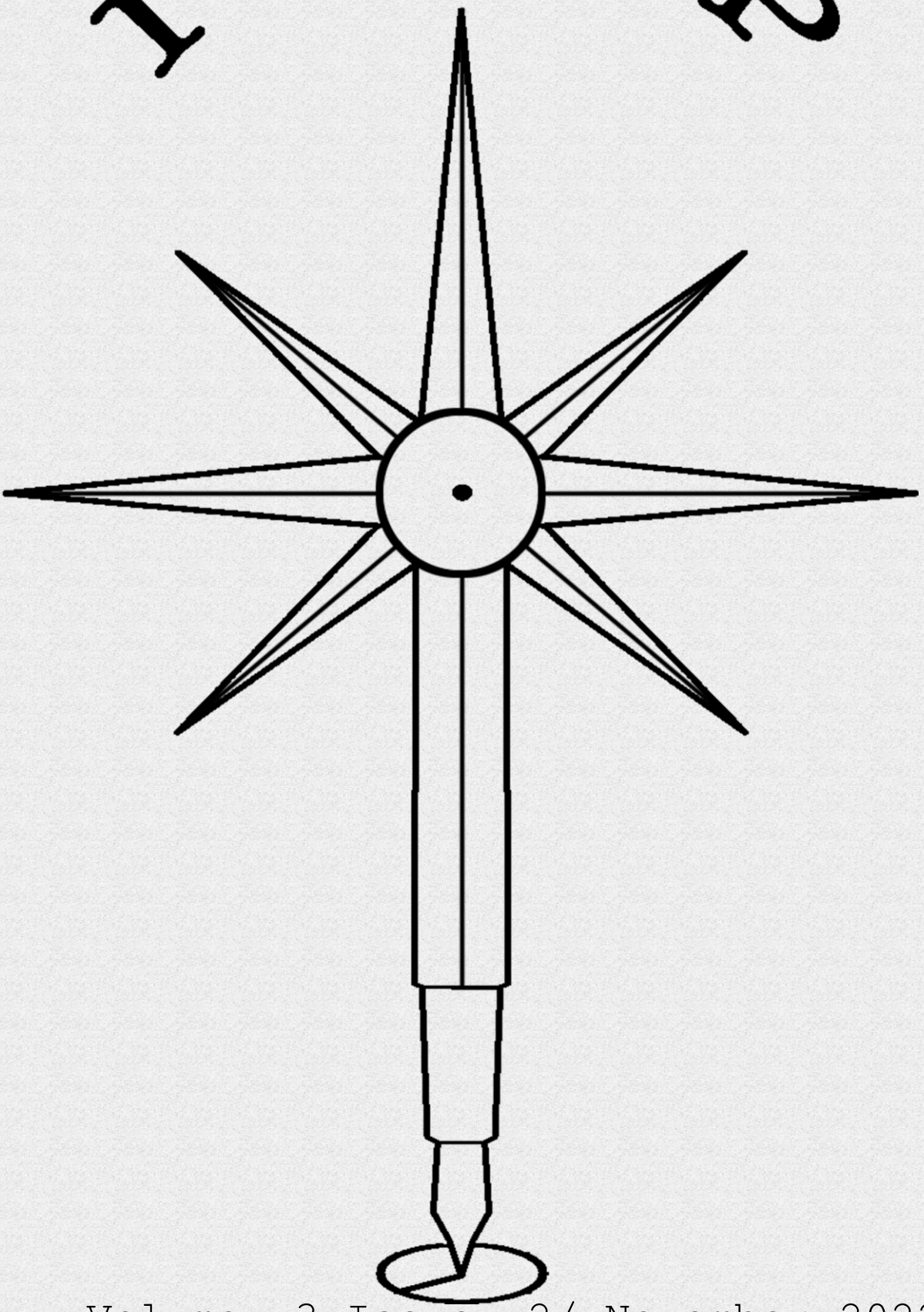

Volume: 3 Issue: 2/ November 2022