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STUDENT AND TEACHER PERSPECTIVES ON INTERDISCIPLINARY STATION TECHNIQUE

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ABSTRACT

This study aims to examine the views of students and teachers on the application process of the station technique based on the interdisciplinary approach. A case study method of qualitative research designs was used in the study. The study group was determined by the criterion sampling method of purposeful sampling methods. In this context, the participants consisted of two classroom teachers and 71 third-grade students in two different classes. Semi-structured and structured interview forms and teacher diaries were used as data collection tools. The collected data were analyzed by content analysis. During the application, students were divided into four groups, where they conducted four different activities at four different stations and organized a bulletin with the resulting products. The results suggested that the interdisciplinary station technique contributes to students' cognitive, affective, and kinesthetic learning, enriches the teaching process, enables students to participate in the process actively, makes the lesson enjoyable, and improves students' ability to cooperate, produces original and creative ideas, design and create products, take responsibility and help each other. However, it requires a lot of labor and time in the preparation phase and problems may arise in classroom management due to the crowded classrooms during the implementation.

Keywords: Active learning; student-centered teaching; teaching technique.

DİSİPLİNLER ARASI YAKLAŞIMA DAYALI İSTASYON TEKNİĞİNE YÖNELİK ÖĞRENCİ ve ÖĞRETMEN GÖRÜŞLERİ

ÖZET

Çalışmanın amacı disiplinler arası yaklaşıma dayalı istasyon tekniğinin uygulama sürecine yönelik öğrenci ve öğretmen görüşlerinin incelenmesidir. Araştırmada nitel araştırma desenlerinden durum çalışması yöntemi kullanılmıştır. Çalışma grubu amaçlı örnekleme yöntemlerinden ölçüt örnekleme yöntemi ile belirlenmiştir. Bu bağlamda katılımcılar, iki farklı sınıfta iki sınıf öğretmeni ve 71 üçüncü sınıf öğrencisinden oluşmuştur. Veri toplama aracı olarak yarı yapılandırılmış ve yapılandırılmış görüşme formu ile öğretmen günlüğü kullanılmıştır. Toplanan veriler içerik analizi ile analiz edilmiştir. Uygulamada öğrenci grupları dört gruba ayrılmış, dört farklı istasyonda dört farklı etkinliği yapmış ve ortaya çıkan ürünlerle bir pano düzenlemiştir.

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Sonuçta disiplinler arası istasyon tekniğinin öğrencilerin bilişsel, duyuşsal ve devinişsel alanda öğrenmelerine katkı sağlamakta, öğretim sürecini zenginleştirmekte, öğrencilerin aktif olarak sürece katılmalarını sağlamakta, dersi eğlenceli hale getirmekte, öğrencilerin işbirliği yapma, özgün ve yaratıcı yeni fikirler üretme, ürün tasarlama ve oluşturma, sorumluluk alma ve yardımlaşma becerilerini geliştirmektedir. Ancak hazırlık aşamasında çok fazla emek ve zaman gerektirmekte ve uygulama sırasında sınıfların kalabalık olması nedeniyle sınıf yönetimi konusunda sıkıntılar da yaşanabilmektedir.

Anahtar Kelimeler: Aktif öğrenme; öğrenci merkezli öğretim; öğretim tekniği.

1. INTRODUCTION

Rapid and continuous advancements and changes are taking place in technological fields nowadays. These developments and changes are also influencing the fields of economy, health, law, politics, and education. As such, the needs of individuals who make up society are diversifying due to these advancements. One of the functions and obligations of education is to satisfy these diversifying needs of individuals. This function is fulfilled in formal and non-formal educational institutions of different types and levels. Formal educational institutions provide individuals with the knowledge, skills, attitudes, and values they need for social life, as well as the competencies required for higher education. Additionally, they teach skills and competencies utilized in professional contexts in the future (Sağlam, 2011).

For education systems to fulfill their functions, curriculums are developed and implemented. Regardless of the level, all curriculums consist of purpose (objective, learning outcome), content, teaching-learning process, and assessment elements. The *purpose* element of a curriculum serves as the answer to the question "why" and indicates the goals planned to be achieved through the implementation of the curriculum. The *content* element serves as the answer to the question "what" and consists of the subjects addressed to achieve the objectives. The *teaching-learning process* answers the question "how" and determines the approach followed in teaching the subject matter to achieve the objectives. In this process, the strategies, methods, or techniques to be used, the examples to be given, the questions to be asked, the feedback and hints to be provided are all addressed in the teaching-learning process. The *assessment* element serves as the answer to the question "to what extent" and is carried out to measure the extent to which the objectives are achieved and make decisions accordingly.

There are numerous approaches, strategies, methods, and techniques that can be used in teaching-learning processes, depending on the purpose and content. The interdisciplinary teaching approach is one of the approaches that can be employed in the teaching process. According to Jacobs (1989), in the interdisciplinary approach, knowledge and methods from multiple disciplines are utilized to examine a theme, situation, problem, topic, or experience. In the interdisciplinary approach, a specific problem, topic, or concept is focused upon, and knowledge and skills from relevant disciplines are integrated to shed light on this concept, topic, or problem from different perspectives. In this context, the general purpose is to examine the concept that constitutes the course content and to teach the knowledge and skills in subject areas derived from different disciplines involved in this process. Put differently, in an interdisciplinary instructional process, both knowledge and skills from specific

disciplines are taught, and assistance is provided in integrating and using them in a meaningful way (Yıldırım, 1996). The interdisciplinary approach reduces fragmentation by facilitating connections between different disciplines. Thereby, it promotes in-depth learning and teaching and helps prevent knowledge overload. Students focus on teaching-learning processes through critical concepts and higher-order generalizations derived from the content. This approach enables students to use abstract concepts and generalizations and develop their thinking skills at the levels of analysis and synthesis. With this approach, students can transfer knowledge to different domains as they see the connections between facts and events (Erikson, 1995).

Many teaching methods and techniques can be used.in an instructional activity designed based on an interdisciplinary approach. One of the instructional techniques that can be used is the station technique. Learning stations are a model that emerged in the 1960s and 1970s, influenced by Montessori in the early 1900s, later shaped by Dewey's educational philosophy, and then influenced by Piaget and Vygotsky's constructivist views (Bulunuz & Jarret, 2010). The learning station technique is a method of conducting lessons in educational settings (inside or outside the classroom) with designated areas where students perform a series of individual or group learning activities to learn or review a particular topic, following specific guidelines prepared in advance by the teacher or by both the teacher and students (Benek & Kocakaya, 2012). Furthermore, the station technique is a student-centered approach that enables students to enhance their communication skills and creativity while having fun and learn to comply with rules through collaboration and interaction (Üstündağ, 2005). In addition to being student-centered, this technique involves students working in groups and each group contributing to the work done by the previous group, and teaches them how to complete an activity that has been initiated and left unfinished (Gözütok, 2007). This technique provides engaging learning environments for students and includes activities that match their success, appeal to their emotions, and help develop their skills (Fehrle & Schulz, 1977). In this technique, students move through the designated stations sequentially and attempt to complete unfinished activities. This way, all students contribute to the activities at each station.

When using the station technique, the whole class is divided into 3, 4, or 5 groups, and stations are created according to these numbers. Different activities such as writing slogans, making posters, and writing poems or stories are conducted at each station with equal durations. At the end of the allocated time, groups move to other stations, leaving unfinished tasks behind, and contribute to the tasks at the next station. If teachers desire, they can assign a chief or observer to each station to ensure order and collection of products. After visiting all stations and collecting the products, the activities of each station are presented and discussed in the class. Through this technique, students develop various skills such as collaboration, creativity, adding or finishing a task already started, following rules, improving communication skills, and showcasing their special abilities (Tok, 2009).

1.1. Problem

In the modern education system, the learning station technique is employed as an instructional tool that addresses individual differences. Differentiation in teaching is flexible and diverse through the learning station technique. It is also possible to organize teaching based on the station technique by differentiating, elaborating, or generalizing the level of specific instructions in station tasks through answer sheets (Pho, Nguyen, Nguyen, & Nguyen, 2020).

One of the important features of the station technique is the presence of independent tasks in instruction. Therefore, it can be used in teaching courses with closely related units of knowledge, concepts, or generalizations. Stations can be organized through interdisciplinary approaches by associating the selected content with multiple courses. In interdisciplinary approaches, a concept, topic, or problem is focused on, and in the process, attempts are made to create meaningful wholes by integrating the knowledge from different disciplines related to that concept, topic, or problem. In other words, the selected content is prepared for teaching by combining it with content derived from different disciplines. In this context, teaching activities prepared based on an interdisciplinary approach can be given in the form of different tasks using the station technique. In such an instruction approach, each station can include tasks related to a different subject to which the selected content is relevant. Having different stations in the station technique coincides with the interdisciplinary approach, integrating knowledge from different disciplines around a concept, topic, or theme. In this design, students can learn different aspects of the selected concept or topic at each station by employing knowledge from different courses. In this study, the station technique, one of the instructional techniques in the literature, was designed and implemented based on an interdisciplinary approach. In this context, the study aims to examine student and teacher perspectives on the application process of the station technique based on the interdisciplinary approach. To achieve this purpose, answers were sought to the following questions:

1. How do students perceive the application process of the interdisciplinary station technique?
2. How do teachers perceive the application process of the interdisciplinary station technique?

1.1. Significance

The station technique is one of the instructional techniques that can be used in many courses. According to the literature, numerous studies have been conducted on the use of this technique in science (Bekerci, Şimşek, Hamzaoğlu, & Yazıcı, 2020; Benek, 2012; Benek & Kocakaya, 2012; Çakmak & Demir, 2018; Demir, Kartal, Ekici, Öztürk, & Bozkurt, 2011; Önel, 2015; Güneş, 2009; Koca & Türkoğlu, 2019; Solak, 2020), mathematics (Güç, Korkmaz, Çakır, & Bacanak, 2016; Hall & Zentall, 2000; Kartal & Arslan, 2022; Tercan, 2019), social studies (Alacapınar, 2009; Mergen, 2011; Şenyurt, 2022; Şenyurt & Şahin, 2022; Taşdemir, 2015), Turkish (Arslan, 2017; Maden & Durukan, 2010; Yaman & Aydemir, 2018), Vietnamese (Pho, Nguyen, Nguyen, & Nguyen, 2020), English (Avcı, 2015), visual arts (Tedik, 2021; Tekin, 2022), life science (Demir, 2008), and physical education (Özbal, Sağlam & Cavkaytar, 2019) courses. Likewise, there are also studies focusing on the use of the station technique in teaching higher education level courses (Batdı & Semerci, 2012; Bulunuz & Jarrett, 2010;

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Kodaman, 2021). These studies have determined that the station technique contributes to academic achievement, makes the lessons more enjoyable, provides positive contributions to students' attitudes toward the courses, and enhances various cognitive and affective skills. Unlike the studies above in the literature, this study does not focus on any specific course but adopts an interdisciplinary approach by selecting a concept and integrating information related to that concept from the contents of different courses. Then, stations are created based on these courses.

In this study, stations were implemented using an interdisciplinary approach to establish connections between different courses on a concept or theme based on students' existing courses. This way, an instructional approach and an instructional technique were integrated in the literature, bringing about an innovation by introducing a different application of the technique. In this context, adding innovation to the station technique used in the instructional process, differentiating the technique, and enriching teaching by connecting different disciplines make the research unique and significant. This study would contribute a new way of applying a well-known technique to the literature. Based on the perspectives of teachers and students regarding the restructured station technique used in the research, the technique can be developed further. The results obtained in this study could be effective in differencing teachers' instructional process, increasing students' participation in the instructional process, and increasing the application of different methods and techniques.

2. METHOD

A case study method of qualitative research designs was employed in the research, considering the application process of an interdisciplinary-based station technique as a case. In the research, it was tried to determine how the teachers and students who experienced the application process of the station technique based on the interdisciplinary approach perceived the process. Case study is a research method that explores a current phenomenon within its own reality and is used in situations where the boundaries between the content within the phenomenon are unclear and there are multiple sources of data (Yin, 1984, as cited in Yıldırım & Şimşek, 2005). A holistic single-case design was used since a comprehensive analysis of a single unit was undertaken to understand the changes and processes in the mentioned case. In case studies, multiple data collection tools are used to collect more in-depth information (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2011). In the holistic single-case design, there is a single unit of analysis, such as an individual, an institution, a program, or a school (Yıldırım & Şimşek, 2005). In this research, the activities implemented were considered as a holistic single case.

2.1. Study Group

The study group was determined using a criterion sampling method of purposive sampling methods. When selecting participants, a list of public schools attended by students with a medium socioeconomic level in a city center located in the Black Sea Region was obtained from official institutions, and a school having six grade 3 classes was randomly chosen. When selecting students to

participate in the study, the criterion of having previously applied the station technique as a class was considered, and two classes meeting this criterion were identified. There were a total of 71 students in these classes, with 32 students in one class and 39 students in another. Of these students, 27 were girls and 44 were boys. One of the male teachers in the study group had 20 years of experience as a classroom teacher, while the other teacher had 22 years of experience. Both teachers graduated from different universities' faculties of education, majoring in elementary education.

2.2. Data Collection Tools

In this study, a structured interview form consisting of six open-ended questions was used to determine students' views on the application of the station technique, and their responses were collected in written form. However, a semi-structured interview form consisting of five open-ended questions was used to determine the views of teachers. The semi-structured and structured interview forms were prepared by the researcher and then revised based on the review of two experts with Ph.D. degrees in educational sciences. The participating teachers who implemented the station technique were asked to keep a journal to record their observations about the process. Interviews with the teachers were conducted and audio-recorded in a suitable part of the school, and the interviews lasted 18 minutes on average.

2.3. Data Analysis

A content analysis technique was employed to analyze the data collected from teachers and students. The audio recordings of the interviews conducted with teachers were transcribed into written documents. Afterward, the teachers' journals and interview data were subjected to an overall reading, and then line-by-line readings were conducted. Content analysis was conducted using an inductive approach. Codes were initially identified during the line-by-line reading of the data. Subsequently, the codes were grouped under sub-themes. Finally, the sub-themes were also grouped under themes, and tables consisting of codes, sub-themes, and themes were created. In addition, the frequencies of the codes were counted and added to the tables. To ensure the reliability of the data analysis, an expert with a Ph.D. degree in educational sciences coded the data as a second coder alongside the researcher. The codes of the two coders were compared, and any discrepancies were discussed and reorganized accordingly. The inter-coder reliability was calculated using Miles and Huberman's (1994) reliability formula (i.e., Reliability = Agreement / (Agreement + Disagreement)), resulting in a reliability coefficient of 0.89 for the analysis of student opinions and 0.92 for the analysis of teacher opinions.

2.4. Application of the Interdisciplinary Station Technique

The interdisciplinary station technique was applied in three stages: preparation, application, and evaluation.

2.4.1. Preparation Stage

Initially, a literature review was conducted to examine existing research and applications related to the station technique. As a result of this review, it was found that there were no studies in the literature

using the application approach employed in this study. The learning outcomes and scope of the curriculum for the selected grade level were examined. Along with classroom teachers, it was decided to consider the concept of recycling, and relevant learning outcomes were selected from the curriculum. The reason for selecting this concept is that it has a broad scope to be linked to other courses. At the same time, it is also suitable for students' development and age. Subsequently, the decision was made on which stations to create. In this context, it was decided to create stations for science, Turkish, mathematics, and visual arts. Since there were four stations, the application was carried out in four cycles. Four different activities were prepared for each station. After the activities were prepared, they were reviewed by a team consisting of two classroom teachers and two educational science experts, and necessary refinements were made. To ensure the smooth application of the cycles without experiencing any issues, an application guideline was prepared for the teachers.

2.4.2. Application Stage

At this stage, teachers were requested to apply the technique according to the prepared guideline. The application guideline is as follows:

o   The teacher draws a picture of a trash bin on the board and asks the students what kind of waste they throw in it. After the students write their answers on the trash bin, the teacher asks, 'Are humans the only living beings that produce these wastes?' and points out that other living beings also produce some waste, but they are organic wastes. Then the teacher asks the students, "What can people do to reduce the waste written over the trash bin I drew on the board?" After receiving their answers, the teacher states that one of the most effective ways to reduce waste, prevent environmental pollution, and prevent the depletion of natural resources is *recycling*.

o   Then, the teacher plays a video called "Zero Waste" (TEMA Vakfı, 2020) and asks for the meanings of some terms mentioned in the video (e.g., waste, reconsidering, recycling, packaging, separating, and natural resources). After evaluating the video, an explanation is provided to the students about the station technique.

o   Application of the Station Technique: Students in the class are divided into four groups. The class is organized into four stations. A paper indicating the name of each station is placed on top of each station. The students are then informed about the order in which the groups will visit each station. The teacher states that there are four different activities for each group at the four stations, and each station has a duration of 15 minutes. Afterward, the student groups are directed to the stations in the following order. The instructions at each station are explained to the students. Guidance is provided to those who need assistance. The students move to the stations according to the order specified in Table 1 below.

Table 1. The Order in which Student Groups Visit the Stations

	Science Station	Turkish Station	Mathematics	Visual Arts
Cycle 1	GROUP 1 Task 1: I see, I think, I am curious	GROUP 2 Task 1: Writing a story	GROUP 3 Task 1: Creating a table	GROUP 4 Task 1: Designing a puppet
Cycle 2	GROUP 4 Task 2: Finding an alternative product	GROUP 1 Task 2: Acrostics	GROUP 2 Task 2: Reading graphics	GROUP 3 Task 2: Drawing caricature
Cycle 3	GROUP 3 Task 3: Drawing a diagram	GROUP 4 Task 3: Creating news text	GROUP 1 Task 3: Coding	GROUP 2 Task 3: Designing a waste bin
Cycle 4	GROUP 2 Task 4: Classifying by waste type	GROUP 3 Task 4: Puzzle	GROUP 4 Task 4: Sudoku	GROUP 1 Task 4: Designing a poster

According to Table 1, in Cycle 1, the first group goes to the science station, the second to the Turkish station, the third to the mathematics stations, and the fourth to the visual arts station. In Cycle 2, the fourth group goes to the science station, the first to the Turkish station, the second to the mathematics station, and the third to the visual arts station. In Cycle 3, the third group goes to the science station, the fourth to the Turkish station, the first to the mathematics station, and the second to the visual arts station. In Cycle 4, the second group goes to the science station, the third to the Turkish station, the fourth to the mathematics station, and the first to the visual arts station. Herewith, all groups visit all stations and participate in all activities.

2.4.3. Evaluation Stage

After the cycles are over, a circle is formed with the students, and they discuss the products they created at the stations. The written news articles and stories are read, and a bulletin board is created using these products. Then, in order to determine the students' opinions about the process, a structured feedback form is distributed to them, asking them to write down their opinions.

3. FINDINGS

This study aimed to examine student and teacher opinions on the application process of the station technique based on an interdisciplinary approach. To achieve this aim, first, the written opinions of students were analyzed to find the answer to the question, "How do students perceive the application process of the interdisciplinary station technique?" The findings reached regarding student opinions are presented below.

3.1. Interdisciplinary Station Technique According to Student Opinions

Six open-ended questions were asked to determine students' opinions on the interdisciplinary station technique. The first question was, "What did you learn in today's station activity?" The codes and themes obtained from the analysis of the students' answers are presented in Table 2.

Table 2. What Students Learned in Station Activities

Theme	Sub-Theme	Codes	f
Learning Outcomes	**Cognitive learning**	Benefits of recycling	16
		Importance of recycling	13
		The concept of waste	12
		Types of wastes	4
		The concept of recycling	4
		The duration of waste decomposition in nature	3
		Separating wastes by their types	2
	Affective learning	Environmental conservation and awareness	7
		Collaboration and assistance	4
	Kinesthetic learning	Making puppets and caricatures	2

According to Table 2, students have learned the benefits of recycling (16), the importance of recycling (13), the concept of waste (12), waste types (4), the concept of recycling (4), the duration of waste decomposition in nature (3), waste separation by types (2), environmental conservation and awareness (7), collaboration and assistance (4), making puppets and caricatures (2). These learnings were consolidated under the sub-themes of cognitive, affective, and kinesthetic learning domains, and these sub-themes were further grouped under the theme of learning outcomes. Some students expressed their views as follows:

"Not every waste is garbage. For example, with some effort, a plastic bottle can turn into a beautiful puppet, and medicine boxes can transform into recycling bins. And remember, 'No pain, no gain.'" (S20)

"I learned about collaboration, I learned about recycling, and I also learned that some wastes are not garbage." (S25)

"I learned not to pollute the environment and how to recycle things that can be recycled." (S5)

The second question asked to determine students' opinions on the station technique was, "How did you feel while doing the station activities?" The codes and themes obtained from the analysis of the students' answers are presented in Table 3.

Table 3. Students' Feelings in Station Activities

Theme	Codes	f
Affective learning outcomes	Find them enjoyable	24
	Feel happy	23
	Feel excited	13
	Like group work	11
	Become curious	2
	Change	1

According to the findings in Table 3, students found the station technique enjoyable (24). Additionally, they felt happy (23), felt excited (13), liked group work (11), were curious about other activities (2), and experienced a sense of change (1) during the activities conducted using this technique.

These codes were grouped under the theme of affective learning outcomes. Some students expressed their views as follows:

"I had a lot of fun and felt very happy while doing it." (S11)

"I had a great day with my teammates." (S15)

"I felt very happy and excited." (S18)

The third question asked to determine students' opinions on the station technique was, "How was it like to teach with the station technique? How was it different from other courses?" The codes and themes obtained from the analysis of the students' answers are presented in Table 4.

Table 4. Students' Opinions According to the Station Technique

Theme	Sub-Theme	Codes	f
Enriched instructional process	**Student-centered teaching**	More enjoyable	47
		Student-centered	21
		Active learning	21
		More exciting	5
		Not taking notes	4
		Intriguing	2
		Rotation between stations	2
		Include different activities	1
	Meta-cognitive learning	Self-learning	21

According to Table 4, students found the station technique to be more enjoyable (47), student-centered (21), promoting active learning (21), more exciting (5), not requiring note-taking (4), intriguing (2), involving rotation between stations (2), and including different activities (1). These codes were grouped under the sub-theme of student-centered teaching. Students mentioned that the station technique is different from other courses in terms of promoting self-learning. The code of self-learning was placed under the sub-theme of meta-cognitive learning. The sub-themes of student-centered teaching and meta-cognitive learning were grouped under the theme of enriched instructional process. Some students expressed their views as follows:

"Studying with the station technique was great. I learned on my own." (S19)

"While studying in regular classes, we used to remain in our seats, but during the station activity, we changed our places." (S22)

"Studying with the station technique was very enjoyable. The difference from other lessons was that we did it on our own." (S13)

"In other lessons, the teacher teaches us, but in this lesson, we learned on our own." (S18)

The fourth question asked to determine the opinions of students regarding the station technique was, "Which station did you like the most and enjoy participating in? Why?" The codes and themes obtained from the analysis of the students' answers are presented in Table 5.

Table 5. Student Opinions on the Most Liked Station and Activity

Theme	Sub-Theme	Codes	f
		Writing stories	6
	Turkish	Writing poems	4
		Puzzles	3
	Science	Designing alternative products	13
		Making recycle bins	12
Most Liked Station	**Visual Arts**	Making puppets	9
		Drawing caricatures	2
	Mathematics	Coding	10
		Sudoku	5
	All of them	Like them all	2

In Table 5, under the theme of the students' most liked station, 13 students liked Turkish, 13 liked Science, 23 liked Visual Arts, 15 liked Mathematics, and two liked all stations. Regarding why students liked these stations more, they responded that it was due to activities such as writing stories (6), writing poems (4), and puzzle activities in the Turkish station. They provided this response due to the activity of designing alternative products (13) in the science station. For the visual arts station, they provided this response because of the activities of making recycling bins (12), making puppets (9), and drawing caricatures (2). Some students expressed their opinions as follows:

"It was the mathematics station. The coding activity was great." (S10)

"It was the visual arts station. Because we made puppets and I learned how to make puppets." (S15)

"It was the puppet station because we were able to create new things by integrating objects." (S21)

"Recycle bins. The reason: because I was curious about them." (S27)

The fifth question asked to determine the opinions of students regarding the station technique was, "Which station did you find the most challenging and did not want to do? Why?" The codes and themes obtained from the analysis of the students' answers are presented in Table 6.

Table 6. Student Opinions on the Most Challenging Station and Activity

Theme	Sub-Theme	Codes	f
Most Challenging Station	**I did not struggle**	All of them were easy. I like all of them.	13
	Turkish	Writing poems	5
		Writing stories	3
	Visual Arts	Making puppets	14
		Preparing posters	1
		Drawing caricatures	1
	Mathematics	Coding	1
		Sudoku	1

In Table 6, under the theme of the station that students found most challenging, 13 students stated that all stations were easy for them and they did not encounter any problems. However, 8 students experienced challenges in the Turkish station, 15 students in the Visual Arts station, and 2 students in the Mathematics station. Those who faced challenges in the Turkish station stated that writing poems and stories were challenging, and in some groups, their writings were erased. Those who experienced challenges in the Visual Arts station mentioned that they had limited materials left, especially for making puppets, and struggled with cutting and gluing. Those who encountered challenges in the mathematics station mentioned that they had not done coding before, had not solved Sudoku puzzles, and did not enjoy these activities, which is why they found them challenging. Some students expressed their opinions as follows:

"I didn't like the mathematics station because I don't like Sudoku." (S2)

"I couldn't find rhyming words at the poetry station and struggled a lot." (S19)

"It was the puppet because sticking, cutting, and designing were too difficult." (S36)

The last question asked to determine the opinions of students regarding the Station technique was, "Would you like to use the station technique in other activities? Why?" The codes and themes obtained from the analysis of the students' answers are presented in Table 7.

Table 7. Student Opinions on Using the Station Technique in Other Activities

Theme	Sub-Theme	Codes	f
Using the Station Technique in Other Activities	**Those who wanted to use it**	Enjoyable	38
		Informative	4
		Student-centered	4
		Different from other lessons	2
		Teamwork	2
	Those who did not want to use it	Tiring	3

In Table 7, under the theme of using the station technique in other activities, the codes were grouped under the sub-themes of those who wanted to use it and those who did not want to use it. Fifty

students who expressed a desire for the station technique to be used in other activities stated that they wanted to use this technique again because it was enjoyable, informative, student-centered, different from other lessons, and promoted teamwork. Three students who did not want to use the station technique in other activities stated that they did not want to use this technique again because they found it tiring. Some students expressed their views as follows:

"I want to. Because I understood the lesson better and had more fun." (S11)

"Yes, I want to. Because it teaches us information and also makes us have fun." (S21)

"I wouldn't want to. Because it would be tiring." (S30)

3.2. Teachers' Opinions Regarding the Station Technique

The observations made by the teachers during the application process, their journals, and the responses they provided in the semi-structured interview form were analyzed to find an answer to the second research question, "How do teachers perceive the application process of the interdisciplinary station technique?" The codes obtained through content analysis were grouped under the themes of "Contributions to the Learning-Teaching Process" and "Criticisms." Since interviews were conducted with two teachers, no frequency is provided. The sub-themes and codes under these two main themes are given in Figure 1.
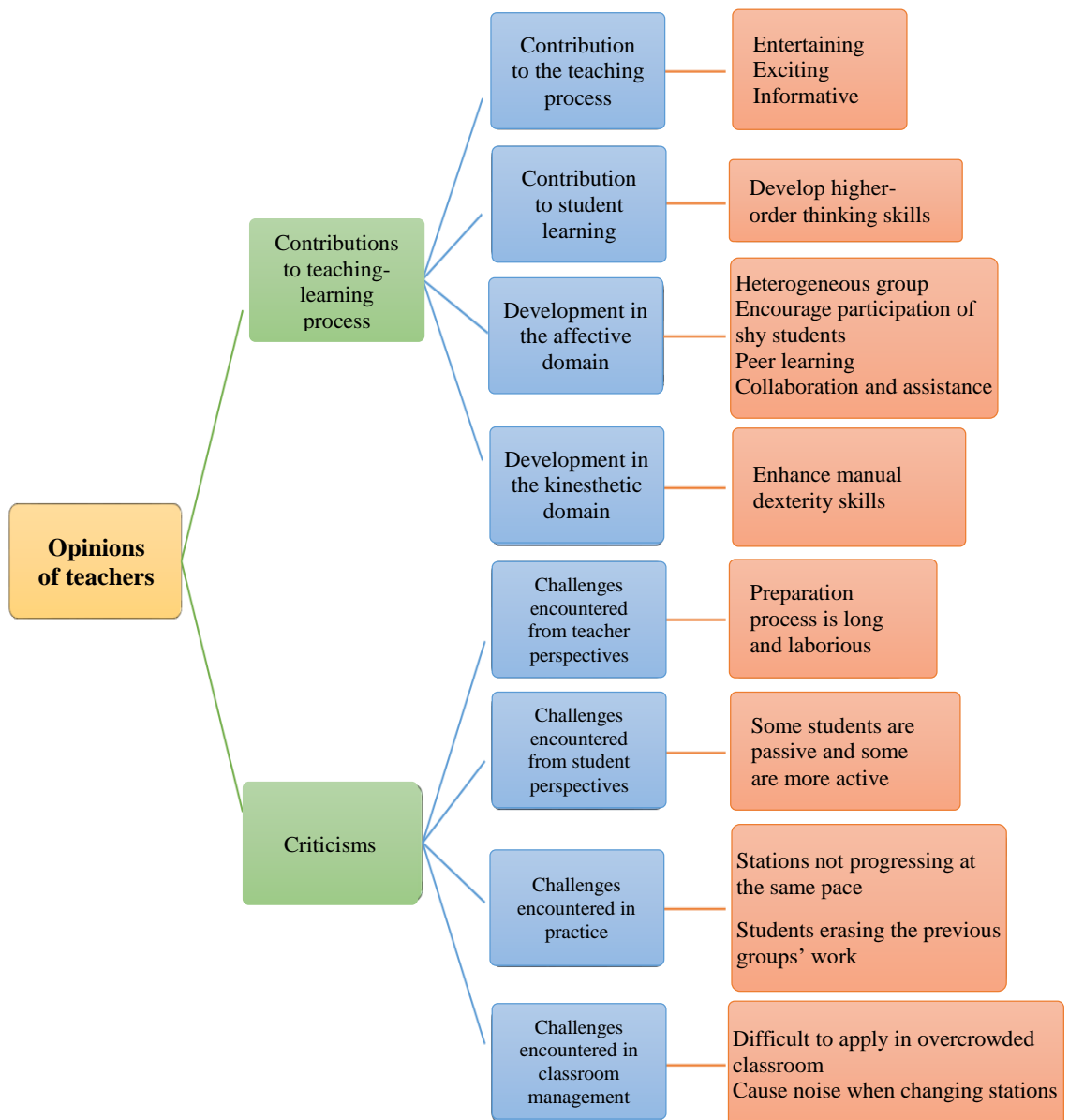
Figure 1. Opinions of Teachers on the Interdisciplinary Station Technique

The theme of "Contributions to the Learning-Teaching Process" in Figure 1 includes the sub-themes of contribution to the teaching process, contribution to student learning, development in the affective domain, and development in the kinesthetic domain. The sub-theme of contributions to the teaching process includes the following codes: entertaining, exciting, and informative. The sub-theme of contributions to student learning the code of developing higher-order thinking skills. The sub-theme of development in the affective domain includes the codes of heterogeneous group, encouraging participation of shy students, peer learning, assistance, and collaboration. The sub-theme of development in the kinesthetic domain includes the code of enhancing manual dexterity skills. Some examples related to the views of teachers are given below:

"The relocation of groups is interesting, entertaining, and informative. It allows them to complete unfinished activities, look from different perspectives, and produce different products. Random selection of groups creates an environment where shy students can express themselves." (T1)

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"Completing unfinished activities is both entertaining and informative for students. Having heterogeneous groups contributes to peer learning. Collaboration and mutual assistance are some of the advantages of this technique. Exploring different dimensions of a specific topic is both enjoyable and informative. This technique enhances students' higher-order thinking and manual dexterity skills." (T2)

Besides having positive views regarding the interdisciplinary station technique, teachers also had criticisms regarding this technique. Teachers' views and criticisms are grouped under the sub-themes of challenges encountered from teacher perspectives, challenges encountered from student perspectives, challenges encountered in practice, and challenges encountered in classroom management. Under the sub-theme of challenges encountered from teacher perspectives, teachers stated that the preparation process for this technique is long and laborious. Under the sub-theme of challenges encountered from student perspectives, teachers expressed that in group work, some students tend to take the lead and be more active, while others may remain passive and stay in the background. Under the sub-theme of challenges encountered in practice, teachers stated that they faced difficulties in switching stations due to stations not progressing at the same pace. In addition, they noted that some students erased the work of the previous group when switching stations, causing problems. Sample statements regarding the views of teachers are given below:

"It is difficult to apply in crowded classrooms. It requires extensive preparation and is laborious. There are difficulties when students change their positions. Students who hold leadership positions in their groups tend to stand out, causing others to lag. While the science, Turkish, and mathematics stations progress quickly, the visual arts station depends on the abilities of a few students. Other students get bored." (T1)

"It is necessary to plan everything before starting the application. It requires a considerable amount of time and effort. The classroom becomes very noisy when applying it. All students cannot participate in the activity. Some students remain passive. It is challenging to apply it in crowded classrooms. In the activities conducted, students may sometimes dislike the work of other groups and erase it." (T2)

4. DISCUSSION, CONCLUSION, AND IMPLICATIONS

This study examined student and teacher perspectives regarding the station technique prepared based on an interdisciplinary approach. One of the findings indicated that the interdisciplinary station technique contributes to students' cognitive, affective, and kinesthetic domains of learning. In the cognitive domain, through this technique, students learned about the concepts of recycling and waste, types of waste, the duration of waste decomposition in nature, separating wastes by their type, and the importance and benefits of recycling. The station technique is one of the techniques that can be used in teaching many courses and subjects. Numerous studies have proved that this technique facilitates active learning, improves academic achievement, and makes learning easier and lasting (Arslan, 2017; Avcı,

2015; Bekerci, Şimşek, Hamzaoğlu, & Yazıcı, 2020; Benek, 2012; Benek & Kocakaya, 2012; Bulunuz & Jarrett, 2010; Çakmak & Demir, 2018; Demir, 2008; Demir, Kartal, Ekici, Öztürk, & Bozkurt, 2011; Erdağı & Önel, 2015; Furutani, 2007; Kodaman, 2021; Korkmaz, Çakır, & Bacanak, 2016; Hall & Zentall, 2000, Güneş, 2009; Kartal & Arslan, 2022; Koca & Türkoğlu, 2019; Maden & Durukan, 2010; Mergen, 2011; Özbal, Sağlam, & Cavkaytar, 2019; Pho, Nguyen, Nguyen, & Nguyen, 2020; Şenyurt & Şahin, 2022; Taşdemir, 2015; Tercan, 2019). Alacapınar (2009) emphasizes that the station technique is an effective technique for achieving cognitive, affective, and kinesthetic learning outcomes. Alacapınar also states that this technique promotes knowledge, emotion, and skill sharing among students and helps students to apply this knowledge, emotion, and skills by relating them to real-life experiences. Kartal and Arslan (2022) concluded in their application of the station technique at the preschool level that this technique can be used to achieve learning outcomes in various developmental domains, and this technique supports different developmental domains. Kartal and Arslan's finding, which indicates that the station technique enhances cognitive, social, affective, and psychomotor skills, is parallel to the findings of this research.

The present study found that students developed collaborative and sharing skills in the affective domain and gained awareness of environmental conservation. Additionally, students found the interdisciplinary station technique enjoyable, felt happy, excited, and curious, experienced a sense of change, and liked the group activities. Based on these views regarding the station technique, one could argue that students had a positive attitude toward this technique. In their study, Güç, Korkmaz, Çakır, and Bacanak (2016) examined the secondary school students' views on the station technique in mathematics class. They found that the station technique helps students develop affective skills such as socialization, fostering a sense of responsibility, and developing team consciousness. Similarly, in the application of the station technique in the first-grade life skills course, Demir (2008) determined that the changes between stations and the opportunity for movement in the classroom were effective in helping students acquire social skills. In their research on the use of the station technique in the fifth-grade physical education course, Özbal, Sağlam, and Cavkaytar (2019) found that this technique contributed to students' affective skills, such as fostering a sense of responsibility and respecting differences. In a study with sixth-grade students, Taşdemir (2015) determined that using the station technique in social studies created a difference in students' attitudes toward the course and increased their willingness to participate in the course. Similarly, in Tercan's study (2019) with seventh-grade students, it was found that using the station technique in mathematics lessons improved students' communication skills, increased their self-confidence, and enhanced their interest in the course. In the station technique applied in the visual arts class, it has been found that the interest and motivation of grade 8 students increased toward the course (Tekin, 2020).

One of the findings of this study was that the implementation of the station technique contributed to the development of students' manual dexterity skills and small muscles related to the kinesthetic domain through activities such as making puppets and drawing caricatures. Similar to the

finding of this study, Alacapınar (2009) also reports that the station technique is an effective technique for achieving cognitive, affective, and kinesthetic learning outcomes. Additionally, Kartal and Arslan (2022) also state that the station technique develops cognitive, social, affective, and psychomotor skills.

Another finding reached based on student views is that the interdisciplinary station technique enriches the instructional process. The interdisciplinary station technique created a more enjoyable, exciting, and intriguing learning environment, encouraging students to move around and actively participate in student-centered learning processes through various activities. Furthermore, students constructed their own learning with this technique and became aware of it. These positive views regarding the station technique are in parallel with many other studies in the literature (Alacapınar, 2009, Avcı, 2015; Batdı & Semerci, 2012; Bekerci, Şimşek, Hamzaoğlu, & Yazıcı, 2020; Benek & Kocakaya, 2012; Demir, 2008; Demir, Kartal, Ekici, Öztürk, & Bozkurt, 2011; Hall & Zentall, 2000; Mergen, 2011; Özbal, Sağlam, & Cavkaytar, 2019). Similar to these findings, in the application of the station technique in fifth-grade physical education and sports class, it has been determined that students enjoyed participating in the lesson, actively participated in the learning process, and learned at their own pace (Özbal, Sağlam, & Cavkaytar, 2019). In the station technique applied in the science and technology class, seventh-grade students expressed their enjoyment in participating in activities conducted with this technique. They found the application useful and stated that the group activities contributed to their learning (Benek & Kocakaya, 2012). In an application conducted by Batdı and Semerci (2012) in a grade 7 science and technology class, it was revealed that through this technique, students developed skills in working collaboratively in groups, presenting different ideas, and completing unfinished tasks. The students were also active participants in their learning process.

In this study, students mostly liked the visual arts station, followed by the mathematics, science, and Turkish stations. Students liked activities such as making recycle bins and puppets and drawing caricatures at the visual arts station, coding and Sudoku activities at the mathematics station, and designing alternative products at the science station. At the Turkish station, they mostly liked activities such as writing stories and poems and solving puzzles. Although the visual arts station was the one that students liked the most, it was also the station where they experienced challenges the most. Some students expressed that there was a shortage of materials in the visual arts station, especially in puppet making, and they had difficulties in cutting and gluing. At the Turkish station, some students found it challenging to write poems and stories, while others struggled with the Sudoku and coding activities at the mathematics station because they were doing them for the first time. Writing poems and stories are considered higher-order learning activities in the cognitive domain. In this context, in the station technique, students are required to quickly use their imagination, generate ideas, express them in writing, and demonstrate a creative performance. That is why students may have struggled. In parallel with this finding, Yaman and Aydemir (2018) conducted a study on teaching punctuation marks using the station technique with fifth-grade students. They found that students easily applied the story writing, drawing,

and information stations, but struggled with the slogan creation and poetry writing stations. These results are similar to the findings of this study.

One of the findings obtained in the research is that students desired the interdisciplinary station technique to be used in other activities and courses since it is fun, informative, student-centered, diverse, and teamwork-oriented. Seventh-graders who experienced the station technique in science and technology classes expressed their desire to use this technique in all science and technology lessons, as well as in other subjects (Benek & Kocakaya, 2012). Fifth-grade students who used the station technique in social studies also expressed their views that the lesson they studied with this technique was different from all other lessons (Alacapınar, 2009). In line with these views, regarding the station technique applied in the Turkish language class by Arslan (2017), sixth-graders expressed their desire to use the station technique not only in teaching Turkish but also in different instruction levels and various grade levels.

The study also obtained results based on the views of teachers. According to the observations and opinions of the two classroom teachers who applied the technique, the interdisciplinary station technique positively contributes to the teaching-learning process. An entertaining, exciting, and informative teaching environment was created through this technique. The technique enabled students to acquire higher-order thinking skills, participate in peer learning, and encouraged shy students to engage in the learning process. It has also facilitated collaboration and mutual assistance among students and enhanced their manual dexterity skills. Kartal and Arslan (2022) examined the views of teachers and parents regarding the station technique in their study. They found that this technique was effective in acquiring skills such as providing assistance, learning to share, taking responsibility, and learning to help others. Similarly, in a study, Kodaman (2021) employed the station technique in Basic Art Education and Painting classes at a higher education level. As a result, Kodaman determined that this technique enhances students' creativity, fosters collaboration through group work, improves the ability to complete an unfinished task, encourages generating original and creative ideas, and develops the skills to produce a product. Kartal and Arslan's (2022) and Kodaman's (2021) research findings support the results of this study.

Teachers who participated in the study also had criticisms regarding the interdisciplinary station technique. According to the teachers, the preparation process for this technique is long and laborious. Some students are more active while others remain passive. In practice, the stations not progressing at the same pace and some activities being longer create problems. It also poses a challenge when some students coming to a station dislike the work of the previous group and erase it. Furthermore, the use of this technique also causes problems in classroom management. Applying this technique in crowded classrooms is challenging. The noise and disorder that occur when switching stations make it difficult to control the class. These views of teachers indicate the limitations of the station technique, which can also be encountered in other studies on the application of this technique. Similar to the findings of this study, Yaman and Aydemir (2018) expressed that there was noise and chaos in the classroom during the

application of the station technique, making it difficult for students to focus on their work. Unless detailed planning is made considering the learning outcomes, student characteristics, and their needs in order to use time effectively and efficiently during the application of this technique, difficulties may arise in the process (Sears, 2007). The difficulties in applying the technique in the whole class, challenges in ensuring the active participation of students in groups, and the presence of chaos and noise in the classroom are among the limitations of the station technique (Tok, 2009).

To conclude, the interdisciplinary station technique contributes to students' learning in cognitive, affective, and kinesthetic domains. It enriches the instruction process, enables active participation of students, makes the lessons enjoyable, and enhances students' skills in collaboration, generating unique and creative ideas, designing and creating products, taking responsibility, and mutual assistance. However, it requires significant effort and time during the preparation stage, and challenges may arise in classroom management during the application due to crowded classrooms.

The following recommendations are presented in line with the conclusions reached in the study:

 The interdisciplinary station technique could also be used in teaching concepts at different grade levels.

 Teachers and students could be encouraged to use this technique more frequently to eliminate the problems encountered during the application. Reusing the technique in other lessons may increase the experience of both students and teachers, reducing classroom chaos or noise in subsequent applications.

 This study was conducted as a case study. Similar studies could be carried out experimentally.

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APPENDIX 1

Samples of students' works created during the application and the bulletins they created with these works are presented in pictures 1, 2, and 3.

Picture 1. Application process

Picture 2. Application process

Picture 3. Application process

GENİŞLETİLMİŞ TÜRKÇE ÖZET

DİSİPLİNLER ARASI YAKLAŞIMA DAYALI İSTASYON TEKNİĞİNE YÖNELİK ÖĞRENCİ ve ÖĞRETMEN GÖRÜŞLERİ

GİRİŞ

Disiplinler arası yaklaşıma dayalı olarak tasarlanan bir öğretim etkinliğinde birçok öğretim yöntemi ve tekniği kullanılabilir. Kullanılabilecek öğretim tekniklerinden birisi de istasyon tekniğidir. İstasyon tekniği öğrenci merkezli bir teknik olmakla beraber, öğrencinin eğlenerek iletişim kurma becerilerini ve yaratıcılığını geliştirebileceği, kurallara uymayı işbirliği ve etkileşim ile öğrenebileceği bir tekniktir (Üstündağ, 2005). Bu teknik öğrenci merkezli olmasının yanı sıra, öğrencilerin grupla çalışarak ve her grubun önceki grubun yaptığı çalışmalara katkı sunduğu, başlanan ve yarım bırakılan bir etkinliği tamamlamayı öğrendiği bir tekniktir (Gözütok, 2007). Bu teknik öğrenciler için çekici öğrenme ortamları sağlamakla beraber, öğrencilerin seviyesine uygun başarılı olabileceği etkinlikleri içeren, onların duygularına hitap eden, öğrencilerin becerilerini geliştiren etkinlikleri kapsayan bir tekniktir (Fehrle & Schulz, 1977). Bu teknikte öğrenciler oluşturulan istasyonları sırayla gezerek yarım kalan etkinlikleri tamamlamaya çalışır, böylece her istasyondaki etkinliğe tüm öğrenciler katkı sağlamış olur.

İstasyon tekniğinin önemli özelliklerinden biri öğretimde birbirinden bağımsız görevlerin olmasıdır. Bu nedenle, yakından ilişkili bilgi birimlerine, kavramlara ya da genellemelere sahip derslerin öğretilmesinde kullanılabilir, seçilen içeriğin birden fazla dersle ilişkilendirilerek disiplinler arası yaklaşımla istasyonlar düzenlenebilir. Disiplinler arası yaklaşımda bir kavram, konu ya da problem merkeze alınarak süreçte bu kavram konu ya da problem farklı disiplinlerin konu alanlarındaki bilgilerle anlamlı bütünler oluşturulmaya çalışılır. Yani seçilen içerik farklı disiplinlerden alınan içerikle birleştirilerek öğretim için hazır hale getirilir. Bu bağlamda disiplinler arası yaklaşıma dayalı olarak hazırlanan öğretim etkinlikleri, istasyon tekniği ile farklı görevler şeklinde verilebilir. Böyle kurgulanan bir öğretimde her istasyon seçilen içeriğin ilgili olduğu farklı bir derse yönelik görevleri içerebilir. İstasyon tekniğinde farklı istasyonların olması disiplinler arası yaklaşımın farklı disiplinlerdeki bilgileri bir kavram, konu ya da tema etrafında bütünleştirmesi ile örtüşmektedir. Bu tasarımda öğrenciler her istasyonda seçilen kavram ya da konunun farklı bir yönünü farklı derslerin bilgilerinden yararlanarak öğrenebilir. Bu çalışmada literatürde yer alan öğretim tekniklerinden biri olan istasyon tekniği disiplinler arası yaklaşıma dayalı olarak tasarlanmış ve uygulanmıştır. Bu bağlamda çalışmanın amacı disiplinler arası yaklaşıma dayalı istasyon tekniğinin uygulama sürecine yönelik öğrenci ve öğretmen görüşlerinin incelenmesidir. Bu amaca ulaşmak için aşağıdaki sorulara cevap aranacaktır.

1. Disiplinler arası yaklaşıma dayalı istasyon tekniğinin uygulama süreci öğrenciler tarafından nasıl algılanıyor?

2. Disiplinler arası yaklaşıma dayalı istasyon tekniğinin uygulama süreci öğretmen tarafından nasıl algılanıyor?

YÖNTEM

Araştırmada nitel araştırma desenlerinden durum çalışması yöntemi kullanılmıştır. Disiplinler arası yaklaşıma dayalı istasyon tekniğinin uygulama süreci durum olarak kabul edilmiştir. İlgili durumda meydana gelen değişimleri ve süreçleri anlamak için tek bir analiz birimi bütüncül olarak ele alındığı için bütüncül tek durum deseni kullanılmıştır. Çalışma grubu amaçlı örnekleme yöntemlerinden ölçüt örnekleme yöntemi ile belirlenmiştir. Çalışmaya katılacak öğrenciler seçilirken, sınıf olarak daha önce istasyon tekniğini uygulamış olma özelliği ölçüt olarak kabul edilmiş ve bu ölçüte uyan iki şube belirlenmiştir. Bu şubelerde 32 ve 39 öğrenci olmak üzere toplam 71 öğrenci bulunmaktadır. Çalışma grubunda yer alan iki erkek öğretmenden biri 20, diğeri 22 yıllık sınıf öğretmenidir. İki öğretmende farklı üniversitelerin eğitim fakültelerinin sınıf öğretmenliği bölümünden mezun olmuştur.Bu çalışmada istasyon tekniğinin uygulamasına yönelik öğrenci görüşlerini belirlemek amacıyla açık uçlu altı sorudan oluşan bir yapılandırılmış görüşme formu kullanılmış ve öğrencilerin görüşleri yazılı olarak toplanmıştır. Öğretmen görüşlerini belirlemek amacıyla açık uçlu beş sorudan oluşan yarı yapılandırılmış görüşme formu kullanılmıştır. Yarı yapılandırılmış ve yapılandırılmış görüşme formu araştırmacı tarafından hazırlanmıştır.Öğretmen ve öğrencilerden toplanan verilerin analizinde içerik analizi tekniğinden yararlanılmıştır.

BULGULAR

Öğrenci Görüşlerine Göre İstasyon Tekniği

Öğrencilerin Disiplinler Arası İstasyon Tekniğine ilişkin görüşlerini belirlemek için 6 açık uçlu soru sorulmuştur. Öğrenciler istasyon tekniği ile geri dönüşümün faydalarını, geri dönüşümün önemini, atık kavramını, atık türlerini, geri dönüşüm kavramını, atıkların doğada kaybolma sürelerini, atıkları türlerine göre ayırmayı, çevreyi korumayı ve duyarlı olmayı, işbirliği ve yardımlaşmayı, kukla yapmayı, karikatür yapmayı öğrenmişlerdir. Öğrenciler istasyon tekniğini eğlenceli bulmuşlardır. Bunun yanı sıra bu teknik ile yapılan etkinliklerde kendilerini mutlu hissetmiş, heyecan duymuş, grup çalışmalarını beğenmiş, diğer etkinlikleri merak etmiş ve değişim hissetmişlerdir. Öğrenciler istasyon tekniğini daha eğlenceli, öğrenci merkezli, aktif öğrenmeyi sağlayıcı, daha heyecan verici, not almaya gerek duymama, merak uyandırıcı, istasyonlar arası yer değiştirilmesi ve farklı etkinleri içermesi açısından farklı bulmuşlardır. Öğrencilerin en çok sevdiği istasyon teması altında 13 öğrenci Türkçe, 13 öğrenci fen, 23 öğrenci görsel sanatlar, 15 öğrenci matematik ve iki öğrenci tüm istasyonları sevdiğini belirtmiştir. Bu istasyonları neden daha çok sevdikleri ile ilgili olarak öğrenciler Türkçe istasyonundaki, hikâye yazma, şiir yazma ve bulmaca etkinliklerinden dolayı bu cevabı vermişlerdir. Fen istasyonundaki, alternatif ürünler tasarlama etkinliğinden dolayı bu cevabı vermişlerdir. Görsel sanatlar istasyonu için, geri dönüşüm kutusu yapma, kukla yapma ve karikatür çizme etkinliklerinden dolayı bu cevabı vermişlerdir.

Öğrencilerin en çok güçlük yaşadığı istasyon teması altında 13 öğrenci bütün istasyonların kolay olduğunu ve hiç sorun yaşamadığını belirtirken, 8 öğrenci Türkçe, 15 öğrenci görsel sanatlar, 2 öğrenci matematik istasyonunda güçlük yaşadığını belirtmiştir. Türkçe istasyonunda güçlük yaşayanlar şiir ve hikâye yazmanın zor olduğunu; bazı gruplarda yazılanların silindiğini; görsel sanatlar istasyonunda güçlük yaşayanlar özellikle kukla yapmak için kendilerine az malzeme kalmasından ve kesme-yapıştırmada zorlandıkları için sorun yaşadıklarını; matematik istasyonunda güçlük yaşayanlar ise daha önce kodlama yapmadıkları, su doku çözmedikleri ve bu etkinlikleri sevmedikleri için zorlandıklarını belirtmişlerdir. Öğrencilerin istasyon tekniğinin diğer etkinliklerde kullanımı teması altında isteyenler ve istemeyenler alt temalarında kodlar toplanmıştır. İstasyon tekniğinin başka etkinliklerde de kullanılmasını isteyen 50 öğrenci, bu tekniği eğlenceli, öğretici, öğrenci merkezli, diğer derslerden farklı ve ekip çalışması nedeniyle tekrar kullanmak istediklerini belirtmişlerdir. İstasyon tekniğini başka etkinliklerde kullanmak istemeyen üç öğrenci yorucu olduğu için bu tekniği tekrar kullanmak istememiştir.

Öğretmen Görüşlerine Göre İstasyon Tekniği

Öğretmenlerin istasyon tekniğine ilişkin görüşleri bu tekniğin "Öğrenme-Öğretme Sürecine Katkıları" ve bu tekniğe ilişkin eleştiriler temalarında incelenmiştir. Öğretmenler disiplinler arası yaklaşıma dayalı istasyon tekniğinin öğrenme öğretme sürecini zenginleştirdiği, eğlenceli hale getirdiği, öğrencilere üst düzey düşünme beceri kazandırdığı, heterojen gruplar sayesinde çekingen öğrencilerin de derse katıldığını, akran öğrenmesi sağladığını, yardımlaşma ve işbirliği yapmayı sağladığını ve devinişsel alanla ilgili olarak el becerilerini geliştirdiğini ifade etmişlerdir.

Öğretmenlerin disiplinler arası yaklaşıma dayalı istasyon tekniği ile ilgili olumlu görüşlerinin yanı sıra bu teknikle ilgili eleştirileri de bulunmaktadır. Öğretmenler bu tekniğin hazırlık sürecinin uzun ve zahmetli olduğunu belirtmişlerdir. Öğrenci açısından ise grup çalışmalarında bazı öğrencilerin ön plana çıktığını ve lider olduklarını bazılarının ise arka planda kalarak pasif olduklarını ifade etmişlerdir. Uygulamada karşılaşılan zorluklarda öğretmenler, istasyonların aynı hızda ilerlememesi nedeniyle istasyon değişiminde güçlük yaşadıklarını, ayrıca istasyon değişimlerinde bazı öğrencilerin önceki grubun çalışmasını silmesinin de sorun yarattığını belirtmişlerdir. Sınıf yönetiminde ise özellikle sınıfların kalabalık olmasının bu tekniğin kullanımını zorlaştırdığını ve istasyonların değişimi sırasında oluşan gürültü ve düzensizliğin sınıf yönetimini zorlaştırdıklarını belirtmişlerdir.

TARTIŞMA, SONUÇ ve ÖNERİLER

Disiplinler arası yaklaşıma dayalı olarak hazırlanan istasyon tekniğine ilişkin öğrenci ve öğretmen görüşlerinin incelendiği bu araştırmada ulaşılan bulgulardan biri disiplinler arası yaklaşıma dayalı istasyon tekniğinin öğrencilerin bilişsel, duyuşsal ve devinişsel alanda öğrenmelerine katkı sağladığıdır. Öğrenciler bu teknik sayesinde bilişsel alanda geri dönüşüm ve atık kavramları, atık türleri, atıkların doğada kaybolma süreleri, atıkları türlerine göre ayırmayı, geri dönüşümün önemi ve

faydalarını öğrenmişlerdir. İstasyon tekniğini birçok dersin ve birçok konunun öğretiminde kullanılabilecek tekniklerden biridir. Bu tekniğin aktif öğrenmeyi sağladığı, akademik başarıyı arttırdığı öğrenmeyi kolay ve kalıcı hale getirdiği birçok araştırma ile kanıtlanmıştır (Arslan, 2017; Avcı, 2015; Bekerci, Şimşek, Hamzaoğlu & Yazıcı, 2020; Benek, 2012; Benek &Kocakaya, 2012; Bulunuz & Jarrett, 2010; Çakmak ve Demir, 2018; Demir, 2008; Demir, Kartal, Ekici, Öztürk & Bozkurt, 2011; Erdağı & Önel, 2015; Furutani, 2007; Kodaman, 2021; Korkmaz, Çakır & Bacanak, 2016; Hall & Zentall, 2000, Güneş, 2009; Kartal & Arslan, 2022; Koca & Türkoğlu, 2019; Maden & Durukan, 2010; Mergen, 2011; Özbal, Sağlam & Cavkaytar, 2019; Pho, Nguyen, Nguyen & Nguyen, 2020; Şenyurt & Şahin, 2022; Taşdemir, 2015; Tercan, 2019). Bu çalışmada, öğrencilerin duyuşsal alanda işbirliği ve paylaşma becerileri gelişmiş, öğrenciler çevreyi koruma ile ilgili duyarlılık kazanmışlardır. Bunun yanı sıra öğrenciler disiplinler arası istasyon tekniğini eğlenceli bulmuş, uygulamada kendilerini mutlu hissetmiş, heyecanlanmış, merak etmiş, değişim yaşamış ve grup çalışmalarını beğenmiştir. İstasyon tekniğine yönelik bu görüşlere dayanarak öğrencilerin bu tekniğe yönelik olumlu bir tutuma sahip oldukları söylenebilir. Güç, Korkmaz, Çakır ve Bacanak'ın (2016) matematik dersinde ortaokul öğrencilerinin istasyon tekniğine yönelik görüşlerini inceledikleri araştırmada, istasyon tekniğinin öğrencilerin sosyalleşmesini sağlama, sorumluluk bilinci kazandırma, takım bilinci oluşturma gibi duyuşsal beceriler kazandırdığı sonucuna ulaşmışlarıdır.

Bu çalışmanın bulgularından biri de istasyon tekniği uygulamasının öğrencilerin devinişsel alanla ilgili olan kukla yaparak ve karikatür çizerek el becerileri ve küçük kasları gelişmiş olmasıdır. Araştırmanın bu bulgusuna benzer olarak Alacapınar (2009) istasyon tekniğinin bilişsel, duyuşsal ve devinişsel alanla ilgili kazanımları kazandırmak için etkili bir teknik olduğunu belirtmektedir.

Öğrenci görüşlerine göre ulaşılan diğer bir bulgu, disiplinler arası istasyon tekniğinin öğretim sürecini zenginleştirdiğidir. Disiplinler arası istasyon tekniği öğrenme sürecinde daha eğlenceli, heyecan verici, merak uyandırıcı bir ortam yaratmış, farklı etkinliklerle öğrencilerin hareket etmesini, öğrenci merkezli olarak öğrenme sürecine aktif katılmayı sağlamıştır. Ayrıca öğrenciler bu teknikle kendi öğrenmelerini yapılandırmış ve bunun da farkına varmışlardır. İstasyon tekniğine yönelik bu olumlu görüşler literatürdeki birçok araştırma ile paraleldir (Alacapınar, 2009, Avcı, 2015; Batdı & Semerci, 2012; Bekerci, Şimşek, Hamzaoğlu & Yazıcı, 2020; Benek & Kocakaya, 2012; Demir, 2008; Demir, Kartal, Ekici, Öztürk & Bozkurt, 2011; Hall & Zentall, 2000; Mergen, 2011; Özbal, Sağlam & Cavkaytar, 2019).

Bu çalışmada öğrenciler en çok görsel sanatlar istasyonunu sevmişlerdir. Bunu matematik, fen ve Türkçe istasyonları takip etmiştir. Görsel sanatlar istasyonunda geri dönüşüm kutusu ve kukla yapma, karikatür çizme; matematik istasyonunda kodlama ve su doku; fen istasyonunda alternatif ürünler tasarlama; Türkçe istasyonunda ise hikâye ve şiir yazma, bulmaca çözme etkinlikleri çok sevilmiştir. Öğrencilerin en çok sevdikleri istasyon görsel sanatlar istasyonu olmasına rağmen en çok güçlük

yaşadıkları istasyon da bu istasyondur. Bazı öğrenciler görsel sanatlar istasyonunda özellikle kukla yapımında malzemelerin az olması ve kesme, yapıştırma yapmada zorlandıklarını ifade etmişlerdir. Türkçe istasyonunda bazı öğrenciler şiir ve hikâye yazmada zorlanmış, bazı öğrenciler ise matematik istasyonunda su doku ve kodlama etkinliklerini ilk defa yaptıkları için güçlük yaşamıştır. Şiir ve hikâye yazma bilişsel alandaki üst düzey öğrenmelerden biridir. Bu bağlamda istasyon tekniğinde öğrencilerin kısa sürede hayal güçlerini kullanmaları, düşünce üretmeleri, bunu yazıya dökmeleri ve yaratma düzeyinde bir performans göstermeleri gerekmektedir. Öğrenciler bu nedenle zorlanmış olabilir. Bu bulguya paralel olarak Yaman ve Aydemir'in (2018) beşinci sınıf öğrencileriyle noktalama işaretlerinin istasyon tekniği ile öğretimi ile ilgili yaptıkları araştırmada öğrencilerin hikâye yazma, resim yapma ve bilgi istasyonlarını kolay uyguladıkları, slogan oluşturma ve şiir yazma istasyonlarında zorlandıkları sonucuna ulaşmışlardır. Bu sonuçlar araştırma bulguları ile benzerdir.

Araştırmada ulaşılan bulgulardan biri öğrencilerin disiplinler arası istasyon tekniğini eğlenceli, öğretici, öğrenci merkezli, farklı ve ekip çalışması nedeniyle diğer etkinliklerde ve derslerde de kullanılmasını istenmeleridir. İstasyon tekniğini fen ve teknoloji dersinde deneyimleyen yedinci sınıf öğrencileri bu tekniği fen ve teknoloji dersinin tüm konularında ve diğer derslerde de kullanmak istediklerini ifade etmiştir (Benek &Kocakaya, 2012).

Araştırmada öğretmen görüşlerine dayalı olarak da sonuçlara ulaşılmıştır. Uygulama yapılan iki sınıf öğretmeninin gözlemleri ve görüşlerine göre disiplinler arası istasyon tekniğinin öğrenme-öğretme sürecine olumlu katkıları vardır. Bu teknikle eğlendirici, heyecan verici ve öğretici bir öğretim ortamı oluşmuştur. Bu teknik, öğrencilerin üst düzey düşünme becerileri kazanmalarını sağlamış, akran öğrenmesine, çekingen öğrencilerin öğrenme sürecine katılmasına, yardımlaşma ve işbirliği yapmalarına yardımcı olmuş, öğrencilerin el becerilerini geliştirmiştir. Kartal ve Arslan'nın (2022) istasyon tekniğine yönelik öğretmen ve velilerin görüşlerini de incelediği çalışmada bu tekniğin işbirliği yapma, paylaşımcılığı öğrenmeyi, sorumluluk almayı ve yardımlaşmayı öğrenme gibi becerilerin kazanılmasında etkili olduğu belirlenmiştir.

Çalışmaya katılan öğretmenlerin disiplinler arası yaklaşıma dayalı istasyon tekniğine yönelik eleştirileri de bulunmaktadır. Öğretmenlere göre bu tekniğin hazırlık süreci uzun ve zahmetlidir. Bazı öğrencileri ön plana çıkarmakta bazıları ise pasif kalmaktadır. Uygulamada istasyonların aynı hızda ilerlememesi, bazı etkinliklerin daha uzun olması sorun yaratmakta, istasyona gelen bazı öğrencilerin önceki grubun çalışmasını beğenmeyip silmesi de güçlüğe neden olmaktadır. Ayrıca bu tekniğin kullanılması sınıf yönetiminde de sorunlara neden olmaktadır. Kalabalık sınıflarda bu tekniği uygulamak güçtür. İstasyonlar değişirken, ortamda oluşan gürültü ve düzensizlik sınıf kontrolünü zorlaştırmaktadır. Öğretmenlerin bu görüşlerin istasyon tekniğinin sınırlılıkları olarak kabul edilmekte ve bu tekniğin uygulaması ile ilgili yapılan başka araştırmalarda da karşımıza çıkabilmektedir. Araştırmanın bu bulgularına benzer olarak Yaman ve Aydemir (2018) istasyon tekniğinin

uygulamasında sınıfta gürültü ve karışıklık çıktığını ve bu nedenle öğrencilerin çalışmaya odaklanmakta zorlandıklarını ifade etmiştir.

Sonuç olarak disiplinler arası istasyon tekniğinin öğrencilerin bilişsel, duyuşsal ve devinişsel alanda öğrenmelerine katkı sağlamakta, öğretim sürecini zenginleştirmekte, öğrencilerin aktif olarak sürece katılmalarını sağlamakta, dersi eğlenceli hale getirmekte, öğrencilerin işbirliği yapma, özgün ve yaratıcı yeni fikirler üretme, ürün tasarlama ve oluşturma, sorumluluk alma ve yardımlaşma becerilerini geliştirmektedir. Ancak hazırlık aşamasında çok fazla emek ve zaman gerektirmekte ve uygulama sırasında sınıfların kalabalık olması nedeniyle sınıf yönetimi konusunda sıkıntılar da yaşanabilmektedir.

Araştırmada ulaşılan sonuçlar doğrultusunda sunulan öneriler şu şekildedir;

 Disiplinler arası istasyon tekniği farklı sınıf düzeylerindeki kavramların öğretiminde de kullanılabilir.

 Uygulama sırasında yaşanan sorunları gidermek için öğretmenlerin ve öğrencilerin bu tekniği daha sık kullanmaları sağlanabilir. Tekniğin başka derslerde tekrar kullanılması öğrencilerin ve öğretmenlerin deneyimlerinin artmasını sağlayacağından, sonraki uygulamalarda sınıfta yaşanan kargaşa veya gürültü azalabilir.

 Bu çalışma durum çalışması olarak yürütülmüştür. Benzer araştırmalar deneysel olarak yapılabilir.

SCHOOL HOLIDAYS FROM THE PERSPECTIVES OF TEACHERS

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ABSTRACT

It is almost accepted that teachers have a heavy workload. Still, the perception that teachers have long school holidays and ample free time during the school day has become a stereotype. From this perspective, teaching has been a profession that is sometimes envied and sometimes criticized. When considered from this point of view, teachers' holidays were found to be worth researching. This study aims to reveal teachers' opinions about the holidays they have. Maximum diversity sampling was used to review teachers' views and a total of 12 volunteer participants, four teachers from each school level (primary, secondary and high school), were interviewed. According to the findings, the meaning that teachers attributed to holiday was mostly described with the expressions of "discharge", "clearing the mind", "making time for oneself and family", "getting out of routine" and "unplanned". In general, it has been observed that some teachers found the holiday periods ideal, while others found them inadequate. In addition, all of the teachers stated that they have a mentally and physically demanding job and emphasized that there should be plenty of holidays for this profession. However, they also stated that there is a dominant opinion in the society that teachers take many and long vacations and have free time. However, it was revealed that contrary to popular belief, they could not spend the holidays (especially summer vacation) offered to them efficiently.

Keywords: Teacher; holiday; school.

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ÖĞRETMENLERİN GÖZÜNDEN OKUL TATİLİ

ÖZET

Öğretmenlerin ağır iş yüklerinin olduğu neredeyse genel kabul gören bir gerçektir. Buna rağmen toplumda öğretmenlerin uzun okul tatillerine ve gün içinde de geniş boş zamana sahip olduğu algısı kalıplaşmış bir yargı haline gelmiştir. Bu açıdan bakıldığında öğretmenlik, kimi zaman imrenilen kimi zaman da eleştirilen bir meslek olagelmiştir. Buradan hareketle çalışmada öğretmenlerin sahip oldukları tatiller hakkındaki görüşlerini ortaya koymak amaçlanmıştır. Öğretmen görüşlerini incelemek üzere maksimum çeşitlilik örneklemi belirlenmiş ve her okul kademesinden (ilkokul, ortaokul ve lise) dörder öğretmen olmak üzere toplam 12 gönüllü katılımcının görüşlerine başvurulmuştur. Ulaşılan bulgulara göre öğretmenlerin tatile yükledikleri anlam daha çok "deşarj olma", "zihin boşaltma", "kendisine-aileye vakit ayırma", "rutinin dışına çıkma" ve "plansızlık" ifadeleriyle betimlenmiştir. Genel olarak bazı öğretmenlerin tatil sürelerini ideal, bazı öğretmenlerin ise yetersiz bulduğu anlaşılmıştır. Ayrıca öğretmenlerin tamamı zihinsel ve fiziksel olarak zorlayıcı bir iş yaptıklarını belirtmiş ve bu meslekte tatillerin bolca olması gerektiğini vurgulamıştır. Bununla birlikte toplumda genel olarak öğretmenlerin çok ve uzun tatil yaptığı ve boş zamanlarının olduğu yönünde baskın bir kanının olduğunu ifade etmişlerdir. Bununla birlikte kendilerine sunulan tatil imkânlarını (özellikle yaz tatili) sanıldığının aksine verimli bir şekilde geçiremedikleri ortaya çıkmıştır.

Anahtar Kelimeler: Öğretmen; tatil; okul.

1. INTRODUCTION

In general, holiday, which is defined as "the period specified by law as a break from work and the period spent without working in order to have fun and rest" (TDK), is identified with school holiday in the teaching profession. In short, school holiday, which means a break in educational activities for certain periods of time (Atalay & Karaman-Kepenekci, 2022), has created the perception that teachers also benefit from the holiday periods offered to students in the teaching profession. Article 50 of the 1982 Constitution mentions the right of employees to rest. According to this article, "Rest is the right of employees. Holidays, annual leave rights and conditions shall be regulated by law." Therefore, it can be understood from this article that rest is guaranteed as a constitutional right and holiday is an indispensable issue. According to Law No. 657 on Civil Servants (DMK), "The weekly working time of civil servants is generally 40 hours. This period is regulated with Saturdays and Sundays as holidays. However, different working hours may be determined by this law, special laws, presidential decrees or regulations to be issued based on these laws, taking into account the characteristics of institutions and services (Art. 99). Furthermore, "Teachers are considered to be on leave during summer and rest holidays. They are not granted annual leave, except for sick leave and other excuse leaves" (Article 103). According to this provision, it is understood that teachers can benefit from summer and other holidays just like students.

In terms of holidays during the academic year, Turkey has a "summer holiday", two one-week "interim holiday" (in November and April), a "semester break" (winter holiday) between two semesters, and "official holidays" (religious holidays, New Year's holidays, etc.), the day and duration of which

are determined according to the calendar of that year. Teachers, on the other hand, start the academic year one week before students start school (early September). The end of the academic year for teachers also starts one week after students go on summer vacation (early July) (Eurydice, 2021). This process is similar to many other countries on the world and it seems that the holiday time offered to teachers is organized according to the academic year.

Tezcan (1983) considers holiday as one of the important problems of teachers and argues that the problems related to the holidays of teachers who constitute a significant part of the public employees in the country, are not sufficiently emphasized and discussed. In this context, the author states that teaching is seen as a profession with plenty of holidays; however, this is not the case in reality. However, according to the results of some studies (Kantas & Vassilaki, 1997; Kyriacou et al., 1999; Zembylas & Papanastasiou, 2004; Boz, & Boz, 2008; Lam & Yan, 2011; Akar, 2012; Bakar et al., 2014), teaching is seen as an attractive profession because it offers reasonable working hours and long holidays. For example, in Boz and Boz's (2008) study on prospective chemistry and mathematics teachers, participants stated that having a lot of free time and long holidays were among the reasons for becoming a teacher. Similarly, in a study conducted by Kyriacou et al. (1999), it was found that some teacher candidates (51.9%) chose this profession because of long holidays and having more social hours.

The perception that teachers have plenty of time and holiday is one of the frequently discussed issues in society. One of the starting points of this perception is that teachers take advantage of all holiday opportunities for students and therefore have long holidays. The other is the idea that teachers have free time outside of class hours. However, in practice, the holidays available to teachers should not be interpreted in such a simple way (Atalay & Karaman-Kepenekci, 2022). For example, Kinnunen and Leskinen (1989) found that teachers are exposed to intense stress during the academic year and that there is a decrease in stress levels only during weekend and semester breaks. In another study (2003), Ritvanen et al. (2004), who found that teachers' stress levels are balanced and reduced only during long holidays, reached more detailed findings that reveal how important holidays are for teachers. Accordingly, it was found that the psycho-physiological stress level of full-time teachers was high, and during summer vacations, teachers' blood pressure, static muscle tension, general stress level, psychosomatic symptoms and adrenaline levels were greatly reduced.

Lawrie (2011) emphasizes that it is necessary to understand how challenging the work teachers do in the classroom is, and for this reason, long holidays are an important issue for this professional group. As a matter of fact, summer holidays are not only a time when teachers recharge their depleted energies, but also a time when they continue their professional development. In China, which generally provides teachers very short holidays throughout the year, it is understood that teachers in the country have high levels of burnout and stress. For example, Liu and Onwuegbuzie (2012) found that inadequate holidays were among the factors affecting Chinese teachers' turnover intentions.

The perception that teaching offers plenty of holiday time and ample time has also led to a sexist approach to this profession. For example, Drudy (2008) mentions that women can fulfill many of their responsibilities during the day thanks to this leisure time, and therefore there is a judgment in society that teaching is suited to women precisely for this reason. When teacher statistics are analyzed across the world, including Turkey, the high number of female teachers can be attributed to this perception. Among the member countries of the Organization for Economic Cooperation and Development (OECD), the proportion of female teachers at all levels is 69.7% (OECD, 2022). This rate is 96.2% in preschool, 82.6% in primary (basic education) and 63.4% in secondary education. According to the National Education Statistics, 43% of the 993,669 teachers working in public schools in Turkey for the 2020-2021 academic year are male (423,354) and 57% are female (570,315) (MoNE, 2021). At the basic education level, this rate is 63.6%, again showing an increase in favor of women. The proportion of female teachers in Turkey is 54.6% at the secondary education level (OECD, 2022).

A report on gender discrimination by the European Institute for Gender Equality shows that in all EU countries certain professional fields, such as engineering and technology, are dominated by men. In contrast, some jobs are still widely considered to be 'women-only'. These include in particular pre-school education, nursing, midwifery, secretarial, domestic and personal care services. The report draws attention to a particularly sharp and growing gender gap in the teaching profession. Indeed, data from OECD member countries show that, on average, women make up more than two-thirds of teachers in institutions from pre-school to higher education (Katsarova, 2020). According to Drudy (2008), this worldwide result coincides with the idea that women should not interfere with their domestic responsibilities while pursuing their careers; it is interpreted as the manifestation of a culturally supported understanding. Therefore, the sexist roles and responsibilities assigned to women, such as motherhood and fulfillment of household chores, have led to women's preference for professions such as teaching, where there are more vacations and free time during working hours.

For human nature, holiday can generally be considered a necessity. This need appears as an opportunity that every segment of society wants to benefit from in certain periods. However, the duration of the opportunities offered to benefit from holiday is not the same for every professional group. In this context, teachers' holiday periods have long been discussed and criticized in various ways. The fact that this issue is mostly speculative in the society leads to the need to question the reality of this claim. In this respect, the issue of teachers' holidays was deemed worthy of research due to the perception that they have more holiday opportunities and less working hours compared to other professions. The study aims to reveal the views of teachers about the holidays they have-benefit from.

In order to achieve the stated general purpose, the following questions were sought to be answered in the study:

1. What does holiday mean according to the teachers?

2. What are teachers' a) individual views and b) social perceptions about school holidays?

3. What are the teachers' views on the of a) summer holidays, b) semester holidays, c) mid-term holidays, and d) free time outside of class hours during the week in terms of;

- ☐ The necessity,
- ☐ The duration,
- ☐ How it is spent and
- ☐ How it should be spent?

2. METHOD

Under this heading the research design, study group, data collection and analysis subheadings are given.

2.1. Research Model

This study, which aims to reveal teachers' views on the holidays they have, is based on the basic qualitative research. In basic qualitative research the researcher tries to understand the meaning of a phenomenon according to those who participate in the phenomena. Meaning is made but not discovered. Therefore, researchers conducting basic qualitative research are interested in (1) how people interpret their experiences, (2) how they construct their world, and (3) what meaning they bring to their experiences (Merriam, 2013, 22). In this study, in-depth interviews were conducted in accordance with the purpose of the research design since it was decided that revealing teachers' perceptions, reactions, descriptions and experiences about school holiday would be best revealed with this approach.

2.2. Participants

The study was based on maximum variation sampling and 12 teachers working in primary, secondary and high schools in Van province who volunteered to participate in the study constituted the study group. Meriam (2013) states that when to terminate data collection depends on the theoretical and practical nature of the research. Accordingly, it is suggested that a very small increase in knowledge compared to the effort made to collect information can be taken as a criterion for saturation (Meriam, 2013). Charmaz (2006) states that if the researcher finds the data sufficient, it would not be correct to talk about a certain sample size in the collection of qualitative data. As a result of the teacher's opinions, it was decided that the research questions were answered in detail and adequately. Personal information about the teachers who participated in the study is presented in Table 1.

Table 1. Demographic information of the participants in the study group

Participant Code	Grade	Gender	Branch	Educational Background
T1	Primary school	Female	Primary teaching	master's degree
T2	Primary school	Female	Primary teaching	undergraduate
T3	Primary school	Male	Primary teaching	undergraduate
T4	Primary school	Male	Primary teaching	undergraduate
T5	Middle School	Female	English	undergraduate
T6	Middle School	Female	Turkish teaching	undergraduate
T7	Middle School	Male	Math	master's degree
T8	Middle School	Female	Religious culture	undergraduate
T9	High School	Female	English	master's degree
T10	High School	Female	Geography	undergraduate
T11	High School	Male	History	undergraduate
T12	High School	Male	Turkish literature	master's degree

Four teachers from each level participated in the study. Seven of the participants were female and five were male. There were only four teachers with postgraduate education (master's degree).

2.3. Data Collection and Validity/Reliability Studies

A semi-structured interview form was developed by the researchers in line with the sub-problems of the study in order to reveal teachers' views. With this form, detailed information and a rich description were prepared by asking probing questions after the open-ended questions asked to the participants. As suggested by Cresswell (2015), the answers given to each question in the interview form were analyzed separately by two researchers for the reliability of the research; codes were created and completed (Creswell, 2015). In addition to this, the findings of the research were verified by an independent reader in line with the auditing technique suggested by Lincoln and Cuba (1985 cited in Meriam, 2013); thus, it was aimed to create internal validity and consistency. For the validity of the data analysis, it was checked whether the codes and themes created were related to the purposes. Direct quotations were frequently used in the study to support the categories created with the opinions obtained. In addition, in order to increase the credibility of the research, tactics that support participant honesty were used. For this purpose, the research was conducted only with people who were ready to contribute of their own free will; each of the participants was given the opportunity to refuse participation, ensuring that the data were obtained from sincerely and honestly expressed opinions (Shenton, 2004 cited in Arastaman et al., 2018). In addition, consent was requested from the participants involved in the research regarding the interview transcripts. In this way, it was aimed to ensure that the formalized analysis and themes created as a result of the opinions obtained were accurately represented.

2.4. Data Analysis

The data obtained were analyzed through content analysis. In this direction, frequency distributions of the participants' views were given. Direct quotations were frequently used in the study,

so that the categories created were supported by the opinions obtained from the participants. The teachers in the study were coded as T1, T2, T3.

3. FINDINGS

The meanings attributed to holiday according to the views of the teachers participating in the study are shown in Figure 1.
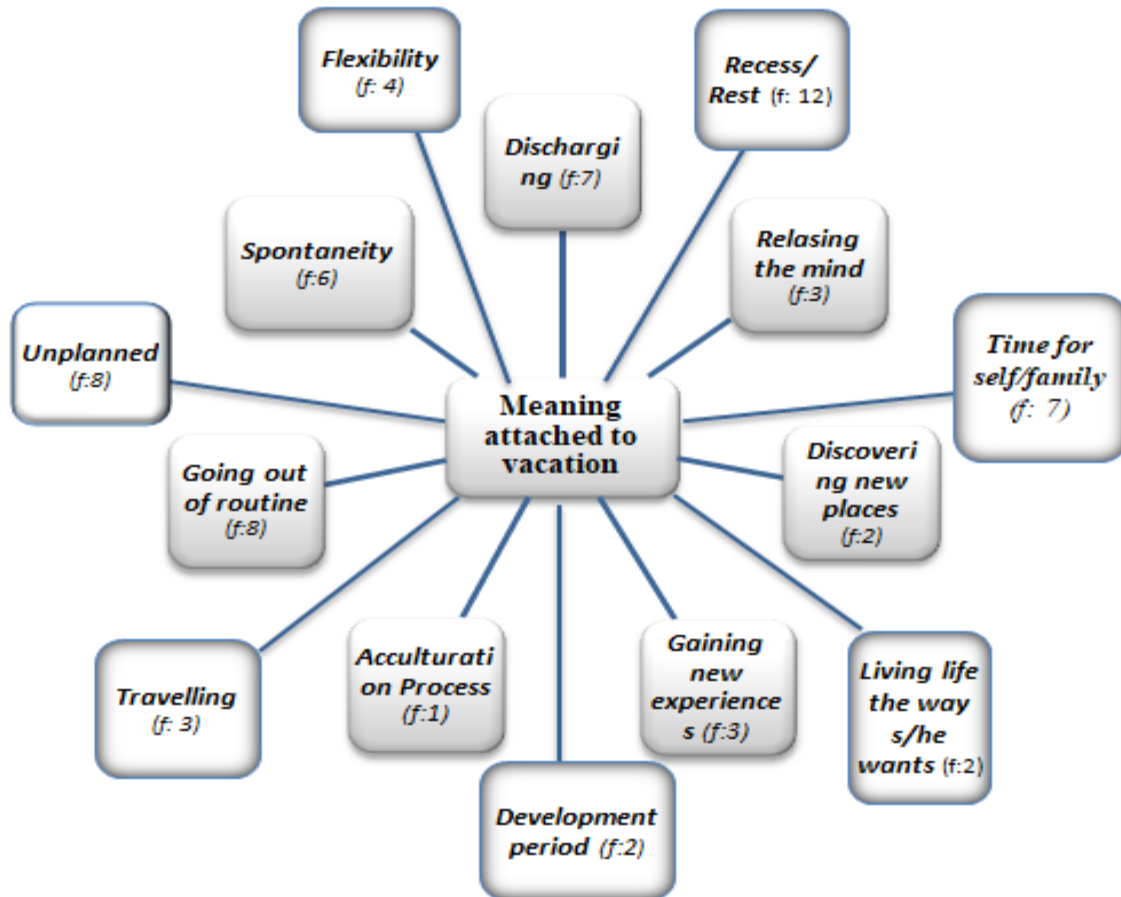
Figure 1. Concepts related to the meaning that teachers attribute to (utilized) holiday

It is understood that teachers generally see holidays as a time of rest and break (f: 12). In addition, the concepts of rest (f: 12) unplanned (f: 8), going out of routine (f: 8), and time for self/family (f: 7) stand out among the meanings attributed to vacation. However, it is understood that some teachers expressed holiday as discovering new places (f: 2) and gaining new experiences (f: 3), and the low number of participants who made statements in this direction draws attention. Similarly, the number of participants who defined holiday as a period of development (f: 2), traveling (f: 3) and acculturation process (f: 1) is also low. As a result, it is noteworthy that there are no expressions such as having fun or having a pleasant time. Teachers' views regarding reflections both individual and social perceptions about holidays are presented in Table 2.

Table 2. Teachers' views regarding reflections both individual and social perceptions

Category		Code	n
Individual Reflections	☐	Ideal-as it should be	8
	☐	There should be plenty of vacation for this profession	8
	☐	An essential need	6
	☐	Restrictive and problematic (very difficult to get permission during the academic year)	4
	☐	Inadequate	4
Reflections of Social Perception	☐	There are too many holidays.	12
	☐	There are 3 months of full summer holiday	8
	☐	Part-time job (the idea that teachers work half a day)	9
	☐	Lots of free time outside the classroom	10
	☐	Suitable and essential for women (especially mothers)	8

According to Table 2, the majority of the participants (f: 8) think that there should be plenty of holidays and free time in the teaching profession and that the current holiday periods are ideal. However, there are also teachers (f: 4) who think that holiday arrangements during the academic year are restrictive and problematic. In this context, T2's views are as follows:

> Sometimes it feels like we will never be able to take any action during the year that goes beyond the set schedule. Even when we get sick, the issue of the child falling behind becomes more important, however we teachers have enough to worry about. But it makes me sad to feel that we are so insignificant once again. It's not just the illness, sometimes it's also problematic for me that we don't have the right not to come to work like everyone else or to take a small vacation whenever we want. We are in a very robotic structure. Both children and us... I don't know how else to find a way out, but I don't think anyone is happy.

When the views of the participants on social perception are examined, it is understood that teachers generally have too many holidays (f: 12) and that they spend three full months of summer holiday (f: 8). In addition, according to the participants, the idea that teachers have free time (f: 10) in the society is also dominant. It is stated that teaching is considered as a half day work (f: 9). Finally, there are also participants who stated that there are perceptions (f: 8) that the teaching profession is associated with women, especially as a motherhood concept, in the society. The views of T7, one of the female participants, on this issue are as follows:

> I don't know why, there was always the idea of "if women were to be employed in a profession, at least they should be teacher so that they would be comfortable" was dominant in the society. I think this thought was more intense in the past and now we are seeing the results of this. This has trivialized both the profession and women. They trampled on the value of the profession as if it was a very simple job, and by attributing it only to women, they once again gave women roles which determined from the outside. The teachers' room has started to be full of women. It is very cruel. Especially when you become a mother, it becomes a very pleasant profession for

a woman, isn't it? There is a lot of free time, you can take care of the child, and you can do housework and cooking (!) These are all very wrong judgments.

Teachers' views on "summer vacation" are presented in Table 3.

Table 3. Teachers' views on summer vacation

Category		Code	n
Necessity	☐	Definitely	12
Duration	☐	Adequate-ideal	6
	☐	Insufficient-little	2
	☐	Too long	4
The way it is currently spent	☐	doing anything productive in real life	7
	☐	Staying in the cities of residence (an average of one week of vacation outside the city, depending on financial means; the rest of the time spent at home)	8
	☐	Doing activities with groups of friends with the desire to increase social interaction	10
How it should be spent	☐	Education-oriented visits internationally	5
	☐	Professional meetings (sharing experiences and stories with teachers from all over the country)	7
	☐	Participation in training sessions	6
	☐	Practical (useful and interesting) seminars	10
	☐	Longer rest and entitlement to discounts on vacation deals for it	2

All teachers (f: 12) think that summer vacation is an absolutely necessary period of time for this profession. Besides, some teachers (f: 6) stated that the duration was ideal, some (f: 2) stated that it was too little and some (f: 4) stated that it was too long. It was observed that most of the teachers (f: 10) spent the summer holiday by staying in social interaction with groups of friends, and a significant number of them (f: 8) stayed in their cities. Some teachers (f: 7) stated that they spent their summer holidays without actually doing anything productive. In terms of how summer holidays should be spent, the teachers suggested practical (useful, interesting) seminars (f: 10), professional meetings to share experiences and stories (f: 7), attending branch-specific training opportunities (f: 6), making education-oriented visits (f: 5), and being offered discounts on vacation opportunities (f: 2) in order to have a longer resting holiday. Some direct quotations obtained from teachers' views on summer holiday are as follows:

> I think summer holidays should definitely continue in this way. I don't know if this perception is related to the holiday time we have been accustomed to since we were children, but how they are spent is the most painful thing for me. Most teachers are not able to travel, see and be cultured even in their own country and spend an international vacation. They cannot spend a week in a hotel. We call the time when the school is closed as a holiday, but we are only not working, we are not on a vacation. (T1)

Summer holiday is necessary, of course. It makes it more possible for us to do some activities. In terms of duration, it is long only for summer, it can be spread over the whole year. In my opinion, holidays should be balanced. While resting on the one hand, on the other hand, we can be involved in certain activities that will provide satisfaction according to our professional interests (e.g. professional meetings, camps, education-oriented visits.) I believe that a teacher should be an individual who does not get tired of lifelong learning, but rather enjoys it. Holiday is a good opportunity to learn new things, to overcome our deficiencies. This is all about the teacher's professional responsibility and its perspective on his/her profession. (T2)

Summer holidays are generally the periods when students cannot spend time at school because of the hot summer weather. From this point of view, this holiday is of course necessary. I think summer holidays are not used efficiently by teachers; however they can be used as a very productive period by teachers who always have to improve themselves. I believe that summer holiday is more than necessary. At this point, I believe that holiday periods can be reduced so that teachers can come to their schools when students are not at school and prepare for training and activities. (T3)

Teachers' views on "semester" are presented in Table 4.

Table 4. Teachers' views on semester holiday

Category	Code	n
Necessity	☐ Definitely	12
Duration	☐ Adequate-ideal	9
	☐ Insufficient-little	2
	☐ Too long	1
The way it is currently spent	☐ Rest (mentally and physically)	10
	☐ Cinema, theater, reading books, etc.	6
	☐ Making and reviewing work plans	5
	☐ For tourism	4
How it should be spent	☐ Participating in and being encouraged to participate in cultural activities	7
	☐ Making arrangements to overcome deficiencies (personal and professional development)	5
	☐ Increasing mental and physical relaxation	4

All of the teachers participating in the study (f: 12) think that the semester break is necessary and the majority of them (f: 9) state that its duration is ideal. It is understood that semester breaks are generally spent for resting (f: 10). There are teachers (f: 6) who spend this holiday with activities such as cinema, theater, and reading books, but there are also teachers (f: 6) who spend it making and reviewing study plans. Teachers believe that this period should be spent by participating in cultural activities (f: 7), making arrangements to overcome deficiencies (f: 5), and resting physically and mentally (f: 4). Some direct quotations obtained from teachers' views on the semester are as follows:

I think semester holidays are necessary and sufficient both in terms of time and duration. Generally, for teachers working in the east, far away from their families and relatives, it is usually spent for visiting time and for other teachers for rest and tourism. Frankly speaking, I do the same (T6).

Semester holidays are also necessary and their duration is sufficient in my opinion. Neither students nor teachers are disconnected from school unlike summer holiday. I am in favor of doing cultural activities (cinema, theater, reading books, etc.) that we could not find the opportunity to do due to the intensity I think all teachers should focus on cultural activities as well as resting during this period. (T7)

Semesters are very necessary, as they help students to relieve the fatigue they experience during the 4-5 months of training for two weeks. Of course, teachers also suffer from this fatigue and it is obvious that they also need such a holiday. Unfortunately, these holidays are perceived as only a rest for teachers, whereas these are very important periods that should be used for both resting and reviewing the mistakes made during the semester and planning the work for the coming period, I think that the two-week period is sufficient for both resting and not being away from school. (T12)

Teachers' views on "midterm holiday" are presented in Table 5.

Category	Code		n
Necessity	☐	Definitely	12
Duration	☐	Adequate-ideal	8
	☐	Insufficient-little	4
The way it is currently spent	☐	Rest (mentally and physically)	6
	☐	Seminar activities	12
	☐	Process evaluation	10
How it should be spent	☐	Relevant, interesting, useful professional trainings (seminars)	12

According to the views of the participants, interim holidays, which have been implemented in recent years, are absolutely necessary (f:12) and their duration is ideal (f:8). However, there are also participants (f:4) who argue that this period is insufficient. It is understood that the mid-term breaks are mostly spent with seminar studies (f:12). In addition to this, there are also teachers who spend this period as process evaluation (f:10) and rest (f:6). Finally, all of the teachers (f:12) think that useful, interesting and useful trainings (seminars) should be given during this time. Some direct quotations obtained from the teachers' views on the midterm vacation are as follows:

In my opinion, mid-term holidays are one of the recent innovations in the education system. After a two-month period of education, it has been a very useful practice for students and teachers to stop and think, evaluate the process and rest a little. I think the duration is quite reasonable. (T1)

It is very restrictive to compress holidays into just summer and semester. That's why I believe that these interim vacations are necessary; they're just a little bit shorter. It is usually spent for rest. If the duration is a little longer, it can be used efficiently for both rest and professional development. (T3)

Mid-term holidays are very good for students. We are able to analyze the situation both with our teachers and through seminars. Although I cannot call it a holiday, it is necessary. (T9)

Here, I think it is useful in terms of student rest for a week and teachers' professional studies. A one-week period is quite ideal. However, there is a need for more useful and striking seminars. (T10)

Teachers' views on the time outside of weekday class hours are presented in Table 6.

Table 6. Teachers' views on time outside of class hours

Category	Code	n
Necessity	☐ Definitely	12
Duration	☐ Adequate-ideal	2
	☐ Insufficient-little	9
	☐ Too long	1
The way it is currently spent	☐ Rest (mentally and physically)	10
	☐ Planning-review-preparation	12
	☐ Return to private life	8
How it should be spent	☐ Preparation-planning activities	9
	☐ Rest (mentally and physically)	12

All of the participants (f: 12) think that the remaining time outside of class is absolutely necessary for them. There are also teachers (f: 9) who claim that the remaining time is too little. It is understood that all of the teachers (f: 12) focus on planning, reviewing and preparation during these time. Although there were also teachers who spent this time resting (f: 10), there were also teachers who stated that they sometimes returned to their personal lives (f: 8). Similarly, teachers believe that the time outside of class on weekdays should be spent in preparation-planning (f: 9) and resting (f: 12). Some direct quotations obtained from teachers' views on the time outside of class hours during the weekdays are as follows:

> Free time outside of class hours is not a practice designed to allow teachers to rest and have free time. They are gaps created due to the programs created according to the course hours that students are pedagogically required to take. From this point of view, it can even be considered that its duration is not excessive, but rather insufficient. Although these processes are not spent efficiently by most of the teachers, when they are used properly, they can be used both for the evaluation of the practices done that day and for the planning of the practices to be done in the following days. (T1)

> Teachers are human beings too. They should be able to rest when they are tired. In my opinion, free time during the week should be rest time. (T4)

> I believe that the duration of these times is insufficient because these times are already spent planning and dealing with children and related problems or issues. I think there should be more time to rest, to breathe a little bit. (T6)

> I think activities outside of class hours are very important. These free times should be spent efficiently in order to keep the teacher's motivation high. (T11)

4. DISCUSSION, CONCLUSION AND SUGGESTIONS

The results of the study show that teachers regard holidays as a time of rest. This meaning that teachers attribute to holidays seems to be valid for all holidays types of the year and the way they spend their holidays mostly serves this purpose. From this perspective, it seems that teachers are both physically and mentally exhausted during the year and need to rest. As a matter of fact, this need is understandable considering how strenuous job teachers do. The studies conducted by Ritvanen et al.

(2003, 2004) also support this conclusion. The researchers found that teachers have high levels of psycho-physiological stress during the teaching and learning periods and that they are largely relieved from this situation during holiday periods. Therefore, rest and having enough time for personal life are very important for teachers. Otherwise, some studies (Meng, 2004; Liu & Onwuegbuzie, 2012; Liu, 2012) suggest that teachers who have very little holiday have high turnover intentions.

Considering the meanings that teachers attribute to holiday, it was observed that they do not make a plan for holiday and a spontaneous process prevails during these times. However, it is understood that some teachers define holiday as seeing new places, traveling, acculturating and gaining new experiences. It is noteworthy that the number of teachers who attribute this meaning to holiday is few; and there are no expressions such as having fun or having a pleasant time. This situation can be evaluated in the sense that although they think that they have an ideal holiday amount; teachers cannot spend this period qualitatively. As a matter of fact, direct quotations obtained from teachers support this situation. According to the research findings, it is understood that teachers are deprived of long trips and vacations (such as cultural, sea and foreign trips) due to financial difficulties. It has long been discussed that teachers' salaries are lower than many other professional groups. Various studies (Erdem, 2010; Tösten & Özgan, 2017; Ünsal, 2018; Bozbayındır, 2019; Cantürk, 2021; Gürbey et al). This situation constitutes a serious obstacle for teachers to spend quality holidays. Considering that this problem also significantly affects the status of the profession and the value attributed to it in society (Richardson & Watt 2006), it is noteworthy that teachers do a job that is not preferred by most people; therefore, the holidays offered to them should not be considered too much (Christie, 2019). Finally, it is noteworthy that the participants did not include positive expressions such as "having fun, having a pleasant time" in terms of the concept of holiday and the meaning they attribute to it.

The majority of teachers believe that there should be plenty of holidays in this profession and think that the current holiday periods are ideal. This situation causes teachers to develop a relatively positive attitude towards the profession. As a matter of fact, studies (Zembylas & Papanastasiou, 2004; Lam & Yan, 2011), which reveal that the reasons for choosing the teaching profession include the suitability of working hours and holiday opportunities, also support this finding. Considering the fact that teaching is a tiring and exhausting profession, more holiday may somewhat offset these effects of the profession. This is because teachers may have a lot of additional responsibilities such as taking on a parental role, providing social and psychological support, meetings and reports while carrying out their teaching practices (Bouras, 2019). From this point of view, holiday is not a luxury for teachers, but a necessity for them to maintain a stable and more productive career. Beyond all these, holiday arrangements during the year are interpreted by some teachers as restrictive and problematic. Indeed, the Civil Servants Law No. 657 states that "Teachers are considered to be on leave during summer and rest vacations. They are not granted annual leave, except for sick leave and other excuse leaves" (Article 103). According to this article, it is seen that teachers are not given additional annual leave except for

excuse leaves (sickness, marriage, etc.) because they benefit from summer vacation. This situation leads teachers to interpret this regulation as restrictive since they do not have the right to take leave during the year.

According to the participant views, when the views of the society on the perception of holidays were examined, it was concluded that teachers have holidays too much, have a lot of free time, and almost do not work except for half a day. In his study, Buchanan (2010) includes the participant's view that "society has a perception that teachers are always on holiday". Although there are no studies that support this finding and reveal the society's opinion about the perception of the profession in this way, some studies on pre-service teachers (Kyriacou et al., 1999; Boz, & Boz, 2008; Bakar et al., 2014) revealed that having the advantage of having plenty of holiday and ample time was among the reasons for choosing this profession.

There is a social perception that integrates the teaching profession with the female gender. According to the findings of the study, most of the teachers mentioned the perception that this is a suitable profession especially for women who are mothers or who are expected to be mothers in the future due to the perception that there are plenty of holidays. This issue, which is also discussed by Drudy (2008), is associated with the fact that women can easily fulfill many responsibilities during the day (taking care of children, housework, etc.) due to the perception of free time. When the statistics on teacher employment worldwide, including Turkey, are analyzed, the high number of female teachers supports this perception. In fact, the rate of female teachers at all levels in OECD member countries is 69.7% (OECD, 2022). Of the 993,669 teachers working in public schools in Turkey for 2020-2021, 43% are male (423,354) and 57% are female (570,315) (MoNE, 2021). Data from OECD member countries show that, on average, women make up more than two-thirds of teachers from pre-school to higher education (Katsarova, 2020). According to Drudy (2008), this worldwide result coincides with the idea that women should not interfere with their domestic responsibilities while pursuing their careers; it is interpreted as the manifestation of a culturally supported understanding. Therefore, the roles and responsibilities assigned to women in society have led to women's preference for professions such as teaching, which are perceived to offer more holidays and free time during working hours.

It is clear that summer holidays are very important for the teaching profession. This period of time, which all participants found necessary, can be considered as a process in which teachers relieve the physical and mental fatigue of the whole year. Lawrie (2011) similarly emphasizes that teachers do a very difficult job and long holidays are an important issue for them. This finding is supported by the fact that teachers in China, which provides teachers with very short holidays, have high levels of burnout and stress. It is also noteworthy that insufficient holidays are among the factors affecting teachers' turnover intentions (Liu & Onwuegbuzie, 2012). It can be understood how important summer vacations are as a process in which teachers both recharge their depleted energies and continue their professional development.

It was found that most of the teachers spent their summer holiday in social interaction with groups of friends and a significant number of them stayed in their home cities. Some teachers, on the other hand, mentioned that they spent their summer holidays without actually doing anything productive. Teachers suggested interesting and useful seminars, professional meetings, attending training camps, and making visits abroad. From this point of view, it is seen that teachers want to continue their professional development even during the summer holidays and they want to achieve this with useful and interesting practices for themselves.

The semesters are also considered necessary and of sufficient duration by the teachers. Teachers who stated that they spend this holiday mostly for resting believe that this period generally should be spent by resting physically and mentally, participating in various cultural activities and making arrangements to eliminate deficiencies. Argon and Koçak (2019) also found in their study that teachers see semester and summer vacations as a satisfactory situation to relieve professional fatigue.

The midterm holidays, which was put into practice for the first time in the 2019-2020 academic year, is held twice a year for one week. Teachers who participated in the study found this holiday, which is usually held in April and November, necessary. All of the teachers stated that they spent this period with seminar activities. They also stated that there should be useful and interesting seminars in this period and they usually spend the rest of their time by relaxing. According to Doğan's (2020) study on primary teachers, among the positive opinions of teachers about this holiday, the opportunity to rest is the most stated. In Kaya's (2021) study on secondary school teachers, it was found that conducting professional practices in these intervals is more effective, restful, relaxing and motivational.

All of the participants think that the remaining time outside of class is absolutely necessary for them. There are also some teachers who argue that this time is too little. When the way the time outside of class is spent is analyzed, it is understood that all of the teachers focus on planning, reviewing and preparation. Similarly, teachers believe that the time outside of class hours on weekdays should be spent preparing, planning and resting. The OECD report for 2021 states like that; *Outside of the legal working hours for teaching, teachers spend some of their time on tasks such as assessing students and preparing lessons. This also implies that teachers need to fulfill these tasks in their personal time and therefore work more than the legal working hours require.* This view expressed by the OECD, of which Turkey is a member, in the context of all countries proves that the teaching profession continues outside of working hours (Atalay & Karaman-Kepenekci, 2022). Therefore, it is clear that teachers cannot spend their time outside the classroom in an arbitrary way or in a way that they immediately return to their private lives.

The teaching is a very stressful and exhausting profession. From this point of view, the fact that teachers have free time outside the classroom and they seem to take too much holiday is a necessity due to the nature of this profession. Therefore, as some researchers (Zembylas & Papanastasiou, 2004; Boz,

& Boz, 2008; Lam & Yan, 2011; Bakar et al., 2014; Kantas & Vassilaki, 1997; Kyriacou et al., 1999; Akar, 2012) found, teaching, which can be preferred only because of these characteristics, has ceased to be attractive as a career profession (Lam & Yan, 2011). Considering that the prestige of teaching has relatively decreased, that there is a declining respect and reputation for the profession in society, and that this profession, which performs the sublime task of educating students, is paid low salaries compared to many other professions, it can be seen that the issue of excessive holiday and free time discussed is quite unwarranted. Beyond all these, it is considered necessary for teachers to benefit from school vacations for the following reasons;

- Keeping teacher motivation high,
- Making education and training processes more efficient,
- Mental and physical readiness,
- Planning-organizing the training activities to be carried out, eliminating the deficiencies,
- Continuing professional development and self-review,
- Making time for social activities and family.

Teachers need financial and moral support to ensure effective participation in artistic and social activities. In this regard, it may be suggested that the ministry allocate a fund for them and implement some practices to encourage participation in designated cultural activities. In addition, there is a need for the seminar activities offered to teachers during holiday to be effective, need-oriented, enjoyable and appropriate. Finally, further research on teachers' holidays with other stakeholders such as students, school managers and parents is recommended. Besides, examining other vocational groups in terms of understanding of teachers' perspectives on vacation might be useful to present a general overview of the subject and will give a more comprehensive idea.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET
ÖĞRETMENLERİN GÖZÜNDEN OKUL TATİLİ

GİRİŞ

Genel olarak *"Kanun gereğince çalışmaya ara verileceği belirtilen süre ve eğlenmek, dinlenmek amacıyla çalışmadan geçirilen süre"* (TDK) olarak tanımlanan tatil, öğretmenlik mesleğinde okul tatili ile özdeşleştirilir. Kısaca eğitim-öğretim faaliyetlerine belli sürelerle ara verilmesi anlamına gelen okul tatili ise (Atalay & Karaman-Kepenekci, 2022) öğretmenlik mesleğinde öğrencilere sunulan tatil sürelerinden öğretmenlerin de faydalandığı algısını oluşturmuştur. 1982 Anayasasının 50. maddesi çalışanların dinlenme hakkından bahseder. Bu maddeye göre *"Dinlenmek, çalışanların hakkıdır. Tatiller, yıllık izin hakları ve şartları kanunla düzenlenir."* Dolayısıyla bu madde ile dinlenmenin anayasal bir hak olarak güvence altına alındığı ve tatilin vazgeçilmez bir unsur olduğu anlaşılabilir.

Öğretmenlerin bol tatile sahip olduğu algısı toplumda sıkça tartışılan konulardan biri olarak gözlenmektedir. Bu algının çıkış noktalarından biri, öğretmenlerin öğrencilerin tüm tatil fırsatlarından yararlandığı ve dolayısıyla uzun tatiller yaptığıdır. Diğeri ise öğretmenlerin ders saatleri dışındaki zamanlarda serbest olduğu düşüncesidir. Ancak pratikte öğretmenlerin faydalanabildiği tatillerin bu kadar basit şekilde yorumlanmaması gerekmektedir (Atalay&Karaman-Kepenekci, 2022). Örneğin Kinnunen ve Leskinen (1989) öğretmenlerin eğitim-öğretim yılı içinde yoğun strese maruz kaldıklarını ve sadece hafta sonu tatilleri ile dönem sonu tatillerinde bu stres seviyelerinde azalma olduğunu ortaya koymuşlardır. Öğretmenlerin stres düzeylerinin sadece uzun tatillerde dengelendiğini ve azaldığını tespit eden Ritvanen ve diğerleri (2004) yaptıkları diğer bir araştırmada (2003) ise öğretmenler için tatilin ne kadar önemli olduğunu ortaya koyan daha ayrıntılı bulgulara ulaşmışlardır. Buna göre tam zamanlı çalışan öğretmenlerin psiko-fizyolojik stres düzeyinin yüksek olduğu; yaz tatillerinde ise öğretmenlerin kan basıncında, statik kas gerginliğinde, genel stres düzeyinde, psiko-somatik semptomlarında ve adrenalin düzeyinde büyük ölçüde kurtulduğu ortaya çıkmıştır.

Öğretmenlerin tatil süreleri de uzun zamandır çeşitli şekillerde konuşulan ve eleştirilen bir konu olarak gözlenmektedir. Bu konunun daha çok toplumda spakülatif olarak yer alması bu iddianın gerçekliğinin sorgulanması ihtiyacını doğurmaktadır. Bu yönüyle diğer mesleklere göre tatil imkânlarının fazla ve çalışma saatlerinin daha az olduğu algısından dolayı öğretmenlerin tatili konusu araştırmaya değer bulunmuştur. Çalışmada öğretmenlerin sahip oldukları-faydalandıkları tatiller hakkındaki görüşlerini ortaya koymak amaçlanmıştır.

Belirtilen genel amaca ulaşmak için çalışmada aşağıdaki sorulara cevap aranmıştır:

1. Öğretmenlere göre tatil kavramı ne ifade etmektedir?
2. Öğretmenlerin okul tatilleri hakkındaki; a) bireysel görüşleri, b) toplumsal algıya ilişkin görüşleri nelerdir?

3. Öğretmenlerin, a) yaz tatillerinin, b) sömestr tatillerinin, c) ara tatillerinin ve d) hafta içi ders saatleri dışındaki boş zamanlarının;

- Gerekliliğine,
- Süresine,
- Nasıl geçirildiğine ve
- Nasıl geçirilmesi gerektiğine ilişkin görüşleri nelerdir?

YÖNTEM

Öğretmenlerin faydalandıkları tatiller hakkındaki görüşlerini ortaya koymayı amaçlayan bu çalışmada fenomenoloji yaklaşımı esas alınmıştır. Öğretmenlerin okul tatiline yönelik, algılarını, tepkilerini, betimlemelerini ve deneyimlerini ortaya koymanın en iyi bu yaklaşımla ortaya konulacağına karar verildiğinden bu çalışmada araştırma desenin amacına uygun olarak derinlemesine görüşmeler yapılmıştır. Araştırmada maksimum çeşitlilik örneklemi temel alınmış olup Van ilindeki ilkokul, ortaokul ve lise kademesinde görev yapan ve araştırmaya katılmaya gönüllü 12 öğretmen çalışma grubunu oluşturmuştur. Öğretmen görüşlerini ortaya koymak için araştırmanın alt problemleri doğrultusunda araştırmacılar tarafından yarı yapılandırılmış bir görüşme formu geliştirilmiştir. Elde edilen veriler içerik analizi yoluyla çözümlenmiştir. Bu doğrultuda katılımcıların görüşlerinin frekans dağılımları verilmiştir. Çalışmada doğrudan alıntılara sık sık yer verilmiş, bu sayede oluşturulan kategorilerin katılımcılardan elde edilen görüşlerle desteklenmesi sağlanmıştır.

BULGULAR ve TARTIŞMA

Araştırma sonuçları öğretmenlerin tatile daha çok *dinlenme zamanı* gözüyle baktıklarını göstermektedir. Öğretmenlerin yükledikleri bu anlam yıl içindeki tüm tatil düzenlemeleri için geçerli görünmekte ve tatili geçirme durumları da çoğunlukla bu amaca hizmet etmektedir. Bu açıdan bakıldığında öğretmenlerin yıl içinde hem bedensel hem de ruhsal olarak oldukça yorulduklarını ve dinlenmeye ihtiyaç duydukları söylenebilir. Nitekim öğretmenlerin ne kadar yıpratıcı bir iş yaptıkları düşünüldüğünde bu ihtiyacın anlaşılabilir olduğu belirtilebilir. Ritvanen ve diğerlerinin (2003, 2004) yaptıkları çalışmalar da bu sonucu desteklemektedir. Araştırmacılar öğretmenlerin eğitim öğretim dönemleri içinde psiko-fizyolojik stres düzeyinin yüksek olduğunu ve tatil dönemlerinde bu durumdan büyük ölçüde kurtulduklarını ortaya koymuştur. Dolayısıyla dinlenme ve kişisel hayata yeterli vakit ayırabilme hali öğretmenler için oldukça önemlidir. Zira aksi durumlarda çok az tatil yapabilen öğretmenlerin işten ayrılma niyetlerinin yüksek olduğunu ileri süren çalışmalar (Meng, 2004; Liu & Onwuegbuzie, 2012; Liu, 2012) da bulunmaktadır.

Araştırma sonuçlarına göre öğretmenlerin büyük çoğunluğu meslekte bol tatil olması gerektiğine inanmakta ve mevcut tatil sürelerinin ideal olduğunu düşünmektedir. Bu durum öğretmenlerin nispeten mesleğe yönelik olumlu bir tutum geliştirmelerine neden olmaktadır. Nitekim öğretmenlik mesleğini seçme nedenleri arasında çalışma saatlerinin uygunluğunu ve tatil fırsatlarının

olduğunu ortaya koyan çalışmalar (Zembylas & Papanastasiou, 2004; Lam ve Yan, 2011) da bu bulguyu desteklemektedir.

Katılımcı görüşlerine göre toplumun tatil algısına ilişkin görüşleri irdelendiğinde ise öğretmenlerin çok fazla tatil yaptığı, boş zamanlarının çok olduğu, neredeyse yarım gün dışında çalışılmadığı sonucu çıkmıştır. Buchanan (2010) yaptığı çalışmasında "toplumun, öğretmenlerin her zaman tatilde oldukları yönünde bir algıya sahip olduğunu" belirten katılımcı görüşüne yer vermektedir. Genel olarak mesleğin bu şekilde algılanmasına yönelik toplum düşüncesini ortaya koyan ve bu bulguyu destekleyen çalışmalara rastlanmamakla birlikte öğretmen adayları üzerinde yapılan bazı araştırmalar (Kyriacou vd., 1999; Boz, & Boz, 2008; Bakar vd., 2014) bu mesleği seçme nedenleri arasında bol tatil ve geniş zaman avantajına sahip olma ortaya konulmuştur.

SONUÇ

Öğretmenlik mesleği oldukça stresli ve yıpratıcı bir meslek olarak görülebilir. Bu açıdan bakıldığında ders dışında boş zamanlarının olması da tatili fazla yapıyor görünmeleri de bu mesleğin doğası gereği zorunlu bir ihtiyaç olarak belirmektedir. Dolayısıyla bazı araştırmacıların (Zembylas & Papanastasiou, 2004; Boz, & Boz, 2008; Lam & Yan, 2011; Bakar vd., 2014; Kantas & Vassilaki, 1997; Kyriacou vd., 1999; Akar, 2012) tespit ettiği gibi sırf bu özelliklerinden dolayı tercih edilebilen öğretmenlik, bir kariyer mesleği olarak cazip olmaktan çıkmıştır (Lam&Yan, 2011). Günümüzde öğretmenliğin prestijinin nispeten düştüğü, mesleğe yönelik toplumda azalan bir saygı ve itibarın söz konusu olduğu ve öğrenci eğitmek gibi ulvi bir görev ifa eden bu mesleğe diğer pek çok meslek grubuna göre düşük maaş verildiği düşünüldüğünde tartışılagelen fazla tatil ve boş zaman konusunun oldukça yersiz olduğu görülebilir. Tüm bunların ötesinde okul tatillerinden öğretmenlerin de faydalanması;

- Öğretmenin motivasyonunu yüksek tutması,
- Eğitim-öğretim süreçlerinin daha verimli hale gelmesi,
- Zihinsel ve bedensel olarak hazır olma,
- Yapılacak eğitim çalışmalarının planlanması-düzenlenmesi, eksikliklerin giderilmesi,
- Mesleki gelişimin sürdürülmesi ve kendini gözden geçirme,
- Sosyal faaliyetlere ve aileye zaman ayırmak adına gerekli görülmektedir.

Bununla birlikte öğretmenler, sanatsal ve sosyal faaliyetlere etkin katılımın sağlanması için maddi ve manevi desteğe ihtiyaç duymaktadır. Bu konuda bakanlıktan kendileri için bir fon ayrılması ve belirlenen kültürel etkinliklere katılımın teşviki için bazı uygulamaların yapılması önerilebilir. Ayrıca genellikle tatillerde öğretmenlere sunulan seminer çalışmalarının etkili, ihtiyaca dönük, zevkli ve yerinde olmasına ihtiyaç duyulmaktadır. Son olarak öğretmenlerin tatili konusunda farklı araştırma yöntemleriyle ve başka çalışma grupları ile ileri araştırmaların yapılması önerilebilir.

STUDENTS' ATTITUDES AND PERCEPTIONS OF E-FEEDBACK TYPES: ONLINE TEACHER FEEDBACK (OTF), ONLINE PEER FEEDBACK (OPF), AND AUTOMATED WRITING EVALUATION FEEDBACK (AWE)

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ABSTRACT

This study investigated students' attitudes and perceptions of online teacher feedback (OTF), online peer feedback (OPF), and automated writing evaluation (AWE) feedback and their impact on the writing performance of EFL learners. It was conducted over two semesters with freshman ELT students. The progress writing technique was implemented. Data were collected through a questionnaire with 20 open-ended questions administered to the participants, and writing samples were collected at various stages of the writing process and semi-structured interviews with volunteer students. 65 students were involved in the questionnaire and 10 students participated in the interviews. The results showed that the use of OTF, OPF, and AWE feedback positively impacted learners' writing performance in various areas, including grammar, organization, coherence, and vocabulary. Participants reported that they found the e-feedback, especially the one provided by the instructor helpful and that it improved their writing most while the one provided by the peers was not as effective as the others. The study suggests that using written e-feedback from multiple sources can effectively improve EFL learners' writing performance, and that incorporating OTF, OPF, and AWE feedback can be a valuable addition to the traditional writing process.

Keywords: Online education; online teacher feedback; online peer feedback; automated writing evaluation feedback; EFL writing

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ÖĞRENCİLERİN E-GERİBİLDİRİM TÜRLERİNE İLİŞKİN TUTUMLARI VE ALGILARI: ÇEVRİMİÇİ ÖĞRETMEN GERİBİLDİRİMİ (ÇÖG), ÇEVRİMİÇİ AKRAN GERİBİLDİRİMİ (ÇAG) VE OTOMATİK YAZI DEĞERLENDİRME GERİBİLDİRİMİ (OYDG)

ÖZET

Bu araştırma, İngilizceyi yabancı dil olarak öğrenen öğrencilerin çevrimiçi öğretmen geri bildirimi (OTF), çevrimiçi akran geri bildirimi (OPF) ve otomatik yazı değerlendirme (AWE) geri bildirimine yönelik tutumlarını ve algılarını incelemiş ve bu geri bildirim türlerinin öğrencilerin yazma performansına etkisini araştırmıştır. Araştırma, yeni başlayan ELT öğrencileriyle iki dönem boyunca gerçekleştirilmiş ve ilerleme yazma tekniği uygulanmıştır. Veriler, katılımcılara yöneltilen 20 açık uçlu soru içeren bir anket ile toplanmış ve yazma örnekleri, yazma sürecinin farklı aşamalarında alınmıştır. Ayrıca, gönüllü öğrencilerle yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Anket çalışmasına 65 öğrenci katılmış ve görüşmelere 10 öğrenci katılmıştır. Sonuçlar, OTF, OPF ve AWE geri bildiriminin öğrencilerin yazma performansını dil bilgisi, organizasyon, tutarlılık ve kelime dağarcığı gibi çeşitli alanlarda olumlu bir şekilde etkilediğini göstermiştir. Katılımcılar, özellikle öğretmen tarafından sağlanan elektronik geri bildirimin etkili olduğunu ve yazma becerilerini en fazla geliştiren geri bildirim olduğunu belirtmişlerdir. Akranlar tarafından sağlanan geri bildirimin diğerlerine göre daha az etkili olduğu ifade edilmiştir. Bu çalışma, yazılı elektronik geri bildirimin farklı kaynaklardan gelmesinin İngilizceyi yabancı dil olarak öğrenenlerin yazma performansını etkili bir şekilde artırabileceğini ve OTF, OPF ve AWE geri bildiriminin geleneksel yazma sürecine değerli bir katkı sağlayabileceğini önermektedir. Sonuçlar aynı zamanda eğitimciler için öğrenci tercihlerinin ve zamanında geri bildirimin önemini vurgulamaktadır. Bu çalışma, yazma eğitimini iyileştirmek ve etkili öğrenme sonuçları elde etmek isteyen eğitimciler ve müfredat tasarımcıları için önemli öneriler sunmaktadır.

Anahtar Kelimeler: Çevrimiçi eğitim; çevrimiçi öğretmen geribildirimi; çevrimiçi akran geribildirimi; otomatik yazı değerlendirme geribildirimi; İngilizceyi yabancı dil olarak yazma

1. INTRODUCTION

The COVID-19 pandemic has led to a significant shift in education, with online learning becoming increasingly popular. This study explores the perspectives of English as a Foreign Language (EFL) students regarding diverse online feedback forms and investigates the impact of these electronic feedback types on their English writing proficiency. Freshman EFL students were the focus of the research, and they received feedback on outlines, initial drafts, and final papers. The results demonstrated that all forms of e-feedback, including OTF, OPF, and AWE, positively influenced students' writing abilities across various writing contexts. Participants particularly valued instructors' electronic feedback, recognizing its instrumental role in enhancing their writing skills. While the literature on writing feedback displays differing views, some scholars emphasize the importance of teacher feedback in improving writing, while others express concerns about its effectiveness and clarity. Peer feedback has been valuable in fostering collaborative learning and critical thinking skills, although challenges arise when students question their peers' feedback credibility. The findings underscore the potential advantages of integrating written e-feedback from multiple sources to complement traditional

writing processes, offering promising directions for future pedagogical and language learning approaches.

English in Turkey is still seen as a foreign language, and one can conclude that Turkey has not reached the desired level of English as seen in the English Proficiency Index that ranks it 64th among 111 countries (EPI, 2023). As is known, writing, as one of the productive skills, is a late-appearing skill in learners, and it is claimed that writing is a complex skill that considers some factors like the topic, function of the text, and future readers (Flower & Hayes, 1980). Writing is a complex skill since it requires production and is the last skill developed even in L1. It is a long process in classroom situations, requiring a first, second, even third, and final draft, and is considered a difficult skill that students are reluctant to learn. Normally, students write their first draft, and teachers correct their writing by giving feedback. Over time, the way feedback is given has changed in association with technology. In fact, it can be stated that the only thing that has not changed in writing is giving feedback.

It is expressed that giving feedback encourages students' writing performance (Bitchener & Knoch, 2010). Feedback in writing can be classified in terms of the way it is given as direct or indirect feedback, the mode as written or oral feedback, and the one providing feedback as teacher or peer feedback (Reugg, 2018).

It is known that all kinds of feedback are quite helpful for students' writing performances. Ferris and Hedgcock (1998) state that teacher feedback on the students' writing is crucial and is believed to be the most effective feedback for students. In the studies carried out on teacher feedback, the general opinion is that it is of great importance for the students: In a study, Ferris (1997) found that teacher feedback improved the students' papers. In another study by Muncie (2000), it was expressed that teachers' comments on the work of students were found to be useful to promote learner autonomy and help improve their long-term writing ability. Similarly, it was put forward that even minimal feedback was helpful and provided a platform for the students to do self-revision (Ismail et al., 2008). A different kind of interaction based on feedback may be accepted as teacher-student conferences or talks. It is stated that conferencing provides perfect opportunities to ask the students important questions about their writing processes, and by doing so, they may get better and more usable comments. It is also pointed out that the interaction between teacher and student makes students active participants, and by asking questions and getting prompt answers, they see their pros and cons in writing so that they can improve their writing (O'Malley & Pierce, 1996; Hyland, 2003).

On the other hand, some studies showed that there were some contradictory results as to teacher feedback. It was found that teacher feedback was often accepted as confusing, arbitrary, and inaccessible. For example, a study by Leki (1990) put forward that without the importance of feedback type, there was no evidence that it would help students improve their writing. Some scholars, like Bai (2012) and Zhang (2016), are against teacher feedback, stating that it has a negative effect on students and causes them to rely on their teacher, which hinders their initiative.

Another feedback type is considered as peer feedback when classmates check each other's writing tasks. In this type of feedback, students are supposed to review their classmates' papers, find the problems and mistakes, and recommend some solutions (Topping, 2009; Latifi et al., 2021). Even though some have the belief that teacher feedback on students is more effective (Zhang, 1995; Hyland, 2003; Rollinson, 2005), some other studies show that peer feedback is also an important factor in improving the writing skills of students (Hansen & Liu, 2005; Wihastyanang et al., 2020). Studies carried out on the peer feedback put forward show that peer feedback applied in higher education yields improvements in students' learning, helps them develop critical thinking skills, and increases motivation (Reinholz, 2018; Novakovich, 2016; Fan & Xu, 2020). It is stated that peer feedback may give students a chance to learn from one another in a challenging and collaborative learning environment (Nicol et al., 2014).

As an interesting finding, it may be stated that first language studies provide a more convincing argument in favor of peer response, and the findings of L1 research do not necessarily apply to L2 learners. The reason why L2 studies differ from L1 studies may be explained by the fact that L2 students feel uncertain about the validity of their peers' feedback. (Wu, 2006). However, some studies express that students may be skeptical about the usefulness of peer feedback since they believe not all peers have enough knowledge in terms of language and content to make corrections and give feedback (Kaufman & Schunn, 2011). As is known, writing is accepted as a difficult skill to develop since it involves and requires deep cognitive thinking skills. Even when peer feedback is assisted with proper strategies, students may have difficulties engaging with their cognitive skills during the process of peer feedback, which may result in an unsuccessful writing product or a less desirable writing performance (Latifi et al., 2021; Noroozi et al., 2020). It is also pointed out that this situation occurs when the quality of the feedback given is low (Misiejuk et al., 2021). Based on this, it may be concluded that the characteristics and forms of feedback given by the peers are of high importance in the students' perception of the feedback (Nelson & Schunn, 2009).

With the pandemic at the beginning of 2020, the whole world came face-to-face with online education. The courses delivered in a classical way had to be changed to another version as online courses, although some courses or some parts of the courses were delivered online before. Dudeney & Hockly (2007), for example, assert that the use of technology in teaching writing has been proven to be effective. While a study by Richards (2015) stated that not all teachers agreed on the use of technology in teaching L2, almost all teachers today have an opposing opinion. With online teaching, online feedback giving, which was used before the pandemic to some extent, also came to the agenda. Some studies on the use of online or web-based feedback proved that online feedback was useful for students. For example, in a study discussing the potential of web-based feedback on EFL students' writing quality, Pariyanto (2012) found that web-based feedback was important to improve the quality of the students' writing since the students could have lots of exposure via the web to how good a composition was.

As is known, e-feedback can be delivered in different forms by using various technological tools. Some studies on the use of e-feedback by using technology depict positive results: In a study by Ab Hamid and Romly (2020), it was found that online learning and online feedback saved time and provided more freedom for both students and teachers since the learning environment was not limited to the classroom and students could communicate with their teachers using social media and other technological tools. In a similar study on giving e-feedback via interactive modes by AbuSa'aleek and Shariq (2021), instructors stated that they were content with the e-feedback since e-feedback and using technology in giving feedback broadened their horizons and eased their work. In giving e-feedback, not only e-mail but also a variety of e-tools can be used; studies by Neuman and Kopcha (2019) and Saeed and Al Qunayeer (2020), for example, suggested Google Docs as an effective channel, expressing that it helped teacher-student and student-student interaction. Some other studies on the use of e-feedback by using blogs by Arslan (2013), Wiki and Facebook by Demirbilek (2015), WhatsApp by Susanti and Tarmuji (2016), and Blackboard LMS by Basabrin (2019) all stated constructive results. It can be stated that e-feedback has been accepted as positive by many studies since it is time-saving.

Another type of feedback these days, in accordance with the development of technology and Web 2.0 tools, is automated feedback (AWE), which is generated by artificial intelligence-based software and delivered to students upon completing any written task (Igi-Global, 2023). Studies carried out depict that this new type of feedback, when compared to teacher feedback, can present personalized comments and recommendations that are mainly helpful for corrections of linguistic mistakes (Zhou, 2013; Wei, 2015). Studies comparing peer feedback and automated feedback have not found any important difference in the final drafts of essays but have pointed out that AWE may prompt more effort in terms of enriching the content (Morch et al., 2017). While Zhou (2013) and Yang & Dai (2015) state that with the help of AWE, students can improve their linguistic performance, writing competence, and self-efficacy, some other scholars express that they have found some weaknesses in the automated feedback since it may look mechanical, incorrect, and repetitive, which may lessen students' adoption of this type of feedback (Wei, 2015; Morch et al., 2017). It is also pointed out that more studies should be carried out on the efficacy of AWE, but it should be taken into consideration that this type of feedback has been gaining popularity in L2 writing (Luo & Liu, 2017).

Considering this information provided in the literature, it is essential to understand students' perceptions and preferences concerning e-feedback providers. Thus, this research reveals a spectrum of opinions about these e-feedback types among students. These insights have important implications for educators and curriculum designers, underscoring the importance of considering students' preferences and learning styles when designing effective feedback strategies. Furthermore, the study underscores the importance of feedback in the learning process. Students' positive attitudes towards feedback indicate its perceived value for their learning and growth. Feedback not only assists students in identifying and rectifying errors but also serves as a motivational catalyst to improve their writing skills. This highlights the essential role of feedback in fostering student engagement and enhancing their

writing abilities. Moreover, the study highlights the significance of prompt feedback delivery. This preference for prompt feedback suggests that educators should prioritize timely feedback provision to facilitate effective learning and improvement among students. In line with these aims, answers to the following questions were sought in this study:

1.   What are the attitudes and preferences of freshman EFL students towards different forms of electronic feedback (OTF, OPF, and AWE) in the context of English writing?

2.   What is the impact of different electronic feedback sources (OTF, OPF, and AWE) on the writing performance and improvement of freshman EFL learners?

2. METHODOLOGY

2.1.   Participants

The study involved 65 students who completed a questionnaire and 10 students who participated in interviews. All participants were enrolled in the department of Foreign Language Education at a Turkish-medium state university in Turkey. They were aged between 18 and 22 and had an upper-intermediate or advanced level of English proficiency. The students were learning how to write paragraphs and essays in English and were selected from two sections: Writing Skills 1 and 2. The selection process considered their regular attendance in writing lessons, and their participation was voluntary.

To encourage participation, students who provided full answers in the questionnaire and those who took part in follow-up interviews were given extra course credit. The researchers used a criterion and convenient sampling approach to select the student participants, in which the criteria were being a student in the Writing Skills 1 or Writing Skills 2 class and actively participating in the process-writing with full attendance to the course. The research took measures to maintain the confidentiality of the data collected, and no personal information that could identify the participants was requested. To ensure formal consent, the participants were required to sign an Informed Consent Form. The data provided by the participants were stored separately from other information, and pseudonyms were employed to safeguard their identities in both the questionnaire and interview data.

2.2.   Researchers

Two researchers played active roles in the study, serving as a teacher, observer, and interviewer. These researchers are both instructors at the English Language Teaching Department of a public university.

2.3.   Materials

In this study, we employed a questionnaire consisting of 20 open-ended questions to gather students' perspectives, preferences, and experiences regarding the drafting process and specific forms of e-feedback utilized in the instructional sessions. These e-feedback types encompassed OTF, OPF, and AWE. Furthermore, we investigated the influence of these e-feedback approaches on students' writing performance across various dimensions. The questionnaire was developed by the researcher-instructors

and underwent expert evaluation to ensure its validity and appropriateness. Additionally, we used the same set of questions in the interviews, which enabled us to comprehensively explore and comprehend the research findings of the questionnaire. The questionnaire included 20 questions such as the following:

"Is it easy to understand the following e-feedback types?

1.   Teacher's written e-feedback: Yes/No. Why?

2.   Online peer feedback: Yes or No?

3.   Automatic online feedback providers such as Grammarly: Yes/No. Why?"

Another question was:

"What are your opinions about e-feedback that only says "good!", "interesting!" or short words or abbreviations?"

2.4.   Procedure

The current study utilized a qualitative case study approach with the aim of examining and comprehending the beliefs and perceptions of tertiary-level freshman students regarding the drafting and e-feedback process in second language (L2) writing. The intention was to focus on a single case, which was considered crucial for the study's objectives. In line with Creswell's guidelines (2013), a variety of qualitative data sources, including a questionnaire with open-ended questions, interviews, observations, and writing samples, were collected to facilitate a thorough understanding of the topic. This particular case study was conducted within the confines of a bounded system, encompassing a single university's English language department, and the data collection spanned two semesters.

To ensure data triangulation, multiple methods of data collection were employed in this study. In order to gain a deeper understanding of each participant's perceptions and beliefs, in addition to the open-ended questionnaire, semi-structured interviews were also conducted, lasting approximately 30 minutes each. The volunteer interviewees were selected from Writing skills 1 course in section A and section B in the fall term and Writing Skills 2 course in section A and section B at Foreign Language Education Department in a state university in Turkey. The open questionnaire was administered online by using Google Forms, through the end of the semester when they had enough experience to be able to answer the questions. The interviews took place before or after classes at predetermined times in an online environment. The researchers already knew the student participants so that they could establish rapport and ensure their comfort during the interviews.

The questionnaire and the interviews conducted were generally free from any distressing content. The interviews were held on the Zoom platform which offers free online meeting and conference environment. The interviews were recorded with the participants' consent. However, the participants were explicitly informed that if they experienced any discomfort or disturbance due to the questions or for any other reason throughout the study, they had the freedom to withdraw from the study at any time without providing any explanations. It was emphasized that there would be no penalties or inquiries regarding their decision to withdraw. In such circumstances, it was sufficient for them to

inform the interviewer of their intention to leave. Additionally, when the interviews ended, any questions or concerns the participants had regarding the study were addressed and clarified.

2.5. Data Collection Procedure

In addition to the questionnaire and interviews, other written data, such as student drafts and course materials, was collected to track and verify the participants' progress. These materials were used to corroborate the information obtained from the interviews. After analyzing the interview data, the researchers consulted with the participants to ensure that their interpretations aligned with the participants' views. Furthermore, peer observations were conducted by the instructor participants during writing lessons at least two or three times throughout the semester. These observations involved taking descriptive and reflective notes to provide additional insights into the participants' experiences and progress.

2.6. Data analysis procedures

A total of sixty-five students participated in the study, providing questionnaire data. Their answers to the questionnaire were collected. Additionally, twenty-four interviews were conducted with students, which were recorded as video on Zoom and later transcribed verbatim. Later, the researchers thoroughly read the transcriptions, making margin notes to create initial codes. The case and its context were described, and categorical units were formed to identify themes and patterns. This same methodology was applied to analyze the answers to the survey's open-ended questions. Next, themes were identified separately for both the questionnaire and interview data. Subsequently, the researchers merged and finalized the themes reached from both sources to develop a comprehensive picture of the case, following Creswell's framework (2013). Finally, after they were initially carried out independently by each researcher, common statements and findings were selected collaboratively to ensure consensus and agreement between the researchers. Furthermore, the observations and field notes were analyzed using the same approach as the transcription analysis described above.

2.7. Strategies for validating findings; validity and reliability of the study

The "member checking" strategy was employed to ensure the study's validity and credibility. This involved providing participants with the transcriptions of their interviews and study conclusions and asking them to confirm the accuracy of the representations of their statements and interpretations. This process aimed to enhance the credibility of the findings (Creswell, 2013). The principle of "triangulation" was used by incorporating various data sources, such as observation notes, students' written works, questionnaire responses, and interviews to strengthen the reliability and validity of the study (Creswell, 2013). To achieve "inter-coder agreement," each researcher independently conducted transcriptions and analysis procedures. This approach ensured consistency and validation in data interpretation, enhancing inter-rater reliability. The researchers maintained "prolonged engagement and persistent observation in the field" by actively participating throughout the term and serving as observers before conducting interviews. This approach aimed to establish rapport and trust with the participants, increasing the reliability of the data collected (Creswell, 2013).

2.8. Expected outcomes

Active engagement in the drafting process, along with receiving e-feedback from various sources, was anticipated to lead to noticeable enhancements in students' writing skills, encompassing grammar, vocabulary usage, organization, coherence, and overall writing quality.

Students were expected to perceive the drafting and e-feedback activities as significant and beneficial for their English writing development. The incorporation of multiple online feedback sources was predicted to be appreciated by students, providing them with comprehensive insights and suggestions.

The drafting and online feedback processes were projected to augment students' intrinsic motivation for writing, fostering a sense of engagement, empowerment, and confidence in their ability to produce high-quality written work. This heightened intrinsic motivation was expected to have a positive impact on overall writing performance and long-term language learning outcomes.

Students with intrinsic motivation for language learning were hypothesized to value the e-feedback gathered from different sources more significantly compared to those motivated solely by grades or burdened by the task. It was believed that the former group would actively engage with the e-feedback and utilize it more effectively to improve their writing, while the latter group might display less enthusiasm and derive fewer benefits from the feedback provided.

Providing e-feedback encompassing both language aspects (e.g., grammar, vocabulary) and content (e.g., ideas, context, coherence, organization) was deemed crucial for students' writing development. Acknowledging and addressing students' content-related ideas and concerns in the feedback process was expected to reinforce their perception that their thoughts and expressions were valued by the teacher, thereby positively influencing their overall writing performance.

2.9. The Circular Process of Drafting in Paragraph Writing

2.9.1. *Teaching Writing Deductively*

Initially, in each writing class, students were introduced to the theoretical principles underlying the composition of specific types of paragraphs in the fall term and essays in the spring term, such as opinion, cause and effect and more. In addition to essay writing, they were instructed on conducting research and writing research-based essays in the second semester. During this stage, the instructor delivered online lectures explaining the rhetorical structure of each paragraph and/or essay type and the language that is commonly associated with it. Following the initiation stage, students engaged in reading activities to analyze exemplary samples. This allowed them to recognize and understand the content, organization, and language usage present in these samples. This integration of reading and writing demonstrated the interconnectedness of these skills, highlighting how reading can be utilized to familiarize students with the writing conventions and written discourse in English.

2.9.2. *Instructional Activities*

After introducing the theoretical concepts and examining well-written samples, students participated in various instructional activities before commencing the actual writing task. These

activities primarily focused on practicing and assisting students in generating ideas. Once the students had selected their topics, the instructional activities, such as brainstorming and free writing were employed to facilitate students in generating arguments and ideas for their writing. Following the decision-making phase of what to write, students constructed a basic outline to plan the structure and content of their paragraphs and/or essays. Then, they submitted them on the LMS they used in their institution. The ones who needed further help consulted the instructors about their outlines via email or messages through the LMS and got e-feedback on them. For the essay writing, they also asked for feedback on the sources they planned to use in their papers.

2.9.3. *Writing the first draft*

During the first draft writing phase, which was primarily conducted as an individual activity, students made decisions about their ideas and commenced writing their paragraphs or essays. Teacher monitoring played a pivotal role during this stage, with the teacher's role transitioning from that of a lecturer to that of a guide and observer. In addition to monitoring, providing e-feedback was another crucial aspect of the first draft writing process. Both researchers and teachers emphasized the importance of offering patient feedback, irrespective of the circumstances, as a key attribute of a competent writing instructor. The students not only received guidance from teachers but also utilized automated feedback tools for their drafts before submitting their papers.

After submitting their drafts, students were assigned as reviewers for two of their peers, ensuring that each student received e-feedback from at least two classmates while also having a reviewer role themselves. Prior to this, students were presented with an evaluation rubric to understand the grading criteria they needed to focus on. They were also instructed on the additional points, aside from the rubric, that they were supposed to consider while providing e-feedback to their classmates' papers, with an emphasis on being polite. The reviewing task was graded, motivating students extrinsically. Those who failed to review their peers' papers lost points. This process aimed to foster a supportive and engaged writing environment.

2.9.4. *Writing the Final Draft*

After receiving e-feedback from the automated tools, then from the teacher, and from their peers on the first draft, this stage follows. Based on the e-feedback received from different channels, the students revised their drafts, wrote their final papers, and submitted them on the LMS. While it may appear to mark the conclusion of a linear process, it represents a part of a larger cycle wherein the various improvements and flaws within the entire process become evident. In this phase, the students were also evaluated to determine whether they had taken the e-feedback they had received previously into account. The students got feedback on the final paper as well. Based on the reports of most of the students, the drafting process helped them develop an awareness of the writing process and enhanced the content and organization of their writing.

3. RESULTS AND DISCUSSION

This part presents the themes and categories that emerged in the interviews and the questionnaire as the investigation findings conducted in this research. Based on the responses given in the questionnaire and interviews, it seems that students have different opinions about different e-feedback types provided by their instructor, peers, and automatic online feedback providers. They used e-feedback from different sources in different ways and at different times. Based on the findings, the following themes emerged:

3.1. Drafting versus Writing:

The preferences for recasting or drafting versus writing a new paragraph or essay vary greatly among individuals. Some participants found drafting helpful and prefer to write drafts before starting an essay or paragraph. For instance, participant #8 said "In my opinion, with this method, we can see the first sight of our writing, and then we can change it to a better one.". On the other hand, others preferred to just write new paragraphs or essays without drafting. For example, Participant #24 said, "I do not usually need drafts; I can write without them, but for some people they could be useful."

Moreover, some responses suggested that drafting can help organize thoughts, select ideas, and improve grammar and spelling mistakes. Participant #11 stated, "I like writing drafts because I am the kind of person who has a lot of opinions in a very messy way, so drafting helps me express myself more in an organized way." Others believe that drafting can be tedious and time-consuming and prefer to start writing right away. For instance, Participant #20 stated this by saying "Though it [drafting] might help some people, I find it distracting". A few respondents, however, did not find this method useful, while others preferred freewriting or outlining. Overall, it seems that writing drafts during classes could be an effective way to improve writing skills, but individual preferences and learning styles should also be considered. Thus, the decision to use drafting or recasting or not seems to depend on personal preference, the complexity of the topic, and the writer's skill level.

As evidenced by the results, it was seen that certain students exhibit a preference for engaging in the process of recasting and drafting when writing, as they find value in receiving error correction. Conversely, there exists a group of students who do not share this preference and instead opt to commence writing without engaging in recasting and drafting. Advocates of recasting and drafting argue that these practices facilitate the organization of concepts and enhance grammatical accuracy, hence aiding in the improvement of writing quality. According to Sheen's (2010) study, it was shown that students who received written correction criticism and expressed a preference for recasting or drafting had better performance in their writing compared to those who did not receive such input. Hence, it can be inferred that there exists a degree of similarity between the outcomes of this research and the study conducted by Sheen (2010). Once more, a study conducted by Doughty and Varela (1998) proposed that learners who were exposed to deliberate corrective recasting had enhancements in their writing abilities. This finding exhibits a similar pattern to our study as well as previous studies that have been referenced.

3.2. Grades vs. Feedback: Which is More Important for Students?

The participants' opinions regarding their interest in scores and feedback varied, with some valuing both aspects equally, while others prioritized one over the other. However, many responses indicated a higher interest and motivation towards feedback. Feedback was perceived as more valuable as it allowed participants to correct mistakes and enhance their skills for future endeavors. For instance, Participant #1 said, "Feedback is more interesting because I can correct my mistake [by getting feedback] and get a higher score." Some also mentioned that grades were important for their academic progress, but feedback was crucial to their learning and growth. For example, Participant #21 stated, "Well, both! Grades are important, of course, but passing on improvement will only make it harder for one to get better grades. Feedback makes it easier to get better grades. But if I must give only one answer, it's feedback." In line with the findings, Armstrong (2010) stated that the influence of grades on student writing was found to be minimal, suggesting that incorporating more frequent and diverse ungraded writing assignments could serve as an effective pedagogical strategy to enhance both the structure and substance of students' written work. It is important to acknowledge the interconnected nature of grades and feedback, whereby feedback plays a crucial role in enhancing grades, and grades, in turn, serve as an indicator of the efficacy of the feedback provided. Consequently, both grades and feedback hold significant importance as integral elements of the learning process. As such, students should actively endeavor to seek and incorporate feedback to enhance their skills and academic performance, thereby leading to improved grades.

3.3. Willingness to use Online Feedback Providers:

Many respondents seemed willing to use automatic online feedback providers again in the future. Many respondents appreciated the convenience of using such platforms and found them helpful in detecting errors and improving their writing. For instance, Participant #4 said, "Yes, I am willing to use them again. They can see the mistakes that I couldn't see sometimes." Some respondents expressed a preference for face-to-face feedback from a teacher or peer, while others mentioned concerns about the reliability or effectiveness of online feedback providers. Participant #2 stated this by saying, "No matter how advanced, sometimes it cannot see and correct my mistakes because it is automatic." Also, Participant #12 stated that "These kinds of applications like Grammarly can make us write carelessly if we rely on them, thinking these applications will somehow correct our mistakes.".

Previous research conducted on the subject matter demonstrates similarities with the conclusions presented in this study. According to a study conducted by Li et al. (2015) in a classroom setting, students expressed their contentment with the corrected feedback provided by AWE (Automated Writing Evaluation) in relation to grammar and mechanics. However, they contended that more significant issues, such as organization and rhetorical techniques, still necessitated the guidance and support of the teacher. A further research investigation examining the combined use of Automated Writing Evaluation (AWE) systems and teacher feedback revealed that students exhibited a strong inclination towards AWE-based programs. However, they encountered challenges in comprehending

the feedback provided by the AWE system due to their limited familiarity with it (Mohsen & Abdulaziz, 2019). According to Cheng (2017), the findings of the study indicate that students exhibited favorable views towards the prompt feedback provided by AWE on numerous submissions.

3.4. Preferences and Satisfaction with E-Feedback Providers: Students' Opinions

The data shows that the preferences for and satisfaction level with different types of e-feedback providers vary among the students.

3.4.1. Teacher Feedback

Students found electronic teacher feedback to be more detailed and helpful than peer e-feedback or feedback from automatic online providers. Overall, participants expressed that the teacher's written e-feedback held the highest value among various feedback types. This preference was attributed to its comprehensive nature, personalized approach, and customized alignment with the individual student's requirements. Teachers were considered professionals in their field and had a better understanding of their students' abilities. In a similar vein, the research conducted by Benson and DeKeyser (2019) demonstrated that American ESL learners had various advantages when exposed to direct or metalinguistic remedial feedback from their instructors. Various linguistic and affective factors have been documented to influence the level of learner engagement with teacher feedback. These factors include learner attitude and beliefs (Han, 2017), emotional responses (Mahfoodh, 2017), and the explicitness of the feedback provided (Suzuki, Nassaji, & Sato, 2019). According to Tehrani's (2018) research, a significant number of students perceive written commentary from educators as the most efficacious approach for enhancing the caliber of their writing. This preference for teacher feedback likely stems from the students' perception that their teachers possess greater expertise in the subject matter.

3.4.2. Online Peer Feedback

Some participants considered online peer feedback to be beneficial, as it offered a broad perspective from peers within their age group. For instance, Participant #27 acknowledged that it aided in identifying vocabulary and spelling errors by saying "It helped me see my vocabulary and spelling mistakes.". Nonetheless, other participants held a less favorable view, citing concerns that peers might lack the expertise of teachers and could potentially deliver criticism that may offend students. In some instances, students reported not receiving any peer feedback, or when they did, peers were overly lenient in their evaluations. Consequently, online peer feedback is often preferred for informal writing tasks or journaling but may not consistently provide significant support. Participant #5 stated, "Not at all because I did not get any useful feedback from my peers," while Participant #24 asserted, "Online peers are not as skilled as a teacher, so I think they would be incompetent at giving feedback."

Peer feedback has been recognized in previous research as having the potential to improve students' writing proficiency (Huisman, Saab, van Driel, & van den Broek, 2018; Noroozi & Hatami, 2019). Nevertheless, concerns have been raised about the effectiveness of peer feedback due to students' limited knowledge, experience, and language proficiency (Noroozi et al., 2018; Saito & Fujita, 2004).

Similarly, a study involving master's students and their engagement with peer feedback in academic writing revealed diverse sentiments and perspectives. Their cognitive and behavioral involvement appeared to be superficial (Yu et al., 2019). In another study by Fan and Xu (2020), a minority of students expressed disappointment with peer evaluation due to their group members' limited feedback contributions, attributed to either inadequate skill or a perfunctory approach.

3.4.3. Automatic Online Feedback Providers

Automated online feedback providers were commonly utilized by students to identify errors and receive prompt, accurate feedback before submitting assignments. However, there were some students who had not previously used such providers. Nevertheless, most participants viewed automated online feedback as beneficial, attributing its usefulness to the instant feedback it offered and its capacity to aid students in comprehending their mistakes. For instance, Participant #12 asserted, "It assists me with punctuation, overused vocabulary, content, sentence coherence, and organization. I cannot say the same for the rest of them, as the free account only addresses the aspects I mentioned." Additionally, Participant #61 stated, "Yes. When I make mistakes, Grammarly instantly corrects my punctuation mistakes. Moreover, Grammarly also helps me correct my grammar mistakes. Grammarly suggests new words for my writing and helps me organize my thoughts about the content I write. In the end, my essay has coherence and unity thanks to Grammarly."

Consistent with the research, empirical investigations have demonstrated that automated feedback, in contrast to teacher feedback, has the capacity to offer individualized comments and suggestions, hence proving more advantageous in rectifying linguistic faults (Zhou, 2013; Wei, 2015). Studies comparing automated feedback and peer feedback have found that there is no substantial difference in their impact on the final grades of essays. However, it has been observed that automated feedback has the potential to stimulate greater effort in enhancing the content of the essays (Morch et al., 2017). Moreover, automated feedback has been shown to enhance students' language proficiency, writing abilities, and self-assurance (Zhou, 2013; Yang & Dai, 2015). This positive perception of automated feedback aligns with findings from a quasi-experimental study conducted by Wang et al. (2013), which reported that the feedback offered was clear and easily understood. The research revealed that following the utilization of the AWE tool, CorrectEnglish, the experimental group exhibited superior performance compared to the control group in the areas of grammar, word usage, and spelling.

3.4.4. Diverse Use of Feedback

Students' preferences for feedback types exhibited variability. Generally, teacher feedback held a high level of importance, followed by automated online feedback. While peer feedback proved valuable for informal writing activities and idea generation, it may not suffice for comprehensive revisions. Some students advocated for a combined approach, utilizing various e-feedback providers in writing classes. For instance, Participant #13 expressed, "I am pretty sure the best way is getting e-feedback from teachers. I had many, and I think I am satisfied with that always and improved myself more with getting an e-feedback from teachers." Likewise, Participant #14 stated, "Every one of them is important for me. The teacher has knowledge; peers can see things the teacher cannot see. And the applications have much more access to certain things."

Although students acknowledged the value of teacher feedback, there were concerns raised regarding the potential workload burden on teachers. Some participants suggested that teachers should train students to provide more honest and constructive peer feedback, avoiding undue positivity or sugar-coating. For example, Participant #15 remarked, "We only wrote about what we thought about the essay (topic, body, etc.), and we encouraged each other. We did not focus on the mistakes, if there were any. It turned into a section of 'showing love,' in my opinion." Additionally, Participant #11 expressed, "I had the most awful comments about my writings, and they weren't even negative. It was too much positivity—a lot of bursts of sunshine, rainbows, and unicorns. I didn't even notice any of my mistakes." While students also valued online peer feedback, they emphasized the need for peers to be more objective and invest additional time in providing feedback. Participant #43 explained, "They were helpful, but they did not provide all of the aspects above. They only write what they see; they do not write it with all the details." Financial concerns regarding premium versions of automated online feedback providers were also mentioned by some students. For instance, Participant #2 mentioned, "It has a premium feature that isn't free. And it doesn't show all of my mistakes." In summary, students generally appreciated the different e-feedback providers in writing classes, but there were notable suggestions for improvement, including the promotion of greater objectivity in peer feedback and consideration of the affordability of premium versions of automated online feedback providers.

All in all, students exhibited diverse preferences for the various e-feedback channels provided. Many students expressed contentment with the teacher's written e-feedback and automated online feedback providers. However, some students encountered challenges in understanding the feedback or found it to be of limited usefulness. Conversely, the satisfaction level with online peer feedback was comparatively low, with students frequently noting the absence of valuable feedback from their peers or perceiving it as lacking in sensibility. Additionally, certain students underscored the significance of receiving comprehensive and specific feedback from their teachers. Moreover, some students valued the professional nature of the feedback offered by their teachers, viewing both online and teacher feedback as more professionally valuable than peer feedback. In summary, the data indicates that students' viewpoints regarding the efficacy of e-feedback providers differ, and their level of satisfaction is influenced by factors such as the comprehensiveness, specificity, usefulness, and professionalism of the feedback they receive.

3.5.   Timing of Written E-Feedback:

The data suggests that the respondents held varying preferences regarding the timing of receiving written e-feedback. Some desired it before exams, others after submitting their homework, and some preferred it immediately after completing a paragraph or essay. For example, Participant #3 expressed, "Before I send my homework, I want to fix it and submit an accurate assignment." Moreover, there were participants who sought prompt feedback within two to three days or within a week. Certain respondents mentioned their preference for receiving written e-feedback when they made mistakes, lacked certainty, or needed external input. On the other hand, some individuals showed indifference towards e-feedback

or its timing. Overall, the timing for written e-feedback appeared to be contingent upon individual needs and preferences.

Consistent with prior research, it is evident that the outcomes derived from these studies exhibit a high degree of similarity. As evidenced by a recent study by Lefevre and Cox (2017), learners prefer receiving rapid feedback as opposed to delayed input when given the opportunity. According to a study conducted by Marczak, Krajka, and Malec (2016), the primary advantage of e-learning feedback, as reported by the majority of participants, is the provision of immediate feedback. According to Lee's (2013) research, it was shown that the students had a high inclination towards agreeing that their faults would be explicitly and promptly rectified.

3.6.   Comparison of Traditional Written, Online, and Oral Feedback:

Additionally, in terms of the comparison of traditional versus online feedback providers, most students preferred written e-feedback because of its convenience and accessibility. For instance, Participant #2 asserted, "I prefer written e-feedback. Because it can be more helpful in online education, and I can look at it whenever I want". Also, Participant #12 stated, "I think traditional feedback is a bit more convenient considering my teacher's time, and I am a shy person, so face-to-face meetings make me more defensive, which is pointless and too sensitive." However, there were still students who favored oral feedback, particularly for more significant and crucial assignments, as they perceived it to be more effective in directly addressing their mistakes. Participant #5 remarked, "In my opinion, online or traditional written feedback is mostly the same. Oral feedback could be useful for bigger and more vital assignments." Furthermore, Participant #10 expressed, "I think oral feedback is better because I remember better when I hear my mistakes, and I have to not make them again out loud." They can access online feedback anytime they want, and it can be more helpful in online education. Participant #12 stated, "I prefer the digital one because I can open and browse this feedback whenever I want. I have never tried oral feedback, but I think it is quite catchy."

As stated above, some students preferred traditional written feedback. Similarly, according to a comprehensive analysis conducted by Lim and Renandya (2020), which included 35 studies on written feedback in writing, most of the findings suggested beneficial benefits of written corrected feedback. However, a small number of studies reported contrasting results, as shown by a negative sign. However, some students preferred oral feedback, especially for bigger and more vital assignments, because they found hearing their mistakes directly from their teachers more effective. In a study conducted by Sobhani and Tayebipour (2015), it was shown that oral feedback had a greater impact on the essay writing skills of Iranian learners compared to the other two types of feedback. It is recommended that learners properly prioritize the feedback they receive from their teacher. The potential cause may also be attributed to the superior aural orientation of learners in processing feedback compared to their visual focus while getting corrective feedback from the teacher. The students showed a greater degree of attentiveness towards the spoken instructions provided by the teacher as opposed to the textual annotations made on their essays. Furthermore, according to Grigoryan's (2017) study, it was proposed that the most successful method of providing feedback in composition pedagogy is through one-on-one student-instructor conferences.

This approach aligns with a constructivist perspective on learning, which views the learning process as a dialogue. Maliborska and You (2016) conducted a study that examined the satisfaction levels of first-year foreign composition students with conferencing. The findings indicated that the students reported a notable degree of satisfaction with conferencing due to its positive impact on student motivation, comprehension of instructors' feedback, and provision of personalized assistance. According to Trotman (2011), in the context of a higher education preparatory English for academic purposes (EAP) writing course in Turkey, the practice of student-teacher conferencing was regarded as being "mutually appreciated and highly valued" (p. 15) by both the students and teachers involved.

Nevertheless, some students had no specific preference and were open to any feedback platform. Hence, students' preferences may vary based on their learning style, personality, and the specific task or assignment being assessed. In summary, it is crucial to acknowledge that students' preferences can differ depending on their learning style, personality, and the nature of the evaluated task.

3.7. Understanding Different Feedback Types Received: Participants' Experiences

Based on the responses received, it appears that many participants found the teacher's written e-feedback and automatic online feedback providers to be easily understandable. Participant #35 stated, "The most optimal method for writing lessons is evaluated by the teacher of the essays. Because the teacher explains more clearly and accurately." The rationale behind this perception lies in the clear and detailed nature of the teacher's feedback, which includes explanatory elements. Similarly, automated online feedback providers were valued for their ability to pinpoint errors precisely and provide corrective guidance. Participant #34 remarked, "Essays are being evaluated only by online feedback providers such as Grammarly. Because using this application is fast, and you can use it very easily." In contrast, some participants encountered difficulty comprehending online peer feedback. Participant #4 mentioned, "It's easy to understand the teacher's feedback since what our teacher demands is clear. Peer feedback can be a little confusing sometimes." This discrepancy arose due to the inconsistent usefulness and occasionally ambiguous or poorly articulated nature of peer feedback. In general, it seems that the ease of understanding feedback types depends on the quality of the feedback received and the clarity of the feedback provider's communication.

3.8. The Impact of E-Feedback Length (detailed or short feedback) on Students' Writing: Students' Opinions

The opinions about short or superficial e-feedback were diverse. Some considered such feedback inadequate, unhelpful, and lacking in any constructive value, as it failed to identify errors or offer opportunities for improvement. For instance, Participant #18 stated, "If there is no mistake, it does not matter to me. You can say 'good' to me. But if you can see any mistake, you should say that, and you should check my entire assignment. Feedback in more detail is always better." On the other hand, some found them beneficial, morale-boosting, and comprehensive enough, as they give motivation and could be a chance to make up. However, most students favored detailed e-feedback that was inspiring, specific, clear, and furnished helpful information or criticism to enhance their current and future writing. For example, Participant #30 remarked, "I don't like it. I prefer to receive critical feedback on mistakes I have made."

3.9.   Willingness to Use Online Feedback Providers in the Future: Students' Attitudes

The responses to the question regarding the participants' willingness to utilize online feedback providers again in the future, if given the chance, were diverse; however, most respondents expressed their readiness to do so. Many participants acknowledged the convenience of using such platforms and recognized their efficacy in identifying errors and enhancing their writing. For example, Participant #1 asserted, "Yes, because no matter how good I am, there will always be something wrong, so it's worth checking." While some respondents preferred face-to-face feedback from teachers or peers, others raised concerns about the dependability or effectiveness of online feedback providers. Participant #21 expressed, "No, I would prefer feedback from my teacher if possible." Overall, it appears that the majority of respondents are open to utilizing online feedback providers again in the future, though some may opt for alternative forms of feedback.

The potential motivation for students to utilize these resources in the future may be associated with the discoveries presented in the subsequent research investigations. For instance, Faizi (2018) discovered that these technologies have facilitated the process of generating and disseminating texts, thereby presenting significant prospects for collaborative and interactive learning. Students can actively participate in constructing knowledge by sharing their work with a broader audience, taking charge of their own learning, and enhancing previously gained information through critical reflection. The research conducted by Noroozi and Hatami (2019) and Wu (2019) suggests that electronic peer feedback (e-PF) offers advantages over traditional face-to-face and paper-based feedback methods. Specifically, e-PF not only enhances argumentative interaction but also enhances the validity and trustworthiness of peer feedback.

4.   CONCLUSION

To conclude, this study has offered insights into students' opinions and attitudes towards various e-feedback providers, the timing of feedback delivery, the impact of feedback styles on their writing, and so on. The findings underscore the significance of digital feedback in the learning process and highlight the importance of considering students' preferences and individual differences when designing effective feedback strategies. As educational institutions continue to embrace digital tools and online learning platforms, understanding students' perceptions of e-feedback becomes increasingly crucial for enhancing writing instruction and promoting effective learning outcomes. By addressing the implications of this study and exploring the suggested future research directions, educators can better support their students' writing development and foster a culture of continuous improvement through meaningful and timely feedback.

4.1.   Limitations

The present study is subject to several constraints. Firstly, the relatively small sample size of 65 participants from a single Turkish university raises concerns about the generalizability of the findings beyond this specific context. Also, the study primarily focuses on short-term outcomes and perceptions,

lacking longitudinal data necessary for assessing the long-term effects of the interventions. Furthermore, the absence of a control group hinders the ability to attribute observed improvements exclusively to the use of e-feedback. Assumptions about students' technology access and familiarity overlook potential variations in digital literacy among participants. Despite offering valuable insights, addressing these limitations in future research is essential to develop a more comprehensive understanding of the efficacy of e-feedback in diverse educational environments.

4.2. Future Directions for Research

Drawing from the results, implications of this study, and limitations, several promising avenues for future research can be pursued. First, further research could delve into exploring the influence of individual differences, such as learning styles, personality traits, and language proficiency levels, on students' preferences for different feedback sources. A deeper understanding of how these individual factors interact with feedback preferences can inform the development of more personalized and effective feedback approaches. Next, future studies may undertake a comparative analysis of the effectiveness of diverse feedback styles, such as written feedback, oral feedback, and multimedia feedback, on students' writing improvement. An examination of how various feedback formats affect student learning outcomes can enrich the development of comprehensive and well-rounded feedback strategies. Furthermore, these may be observed in longitudinal studies to see how their opinions of e-feedback providers evolve over time and how it affects their writing skills to develop fruitful writing instruction. Thus, in addition to the above-mentioned study, researchers may also investigate the impact of instructor training on providing constructive and effective feedback to students to enhance the quality and usefulness of feedback provided to students.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

ÖĞRENCİLERİN E-GERİBİLDİRİM TÜRLERİNE İLİŞKİN TUTUMLARI VE ALGILARI: ÇEVRİMİÇİ ÖĞRETMEN GERİBİLDİRİMİ (ÇÖG), ÇEVRİMİÇİ AKRAN GERİBİLDİRİMİ (ÇAG) VE OTOMATİK YAZI DEĞERLENDİRME GERİBİLDİRİMİ (OYDG)

1.   GİRİŞ

Türkiye'de İngilizce hala yabancı bir dil olarak kabul edilirken, yazma becerisi öğrenenler için geç bir dönemde karmaşık bir yetenek olarak gelişir. Yazma, üretken becerilerden biri olarak kabul edilir ve yazma geri bildirimi konusunda farklı görüşler bulunmaktadır. Bazı araştırmacılar öğretmen geri bildiriminin yazma gelişimindeki önemini vurgularken, diğerleri etkililik ve açıklık konusundaki endişelerini dile getirirler. Akran geri bildirimi, işbirliğine dayalı öğrenmeyi ve eleştirel düşünme becerilerini teşvik ederken, öğrenciler akranlarının geri bildirim güvenilirliğini sorguladığında zorluklar ortaya çıkar. Örneğin, Armstrong (2010) dil becerilerinin gelişimi için çeşitli faktörleri tartışarak düzeltmeli geri bildirim verme ile öğrenci yazılı performansı arasındaki ilişkiyi ele almıştır. Bazı çalışmalar öğretmen geri bildiriminin yazma becerilerini artırdığını vurgularken (Ferris & Hedgcock, 1998; Bitchener & Knoch, 2010), diğerleri öğrenci geri bildiriminin de önemli bir rol oynadığını belirtmiştir (Hansen & Liu, 2005; Wihastyanang et al., 2020). Dijital ortamda geri bildirimin etkileri de araştırılmıştır (Ab Hamid, H., & Romly, R., 2020; AbuSa'aleek, A. O., & Shariq, M., 2021). Arslan (2013) öğretmen ve akran geri bildiriminin bloglar ve portföyler aracılığıyla nasıl entegre edilebileceğini tartışmıştır. Ayrıca, otomatik yazı değerlendirme geribildirimi (OYDG) etkisi de ele alınmıştır (Li et al., 2015; Luo & Liu, 2017). OYDG 'nin kişiselleştirilmiş yorumlar ve dilbilgisi hatalarının düzeltilmesine nasıl yardımcı olabileceği belirtilmiştir. Ancak OYDG 'nin mekanik, hatalı ve tekrarlayıcı görünebileceği ve öğrencilerin böyle bir geri bildirimi kabul etmesini zorlaştırabileceği de belirtilmiştir (Wei, 2015; Morch et al., 2017).

Bu araştırma, İngilizceyi Yabancı Dil olarak öğrenen öğrencilerin çevrimiçi öğretmen geribildirimi (ÇÖG), çevrimiçi akran geribildirimi (ÇAG) ve otomatik yazı değerlendirme geribildirimi (OYDG) formlarına yönelik görüşlerini, deneyimlerini ve bu elektronik geri bildirim türlerinin İngilizce yazma yeteneklerine etkisini incelemektedir. 1. sınıfta İngilizce öğrenen öğrencilere odaklanan araştırmada, metin taslaklarına ve son hallerine geri bildirim verilmiştir. Bulgular, ÇÖG, ÇAG ve OYDG gibi e-geri bildirim türlerinin farklı yazma bağlamlarında öğrencilerin yazma yeteneklerini olumlu şekilde etkilediğini göstermiş, öğrencilerin bu geri bildirimleri değerli bulduğunu ve yazma becerilerini geliştirmedeki önemini anladığını göstermiştir. Bu sonuçlar, eğitimciler ve müfredat tasarımcıları için önemlidir, çünkü etkili geri bildirim stratejileri tasarlanırken öğrenci tercihlerinin ve öğrenme stillerinin dikkate alınması gerektiğini vurgular. Ayrıca, araştırma geri bildirimin öğrenme

sürecindeki kritik rolünü vurgulayarak, öğrenme ve gelişme için geri bildirimin ne kadar değerli olduğunu gösterir. Geri bildirim, yalnızca hataları tespit etmekle kalmaz, aynı zamanda yazma becerilerini motive edici bir araç olarak geliştirmede önemli bir rol oynar. Bu da geri bildirimin öğrenci katılımını artırma ve yazma yeteneklerini geliştirme temel rolünü öne çıkarır. Bununla birlikte, araştırma zamanında geri bildirim iletiminin önemini de vurgulayarak, eğitimcilerin etkili öğrenmeyi ve öğrenci gelişimini kolaylaştırmak için zamanında geri bildirim sağlamaya öncelik vermesi gerektiğini belirtir.

Bu bilgiler ışığında, bu çalışmada aşağıdaki soruların cevapları aranmıştır:

1.   İngilizce yazma bağlamında yeni başlayan İngilizce öğretmenliği öğrencilerinin elektronik geri bildirim türlerine (ÇÖG, ÇAG ve OYDG) karşı tutumları ve tercihleri nedir?

2.   Elektronik geri bildirimin farklı kaynaklarının (ÇÖG, ÇAG ve OYDG) yeni başlayan İngilizce öğretmenliği öğrencilerinin yazma performansı üzerindeki etkisi nedir ve nasıl bir gelişme sağlar?

2.   YÖNTEM

Bu çalışmanın anket kısmına 65 öğrenci, yarı yapılandırılmış sözlü görüşmelere de 10 öğrenci katılmıştır. Katılımcılar, yaşları 18 ile 22 arasında İngilizce öğretmenliği bölümü öğrencileridir. Katılımcılar İngilizce paragraf ve deneme yazma becerilerini Yazma Becerileri 1 ve 2 dersleri kapsamında almışlardır. Araştırmacılar, aynı üniversitede öğretim üyesi olarak görüşmeleri ve gözlemleri gerçekleştirmişlerdir.

Çalışmada katılımcıların taslak yazma ve e-geribildirim türleri hakkındaki görüşlerini soran 20 açık uçlu sorudan oluşan bir anket kullanılmıştır. Kapsamlı inceleme için ayrıca sözlü görüşmeler gerçekleştirilmiştir. Katılımcıların anket cevapları ve görüşmeleri temalar ve desenler açısından incelenmiştir. *Üçgenleme,* gözlemleri, yazı örneklerini ve anket verilerini birleştirerek kullanılmıştır. *Üye kontrolü* inandırıcılığı arttırmış, katılımcılar bulunanların doğruluğunu onaylamıştır. Veri toplama işlemi iki eğitim-öğretim dönemi sürmüştür.

Taslak yazı süreci, teorik eğitimi, örnek analizini, fikir oluşturmayı ve geri bildirimin entegrasyonunu içermekteydi. Öğrenciler ilk taslakları yazarken uygulamalar yapmışlar ve geri bildirimi öğretmenlerden, akranlarından ve otomatik araçlardan almışlardır. Akran geri bildiriminin ardından öğrenciler son taslakları üzerinde düzeltmeler yaparak teslim etmişler ve e-geribildirimin entegrasyonunu ve genel gelişmeyi değerlendirmişlerdir. Süreç yazma farkındalığı arttırmış, içerik ve organizasyonu iyileştirmiştir.

3.   SONUÇ VE TARTIŞMA

Bu çalışma, öğrencilerin farklı türdeki e-geribildirim sağlayıcılarına yönelik algılarını ve tercihlerini, geribildirimin teslim zamanlamasını ve geribildirim stillerinin yazma becerilerine etkisini incelemek amacıyla yürütülmüştür. Bulgular, e-geribildirimin öğrenme sürecindeki önemini

vurgulamakta ve etkili geribildirim stratejileri tasarlarken bireysel tercihleri dikkate alma gerekliliğini vurgulamaktadır.

Bulgular farklı e-geribildirim sağlayıcılarına ilişkin öğrenci tercihleriyle ilgili aşağıdaki gibi bir dizi tema ve kategoriyi tanımlamıştır:

Taslak Hazırlama Karşısında Yazma: Öğrencilerin taslak hazırlama sürecine karşı hızlı yazma tercihleri farklılık göstermiştir. Bazıları, düşünceleri düzenlemek ve dilbilgisini geliştirmek için taslak hazırlamanın faydalı olduğunu belirtirken, diğerleri hemen yazmaya başlamayı tercih etti.

Not Karşısında Geribildirim: Öğrencilerin çoğu, not yerine geribildirimi önemsedi ve geribildirimin hataları düzeltmelerine ve becerilerini geliştirmelerine yardımcı olduğunu söyledi. Notlar akademik ilerlemeleri için önemli olarak görülse de, geribildirimin öğrenme ve gelişme için kritik bir rol oynadığı belirlendi.

Gelecekte Çevrimiçi Geribildirim Sağlayıcılarını Kullanma İstekliliği: Katılımcılar, e-geribildirim platformlarının kullanımını gelecekte tekrar istemeye olumlu bir yaklaşım sergilediler. Bu tercihin arkasında, bu tür platformların hataları tespit etmede sağladığı kolaylık ve etkinliğin bulunması yer aldı. Bununla birlikte, güvenilirlik ve etkinlik konularında endişeler de dile getirildi.

E-Geribildirim Sağlayıcılarına İlişkin Tercihler ve Memnuniyet: Öğretmenler tarafından sunulan e-geribildirim ayrıntı ve kişiselleştirilmiş yaklaşımı nedeniyle takdir edildi. E-akran geribildirimi hataları tespit etmede yardımcı olurken, öğretmen uzmanlığının eksik görüldüğü belirtildi. Otomatik e-geribildirim sağlayıcıları, hızlı ve kesin sonuçları nedeniyle övgü aldı.

Yazılı E-Geribildirim Zamanlaması: Öğrenciler geribildirimi ne zaman almayı tercih ettikleri konusunda çeşitli görüşlere sahipti; bazıları sınavdan önce isterken, diğerleri görevlerini tamamladıktan sonra tercih etti.

Geleneksel, Çevrimiçi ve Sözlü Geribildirim Karşılaştırması: Öğrencilerin çoğu, erişilebilirlik ve kullanılabilirlik nedeniyle yazılı e-geribildirimi tercih etti. Ancak bazıları özellikle daha büyük ödevler için sözlü geribildirimi tercih etti.

Alınan Farklı Geribildirim Türlerini Anlama: Öğrenciler, öğretmen geribildirimi ve OYDG'yi anlamada kolaylık yaşarken, e-akran geribildiriminin zaman zaman karmaşık olduğunu ifade etti.

E-Geribildirim Uzunluğunun Etkisi: Öğrenciler, kapsamlı ve ayrıntılı e-geribildirimi tercih ettiler. Bu tür geribildirimin bütünsel hata düzeltme ve pedagojik gelişim sağlama kapasitesine değer verdiler.

Gelecekte Çevrimiçi Geribildirim Sağlayıcılarını Kullanma İstekliliği: Katılımcıların çoğunluğu, e-geribildirim platformlarını tekrar kullanmaya hazır olduklarını ifade ettiler; ancak bazıları diğer geribildirim türlerini tercih etti.

Sonuç olarak, bu çalışmada, e-geribildirimin öğrenme sürecindeki önemi vurgulanırken, öğrenci tercihlerinin e-geribildirim sağlayıcılarına ilişkin çeşitli faktörlere dayandığı belirtiliyor. Ayrıca eğitimcilerin yazma eğitimini geliştirmek ve etkili öğrenme sonuçları elde etmek için anlamlı ve zamanında geribildirim kullanmaları gerektiğine dikkat çekiliyor. Araştırmada, sınırlamalar da kabul

edilerek küçük örneklem boyutu ve uzun dönem veri eksikliği gibi konulara da değiniliyor. Gelecekteki araştırmaların bireysel geribildirim tercihlerini, farklı geribildirim stillerinin etkililiğini ve eğitmen eğitiminin geribildirim sağlama etkinliğine etkisini incelemeyi içerebileceği öneriliyor.

Anahtar Kelimeler: Çevrimiçi eğitim; çevrimiçi öğretmen geribildirimi; çevrimiçi akran geribildirimi; otomatik yazı değerlendirme geribildirimi; İngilizceyi yabancı dil olarak yazma

MEN AND MASCULINITIES IN PROFESSIONAL FIELDS CHARACTERIZED BY FEMININITY: AN EXAMPLE OF MALE TEACHER CANDIDATES IN EARLY CHILDHOOD EDUCATION

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ABSTRACT

This qualitative study examines the perceptions and experiences of male students enrolled in early childhood education, a domain often considered feminine. The research aims to uncover these students' perspectives on their chosen profession and their encounters within it. Conducted at a state university in the central Black Sea region of Turkey, the study engaged participants from the fourth year of the preschool education program. A total of 12 male students, ranging in age from 21 to 24 years, were selected for the research. Over the course of 24 weeks, these students completed practical teaching sessions at a local kindergarten. Data collection utilized a semi-structured interview format, designed to explore participants' motivations for selecting the preschool education field and their lived experiences in relation to both their academic journey and their masculinity. The collected data underwent content analysis, guided by themes derived from participants' responses and aligned with the research questions. Inter-coder reliability was established by re-coding transcriptions of three randomly selected interviews, resulting in a reliability coefficient of 0.85—exceeding the recommended threshold of 0.80 for such analyses. This study contributes to understanding the perspectives of male students in a predominantly female-centric field, shedding light on their motivations, experiences, and sense of identity. It highlights the nuanced landscape of early childhood education and opens avenues for further exploration into gender dynamics within academic and professional realms.

Keywords: Male teacher candidates; early childhood education; male early childhood teachers

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KADINSILIK İLE KARAKTERİZE EDİLEN
MESLEK ALANLARINDA ERKEKLER VE ERKEKLİKLER: OKUL ÖNCESİ ÖĞRETMENLİĞİNDE OKUYAN ERKEKLER ÖRNEĞİ

ÖZET

Bu nitel çalışma, genellikle kadınsı olarak kabul edilen erken çocukluk eğitimine kayıtlı erkek öğrencilerin algılarını ve deneyimlerini incelemektedir. Araştırma, bu öğrencilerin seçtikleri meslek hakkındaki bakış açılarını ve bu meslekteki karşılaştıkları deneyimleri ortaya çıkarmayı amaçlamaktadır. Türkiye'nin Karadeniz bölgesinin ortasındaki bir devlet üniversitesinde gerçekleştirilen bu çalışma, okul öncesi eğitim programının dördüncü sınıfını bitirmek üzere olan öğretmen adayları ile yapılmıştır. Araştırma için 21 ila 24 yaşları arasında değişen yaşlardaki toplam 12 erkek öğrenci seçilmiştir. Bu öğrenciler, 24 hafta boyunca yerel bir anaokulunda pratik öğretim oturumları tamamlamışlardır. Veri toplama süreci, katılımcıların okul öncesi eğitim alanını seçme nedenlerini ve akademik yolculukları ile erkeklikleri arasındaki deneyimleri keşfetmeyi amaçlayan yarı yapılandırılmış bir mülakat formatı kullanmıştır. Toplanan veriler, katılımcıların yanıtlarından türetilen temalarla uyumlu olarak içerik analizine tabi tutulmuştur. İki kodlayıcı arası güvenilirlik, üç rastgele seçilen mülakatın transkriplerinin yeniden kodlanmasıyla kurulmuş ve bu analizler için önerilen 0.80 eşik değerini aşan 0.85 güvenilirlik katsayısı elde edilmiştir. Bu çalışma, genellikle kadın merkezli bir alanda erkek öğrencilerin perspektiflerini anlama konusuna katkıda bulunmakta, onların motivasyonlarını, deneyimlerini ve kimlik duygularını aydınlatmaktadır. Aynı zamanda okul öncesi eğitimin yapısını vurgulayarak akademik ve mesleki alanlardaki cinsiyet dinamiklerinin keşfi için fırsatlar sunmaktadır.

Anahtar Kelimeler: Erkek öğretmen adayları; okul öncesi eğitim; erkek okul öncesi öğretmenleri

1. INTRODUCTION

Individuals choose professions, but employment conditions, job opportunities, and sometimes social norms play a role in the selection of a profession. One of the most important of these social norms is gender roles. Gender is a socially structured classification system based on binary categories, masculinity and femininity (Kosut, 2012), while gender roles are a group of expectations related to gender that society expects men and women to fulfill (Dökmen, 2004). Society constantly provides rewards and punishments to individuals according to whether they behave in accordance with this expectation, and conditions both men and women to behave in accordance with these roles (Bearman & Amrhein, 2014). These roles arise in professions as well as in areas such as household-related work and personal relationships. Early childhood education is one of these professions.

Early childhood education (ECE) teachers consist of males at a percentage of between 2-3% worldwide, and this ratio is persistent primarily in countries where deliberate efforts are in place to increase male representation in ECE. The scarcity of men in this important profession, which takes place at the intersection of caring and teaching, also indicates how deep the roots of sexism in our world are (Warin, 2018). Especially when it comes to masculinity in the context of sexism, it is necessary to look at the concept of "hegemonic masculinity" as described by Connell (1995).

Hegemonic masculinity is a concept used to define attitudes and practices that perpetuate gender inequality, including both the domination of men over women and the power of some men over other men (Connell, 1995). Hegemonic masculinity is also defined as the image of masculinity possessed by men who hold power (Türk, 2007). In other words, hegemonic masculinity is known as a form of masculinity that is presented to men as the norm and requires all men to position themselves according to this norm (Connell & Messerschmidt, 2005) and emphasizes how men are positioned as masculine or non-masculine (Connell, 1995). Connell (1995), in addition to hegemonic masculinity, describes other classifications as subordinated masculinity (masculinities that are usually associated with femininity, tend to be emotional or tearful, and are also subjected to derogatory labels such as effeminate), cooperative masculinity (masculinities that contribute to hegemonic masculinity and share patriarchy, although they do not seem dominant), and finally marginal masculinity (masculinities that are excluded from standard masculinities and marginalized according to social positioning based on race, class, and ethnicity). From this perspective, men who enter women's professions face the risk of being perceived as non-masculine, that is, people who do not fit into the hegemonic masculinity scenario, and therefore being questioned regarding their gender identity (Nordberg, 2002). Therefore, men who choose the profession of early childhood education teachers also risk being questioned about their choice of profession.

It is well established in the literature that male preschool teachers and teacher candidates may experience difficulties due to gender-related expectations and stereotypes (Erden, Özgün & Aydilek-Çiftci, 2011; Fu, 2012; Weaver-Hightower, 2011). For example, it is stated that male teacher candidates encounter resistance due to their gender (Fu & Li, 2010), are discouraged due to sexist taunts and objections (Weaver-Hightower, 2011), tend to doubt the value of their profession (Fu & Li, 2010), and often encounter sexist assumptions and stereotypes that discourage them from pursuing a career in early childhood education (Fu, 2012).

On the other hand, being male preschool teachers may come with some advantages in addition to these difficulties. Based on the analogy of the "glass ceiling" (Freeman, 1990), which is used for the obstacles women face due to sexist attitudes while progressing in their professions, Williams (1992) uses the term "glass escalator" to explain the faster rise of men in professions where women predominate. Within this framework, in the professions where women constitute the numerical majority, it is usually assumed that men are more competent and better leaders than women. As a result, men are attracted to higher-paying jobs and administrative positions. The metaphor of "glass escalator" is used because the negative stereotypes about male sexuality of men who insist on staying in these professions and exposure to possible prejudices, including pedophilia, low wage payment, etc. push men to higher-paying and more prestigious positions (Williams, 2013). ECE is considered as one of these professions where men benefit from this advantage (Simpson, 2004; Deng et al., 2023). Within this framework, although the identities of male teachers are under threat of questioning due to discriminatory practices

and the pressure of hegemonic masculinity in the field of ECE, it is possible to observe that the privileged status in society is reflected in this field as well.

When the percentage of male teachers in the field of preschool education in Turkey is examined, an interesting parameter emerges. This percentage is currently 6.05%, according to the Turkish Ministry of National Education (MEB) data for the year 2022 (MEB, 2022). Considering that this percentage varies in the range of 2-3% worldwide (Warin, 2018), the proportion of men is interestingly higher than the world average. This is despite the more traditional and conservative structure of Turkish culture and values than other developed countries. However, the percentages of male ECE teachers in Turkey vary in public and private institutions. While the percentage of male preschool teachers working in public schools is 7.03%, this percentage decreases to 3.17% in private schools (Ministry of National Education, 2022). These ratios consider the influence of gender on career choice.

When the influence of gender on career choice is examined, the opinions of Gottfredson (1996), who stated that "vocational choice largely as a process of eliminating options and narrowing one's choices" (p. 179) emerges. Arguing that the individual's self-concept and perceived accessibility of a profession determine career decisions, he states that people sometimes give up their interests, prestige, and gender compatibility in choosing a profession (Gottfredson, 1996). Leung and Plake (1990) found that contrary to Gottfredson's model, the prestige of a profession is more critical, and people tend to abandon gender-appropriate occupations when the prestige of a job is higher. As a result, ranking the factors that are given up during the career selection process may vary depending on the degree of threat to self-perception (Gottfredson & Lapan 1997). As a result, it is thought that the difficulties experienced by teachers in settling down for a job in Turkey and the potential loss of prestige caused by the risk of unemployment may lead men to choose a career in ECE.

This research aims to examine how male students seeking a career in an ECE program evaluate the professions, and experiences of being a man, and how studying in this field affects their identity as a man in a female-dominated field. To achieve this, male teacher candidates with at least two semesters of teacher practicum are included in this study. In this context, this research seeks answers to the following research questions:

1. What are the reasons for male preschool teacher candidates to choose this profession?

2. What are the opinions of male preschool teacher candidates about gender role norms and their professions?

3. What kind of reactions do male preschool teacher candidates encounter about their profession?

4. What are the difficulties faced by male preschool teacher candidates within their profession?

2. METHOD

This research is a qualitative research. The qualitative approach is determined as the most appropriate method for determining the opinions and experiences of male students studying in ECE, which is considered a feminine field.

2.1. Participants

Participating in the research are ECE program seniors with at least two semesters of teacher practicum experience. The participants consist of students registered at a state university located in the central Black Sea region. Teacher candidates completed two semesters of teaching practicums in a kindergarten classroom once a week for a total of 24 weeks. The study group consists of a total of 12 male teacher candidates. The average age of the participants was 22.5, and all participants were within the 21 and 24-year-old range.

2.2. Semi-Structured Interview Form

A semi-structured interview form prepared by the researcher was used as a data collection tool in the study. The questions included in the interview form used in the research have been prepared primarily based on the experiences and observations of the researcher. While preparing the questions included in the interview form, the opinions of a female academic who works in the field of psychological counseling and guidance and who also has expertise in the field of gender study were considered. The semi-structured interview was preferred in this study because it provides consistency between the interviews conducted, provides flexibility for interviewees to share their experiences in their responses, and provides an opportunity to ask explanatory questions to the researchers conducting the interview (Braun & Clarke, 2013). This form consists of 10 open-ended questions that focus on the reasons why male students studying in ECE programs chose the field and the experiences they have during their studies and their lives in terms of masculinity identity.

2.3. Data Collection

The data were collected through online interviews with students who volunteered to participate in the study. The interviews lasted between 30 to 40 minutes. The interviews were recorded with the consent of the participants for data analysis purposes. The interviews were conducted with the ZOOM program, an online video conferencing tool.

2.4. Analysis of the Data

Content analysis technique was used to analyze the data. First, the interviews were recorded, and then the recordings were transcribed. The themes were created based on the information contained in the transcripts and the research questions. The data were analyzed using the QDA Miner Lite (version 2.0.7; Provalis Research) program. To ensure the reliability of the data within the scope of the research, the researcher selected three interviews randomly and these interviews were re-encoded based on the

determined themes by a qualified researcher. The reliability formula proposed by Miles and Huberman (2015) (Reliability= Consensus / Consensus + Disagreement) was used to calculate the reliability coefficient. The reliability value of Miles and Huberman Decoders in the analysis was performed. It was calculated as 85. According to Miles and Huberman (2015), the reliability value between Decoders should be at least 80%. According to this criterion, the reliability value was calculated as 85 and accepted as within the acceptance limits.

2.5. The Role of the Researcher

The author of this research is a male academic working in the field of ECE teacher training programs. The interviews were conducted by the researcher. The relevant literature was taken into consideration when interpreting the data collected for this study, but the researcher acknowledges that his own experiences may affect both the interview process and the interpretations.

3. FINDINGS

The qualitative data collected within the scope of the study were analyzed for the purposes of the research and the findings are presented below. The answers given to the semi-structured interview questions were classified into a total of five separate categories.

3.1. Findings on the Reasons for Choosing Preschool Teaching

Teacher candidates' reasons for choosing ECE field and their opinions on this issue have been collected under various codes and the findings are presented in Table 1. The codes created and examples of expressions of these codes are listed below.

Table 1. The Reason why Preschool Teacher Candidates Choose a Field

Category	Number of Interviewees Giving an Opinion (N=12)	%
Job Security	8	66,70%
Popularity	3	25,00%
Proximity to Children	2	16,70%
Other	2	16,70%

3.1.1. Job Security. Within this code, participants stated that they chose the field because it has a high chance of having a job after graduation. 66.7 % of participants mentioned job security. For example, an interviewer describes job security as follows:

"When we evaluate the conditions of our country, it came across to me as a department where you could find a job comfortably when you graduate."

3.1.2. Popularity. This code was created for participants when they expressed that the participants were advised to choose the program. Any answers related to popularity or a recommendation given by someone to choose ECE program were taken into account and 25% of participant talked about this category. An example given by popularity is as follows:

"We were told that in the future ECE will be more popular and it is a good program. If you choose this program, you will like it. Although I came a little unwillingly at first with these suggestions, I have grown fond of it and liked it later. I don't want to quit anymore."

3.1.3. Proximity to children. Opinions about feeling close to children as the reason for choosing the field in interviews were coded as proximity to children and placed under this code. 16.7% of the participants expressed an opinion in this category. An example statement is included below.

"I have a slightly more moderate and warm attitude towards preschool children and I like to communicate with them."

3.1.4. Other. When participants stated their reasons for choosing a profession as willing to educate or ease of the profession, these reasons were coded in this coding group. 16.7% of the participants expressed an opinion in this category.

3.2. Findings on the Category of Gender Roles in the Preschool Teaching Program

ECE teacher candidates' views on the perception of gender roles in the field and statements about judgments in society have been placed under this category and the codes are presented in Table 2. The explanation of the codes and sample expressions are included below.

Table 2. The Views of Preschool Teacher Candidates on Gender Perception

Category	Number of Interviewee Giving an Opinion (N=12)	%
Women's Profession	10	83,30%
Gender Equality	9	75,00%
Administrative Positions	7	58,30%
Identity Crisis	3	25,00%
Male Authority	3	25,00%

3.2.1. Women's Profession. The comments expressed by the participants in the interviews and that this profession is perceived as more of a women's profession have been collected under this code. This code accounts for 83.3% of the participants. One of the participants described how the preschool teaching profession is looked at as follows:

"*What about this way, for example, because society assumes such a meaning, obviously, because kindergarten for children is, after all, as it literally is considered as `mother school` as the name also includes the word mother. The Society considers any preschool job you can think of is more suited for women. Like this job fit to women`s nature and man has no place within these schools. It is automatically assumed that women can take better care of children at this age and therefore they are more qualified for this job." They don't perceive this as an education I guess, it is more like a mothering job.".*"

3.2.2. Gender Equality. The statements made by the participants about gender equality have been collected under this code. The percentage of participants who mentioned gender equality was 66.6%. One of the participants stated his opinion on this issue as follows:

"*In raising a child close to the ideal is seen as the role of the mother, but I think fathers has equally responsible and effective role in raising the child. Relying on this, at least by entering ECE field, gaining experience there, seeing how things work there, how child psychology is, in practice, both internship and in theory, I also convinced myself that I would not have many difficulties on my own. I mean, being ECE teacher, I wouldn't want them to see gender when they look at this profession. According to gender norms, a male teacher cannot at a preschool, or an obstetrician cannot be a man. I would like to somehow overcome the prejudice.*"

3.2.3. Administrative. The opinions of the students participating in the study regarding the roles they were supposed to have in ECE schools for their future professional life, as well as their own opinions related to administrative positions were collected under the administrative code. 58% of the participants in the study expressed an opinion on this issue. One of the statements in the administrative coding is indicated below.

"*So I am about to finish the program. They tell me I should become a school principal or an assistant principal. I can't and shouldn't do this job. They told me this when I was doing my practicum at the school in the second semester. They think just because I am a man, I cannot teach in a preschool at all, so I should become an administrator. This happened in the last day of my internship.*"

3.2.4. Identity Crisis. The expressions related to the identity crisis experienced by the male teacher candidates when they started the program, during their studies, or during the teaching practicum were collected under this code. 25% of the participants expressed an opinion on this issue. An example expression with this code is given below.

"So I wonder if it suits my character? So it looks like a women's profession. Yeah, I mean, taking care of the kids. I mean, from my own point of view, what does it make me feel from the point of my self-confidence, so there may be thoughts such as should I switch to a male profession?"

3.2.5. Male Authority. The opinions expressed by the participants about the authority of male teachers were collected in this code group. 25% of the participants expressed an opinion on this issue. Below is an example statement.

"How can I explain more, when I am dealing with a teacher My observations tell me that male teachers can set boundaries when they communicate more effectively. Parents and other teachers can feel the authority of a male teacher I think. At least as far as I have observed, that is, they need to watch their attitude a little more when they deal with a male teacher. Because when they deal with a male teacher, you know, they act differently. When they deal with a female teacher, they can be a little more friendly towards her and have a hard time setting boundaries."

3.3. Reactions

The difficulties faced by preschool teacher candidates and their opinions on this issue have been collected under this category and the codes created are presented in Table 3. In addition, the definitions of each category and sample statements are given below.

Table 3. Reactions

Category	Number of Interviewees Giving an Opinion (N=12)	%
Positive Discrimination	9	75,00%
Society-Negative Reaction	8	66,70%
Parents-Negative Reaction	6	50,00%
Supportive Attitude	6	50,00%
Children -Positive Reaction	3	25,00%
Parents-Positive Reaction	3	25,00%
Family-Negative Reaction	2	16,70%
Children -Negative Reaction	1	8,30%

3.3.1. Positive Discrimination. The statements in which the participants stated that they were subjected to positive discrimination in the interviews were collected under this coding. 75% of the participants stated that they had been discriminated against because of their gender in some way. An example given by one of the participants in this direction is as follows:

"When I first went to the practicum, they didn't assign me the three-year-old age group. They said I was a man. I would be better off working with the older five-year-old-age group. I don't know, how can you take it? I don't know if it's right? I mean, that's actually what I wanted at first. I thought I would have difficulty at the three-year-old group. I mean, because it's just the first time. It was a relief to be treated a little more comfortably. Actually, it was a good thing from my point of view."

3.3.2. Society Negative Reaction. The negative reactions that the participants received from the people in the society to being placed in the ECE program were collected in this code. 66.6% of the participants stated that they had received a negative reaction in some way. One of the participants expressed the reaction he received as follows:

"Yes, I mean, definitely, when they ask me what I study wherever I go, when they hear ECE, whether it's a man or a woman, the reaction I get is that "What, it is a preschool and you are a male". This is annoying. They met me for the first time, that's how they really think they are not afraid to show how they feel about me being a male in ECE job."

3.3.3 Supportive Attitude. The answers of the participants who stated that they experienced a supportive attitude for their choice as ECE teacher program were collected under this code. 50% of the participants stated that they got a supportive attitude or reaction. As an example of the answers given about this coding, one of the participants expressed the attitude of the practicum teacher towards him during the teaching practicum in this way:

"At the end of the semester, my practice teacher said, "I am glad that you have chosen this profession and I am glad that you are continuing. I was very pleased with your performance as an intern. She also said that I was able to perform as well as female interns do, and that's why she wanted me to continue in this profession," she said, and this made me very happy."

3.3.4. Parents- Negative Reaction. The negative reactions that the participants received from the parents of the students at the school during the practicum were collected under this coding. 50% of the participants stated that they had received some kind of negative reaction. As an example of this, one of the participants shared his experience as follows:

"At the beginning of my practicum, I was opening the classroom door. I was welcoming the students, but they were asking whether I was working there. I was saying that I was not working. I was saying that I was a teacher candidate. When they see a male teacher, families react oddly. They were asking "How could a man be an ECE teacher?" I'm saying yes, yeah this happens sometimes. You might have seen a male ECE teacher for the first time, but it happens, I said."

3.3.5. Parents-Positive Reaction. This coding was created for the situations in which the participants received a positive reaction from the parents during the practicum. These reactions occurred sometime after the teacher candidates got to know the children and their families. A response to this coding is included below.

"Then as time went on, after the first semester was nearing the end of the internship, I received such positive feedback from the students that the parents were already starting to ask. When is the male teacher coming? Because our children love him. And that made me happy, obviously."

3.3.6. The Positive Reaction of The Children. The positive reactions that the teacher candidates received from the children during the teaching practicum were collected under this code. 25% of the participants stated that they faced some negative reactions from the children when they first started their practicum, but these disappeared in a very short time, and they started having good communication with the children.

"When I first started the internship, the children didn't really like me. But in 1-2 weeks, all that prejudice against me has changed. So I realized that I can actually communicate my intentions and be understood well. In fact, the children have become much more sincere, so they have grown fond of me. Some of the children started coming over every day when they saw me in the morning and hugging and saying hello asking how I was."

3.3.7. Family- Negative Reaction: The negative reactions that the participants received from people to being placed in the ECE teachers program were collected under this code. 16.70% of the participants stated that they had received a negative reaction in some way. One of the participants expressed the reaction he received as follows:

"It's just that Mom said it's a program that girls really prefer. Where I am from we have a more patriarchal point of view in society. I mean, it's just a program that girls prefer."

3.3.8. Children- Negative Reaction. The negative reactions that the participants received from the students at the school during their practicum experiences were collected under this code. Only one participant stated that they faced a negative reaction. One of the participants shared his experience in a kindergarten classroom as follows:

"There was a girl named B.... in the class. When she saw me first, she reacted so harshly. When I tried to talk to her, she frowned. She didn't respond to what I said. She didn't want to talk to me. When she went home, she told her mother, "A man came into our classroom today. Just a male teacher in the classroom. I didn't like him very much," kind of things she said. She showed that she was uncomfortable with the situation. And then, her mother told my practicum teacher. The internship teacher also told me that she did not like me."

3.4. Difficulties

The difficulties faced by preschool teacher candidates and their opinions on this issue have been collected under this category and the codes created are presented in Table 4. In addition, the definitions of each category and sample statements are given below.

Table 4. Difficulties

Category	Number of Interviewees Giving an Opinion (N=12)	%
Employability	5	41,70%
Pedophilia Implication	5	41,70%
Negative Discrimination	3	25,00%

3.4.1. Employability. The answers given by the participants to the interview questions about the field of study have been collected under this code. 41.7% of the participants expressed their opinion about the difficulties in their employability. An example to the Workspace code is as follows:

"So let me think about it, for once I want to speak for the private schools and institutions. I want to talk about the private sector in our field. I don't think we can get too many employment opportunities."

3.4.2. Pedophilia Implication. The statements used by participants to express their thoughts about the difficulties they experienced due to their gender and common misconceptions about male teachers being potential sexual abusers in society were collected in this code group. 41.7% of the participants expressed an opinion on this issue. An example by one of the participants is given below.

"Last year, in the first semester, my internship teacher gave me some preliminary information, not a warning, but information was about not having too much contact with girls. Because, for example, children like to come and give us hugs. The younger ones, especially 5-year-olds. I mean, a girl pupil wants to hug me, for example, because I'm her teacher at work, or sometimes they cry and go their teacher for comfort. You know, kids like to touch. The teacher said that some of the parents may be uncomfortable with these issues. We don't have any problems with you. The source of the problem is you. Parents can be sensitive about this. We more or less predict these things, we know, or there may be such a possibility, so they passed on a little information that it would be better for yourself and for us if you were a little careful."

3.4.3. Negative Discrimination. The cases in which the participants stated that they were discriminated against because of their gender were collected under this code. 25% of the participants stated that they had been discriminated against because of their gender in some way. An example answer to this category is given below.

"When I started the teaching practice, the reaction we received was "Here we go again, another male student! Male students trainee students can't do much"."

4. DISCUSSION AND INTERPRETATION

This study examines in depth the complex challenges faced by male students on the preschool teaching career path, both during their academic journey and expectations for their future professional endeavors, and addresses the unique challenges, motivations, and aspirations that drive these individuals to pursue a career in a field traditionally dominated by their female colleagues. This study aimed to reveal the personal and professional complexities that shape male ECE teacher candidates' perceptions and careers through semi-structured interviews and hoped to shed light on the obstacles they may face. It is hoped that findings from this study will help society discover the transformative potential they may bring to the preschool education environment. The findings of the research show that male individuals who aim to become preschool teachers encounter various difficulties and reactions mainly due to gender stereotypes, but from time to time male identity can also turn into an advantage. In particular, the study reveals that the main concerns of the participants revolve around forward-looking social stereotypes, which are spread especially by parents of young children and the wider community towards male ECE teachers. Moreover, a subset of participants expressed concerns about their individual achievements and performance, which reveals that the widespread influence of gender stereotypes poses a central and challenging obstacle for men in this profession. In the following section, the study's findings are interpreted under categories within the same order as in the results.

4.1. Discussion and interpretation of the findings related to the examination of the reasons for choosing the ECE field

Job security is one of the main reasons why male teacher candidates choose ECE field. The participants consider the teaching profession as a financially and socially acceptable profession, especially in public institutions. Considering the economic conditions and unemployment rates of Turkey, working in a government institution is considered a guaranteed job, and the teaching profession provides certain living standards to individuals. It is thought that this is one of the reasons why the percentage of male preschool teachers in Turkey is higher than the percentage in the majority of countries, especially in many European and North American countries. Compensation has an important weight in shaping a person's career choices. This also applies to males who are following a path in their preschool education. Men have often faced the challenge of reconciling their passion for a fulfilling career with their responsibility to support their families financially. Considering that preschool teaching as a profession that generates a good level of income in the conditions of Turkey increases the preferability of this profession. The opposite of this situation is observed in Western countries. The financial aspect often appears as a significant deterrent factor that discourages men from considering teaching as a viable option. This has been revealed in previous studies. According to Cooney and Bittner (2001), the prevailing concern among men has been the possibility of earning insufficient earnings, especially given their role as the main source of livelihood of their households. The necessity of making financial concessions while pursuing their chosen profession is of great importance in decision-making

processes. In his study, Cohen (1992) pointed out that many male individuals trained in ECE are rapidly transitioning to more financially rewarding and respected roles in school administration and higher education. It turns out that the participants' desire for stability and assurance in their career paths significantly affects how these individuals select a career path. In a rapidly developing job market, this finding underscores the enduring value attributed to the security that the teaching profession can provide.

The concept of popularity as a factor in choosing a career has remarkable importance. The recognition of the popularity of a field reflects a contemporary social influence and emphasizes how external perceptions can lead individuals on certain paths. It turns out that a small portion of the candidates are motivated and interested in the education of young children. This coincides with the peculiar nature of the profession of ECE, in which a real passion for educating young minds is required. These findings are supported by other studies included in the literature (Buldur, Keskin, & Börekçi, 2021). It is thought that some of the participants perceive preschool teaching as an easy profession due to the structure of preschool education in Turkey. Usually, preschool educational institutions serve two different student groups, morning and afternoon, and teachers usually work half of a day.

When all these findings are evaluated, it is seen that preschool teaching in Turkey is more advantageous than many other professions in terms of working conditions and finding a job, which is effective for men to choose this field. This finding is parallel to the determination made by Leung and Plake (1990) that the ideas and preferences for choosing gender-appropriate occupations can be abandoned quickly when prestige of the profession is high. The ranking of the factors given up in the process of choosing a profession may vary depending on the degree to which the self-concept is threatened (Gottfredson & Lapan, 1997) given that the risk of loss of prestige created by the possibility of unemployment for a man may threaten his self more than the risk of working in a gender-inappropriate profession. This may lead to the fact that the gender conformity factor is more easily overlooked by some people when choosing a profession. It would be useful to look at why males choose teaching in ECE in Turkey from this point of view.

4.2. Discussion and interpretation of the findings related to gender role perceptions of ECE teacher candidates

Preschool teaching has historically been seen as a profession dominated by women (Baqi, 2023). This view, expressed by a large part of the participants, the prevailing perception that preschool education is a "Women's Profession" shows that deep-rooted gender stereotypes that persist in social perceptions are widespread. This observation emphasizes that it is critically important to challenge these stereotypes and expand the discourse surrounding career choices, as the ongoing impact of traditional roles can affect not only individual decisions but also the overall diversity in the field. It is worth noting that the perception that teaching is a woman's job in the preschool period is deeply entrenched in society (Seno et al., 2022). Male preschool teacher candidates have question marks in their heads both because

of this perception that has persisted in society, and this also affects their perception of how they position themselves in the ECE profession.

The fact that some of the participants in the study expressed opinions indicating that they were experiencing identity confusion reveals a complex layer of personal struggle. This feeling offers a glimpse into the difficulties that can arise when one's desires clash with traditional gender norms. Investigating the root causes of this identity conflict can reveal the emotional complexities that individuals have when following a path that can defy societal expectations. Current research has shown how male teachers avoid the preschool teaching profession because it may cause them to question their masculine status (Brody et al., 2021; Xu et al., 2020). This a finding of the research can be evaluated according to the concept of hegemonic masculinity. Considering that hegemonic masculinity is defined as a form of masculinity that is presented to men as a norm and requires all men to position themselves according to it (Connell & Messerschmidt, 2005), it can be inferred that men who will work in a field seen as a "women's profession" have difficulty in positioning themselves within hegemonic masculinity. The fact that many participants refer to the dimension of doing the school administration profession, which they find more masculine than this profession, which also includes care, can be explained by the fact that the participants feel obliged to position themselves according to the hegemonic norms of masculinity.

School administration emerges as a remarkable category with a serious tendency to leadership roles among the participants. This reflects a desire to contribute to the educational ecosystem beyond the classroom, potentially by influencing policies and practices. As mentioned by Cohen (1992), it is important to recognize that a significant number of professionals specializing in preschool education are rapidly shifting to more financially lucrative and respected positions in the fields of school administration and higher education. Boyd and Newman (2019) found that a significant number of ECE teachers prefer to work in elementary schools instead of preschool education centers due to unsatisfactory career paths, low status, and poor working conditions. Garvis and Pendergast (2015) also reported that pre-service ECE teachers in Australia often prefer to work with older children rather than younger children in preschool education settings. In Turkey, on the other hand, this has caused male ECE teacher candidates to be looked at as possible administrators. Examples of this have also been observed in other countries. This finding was put forward by Williams (1992). It can also be explained by the metaphor of the "glass escalator." Especially in the professions where women constitute the numerical majority, t it is assumed that men are more competent and better leaders than women, and as a result, men are attracted to higher-paying specialties and administrative positions (Williams, 2013). Within the study, this is observed as male preschool teacher candidates in Turkey also benefit from this advantage. When considered by Connell (1995) in terms of masculinities positioned within the framework of hegemonic masculinity, it can be interpreted that men who plan to use this advantage are

included in the classification of "cooperative masculinity," who take advantage of hegemonic masculinity and share in patriarchy within this framework.

Similarly, the fact that some participants stated that the presence of male teachers in preschool educational institutions in a predominantly female-centered area would positively contribute to the dynamics of authority and even contribute to communication between parents and teachers raises some interesting questions. They say that in preschools where there are no male colleagues, female teachers have problems with particularly demanding parents, simply implying that if the teacher is male, these problems will not occur. As Harris and Barnes (2009) stated, another dimension of male role modeling includes the expectation that male teachers will naturally have disciplined characteristics in the educational environment. As Haase (2008) emphasizes, male educators often perceive a sense of responsibility to maintain traditional masculine behaviors among boys within the framework of patriarchal gender. This perspective shows that stereotypical judgments of society can play a role in this process when creating professional identities and determining the roles of male teacher candidates who intensively and every time realize gender equality in preschool education.

It is an essential finding that gender equality is accepted as an important issue by most of the participants. This reflects a growing awareness among these individuals of the need to eliminate gender biases and promote equal opportunity for all genders. This awareness aligns with the developing discussions on gender equality (Anliak & Şahin Beyazkürk, 2008). It suggests that preschool education is not immune to broader social changes.

4.3. Discussion and interpretation of the findings related to the opinions of ECE teacher candidates about the reactions they received

The findings obtained within the scope of this study are expected to help us understand the reactions, problems, and feelings faced by male preschool teacher candidates by shedding light on the experiences of male preschool educators during the teaching process. Male preschool teacher candidates sometimes stated that they were subjected to positive discrimination in practicum schools and sometimes in universities because they were men, but a few participants expressed discomfort with this. These findings are similar to the findings of other studies in the literature (Demirkasımoğlu & Taşkın, 2019). However, the presence of a wide range of negative reactions, from the immediate environment to parents and even children, shows that social prejudices can prevail and informs us about how to meet the challenge of society's well-established norms by choosing the profession of preschool teaching. The existence of supportive attitudes that teacher candidates encounter during their education and the important role of encouragement from peers, mentors, and institutions show. Anliak and Şahin-Beyazkürk (2008) emphasize the importance of this support in their study of male preschool teacher candidates. Such supportive attitudes can often serve as a foundation for resilience in the profession, strengthening their belief in the value of their chosen profession and helping them overcome difficulties.

While positive reactions highlight the importance of preschool educators' potential to be a catalyst for overcoming gender norms and promoting inclusivity, negative reactions show us the biases that preschool children may have internalized from the broader social fabric.

4.4. Discussion and Interpretation of the Findings Related to the Difficulties Faced by Male Preschool Teacher Candidates

Understanding the difficulties ECE teacher candidates face can offer various possibilities for solving the problems inherent in their chosen career path. The Field of Study (Work Environment) category emphasizes the complex interaction of conditions within the field itself. The challenges in this category may be related to the demands of ECE education, including the need for patience, adaptability, and endurance in the profession to progress in a dynamic and often challenging working environment. Many of the participants mentioned the difficulties of finding a job as male teachers, especially in the private sector. As a reason for this, it has been stated that private institutions use their preschool teacher preferences in favor of women teachers. These findings show that this problem is a global problem. A study conducted in South Africa revealed that there are no male educators in kindergartens in the region where the research was conducted (Okeke and Nyanhoto, 2021). Various factors negatively affecting boys' participation in the preschool education sector have been identified. It is noted that these factors may include misinterpretation of cultural roles, stigmatization, fear, prejudice, low educator status in the preschool sector, and lack of male recruitment policies. On the other hand, unlike public schools, where commercial concerns are at the forefront, male preschool teachers are not preferred due to the concern that parents will not prefer male teachers. There is a common belief among participants, and they mostly believe that they will not be hired for positions in private schools. This could be considered as a disadvantage for male ECE program graduates.

The existence of the Pedophilia implication expressed by many participants is noteworthy and reflects a disturbing aspect of social prejudice. This situation suggests that some individuals in society may unfairly associate male educators with negative assumptions in ECE, which may harm the general perception of the profession. Male teachers may also experience social exclusion from their female colleagues and are highly aware of the risk of alleged sexual abuse of children (Yang, 2018). In order to ensure that unfounded accusations do not hinder the pursuit of a meaningful career, such perceptions need to be addressed critically through awareness campaigns and discussions.

Another difficulty identified is negative discrimination, which indicates situations where individuals may face prejudices due to their gender and career preferences. This category reveals the ongoing impact of gender stereotypes that perpetuate prejudices against boys in preschool education. As Yang points out in her study (2018), many parents or guardians express their concerns when their young children are assigned a male teacher, which can create a sense of doubt and pressure on male teachers

(Yang, 2018). This reveals a systemic obstacle that requires concerted efforts to challenge these biases and improve the environment of equality and inclusion.

Basically, these findings paint a portrait of the obstacles and problems ECE teachers face. Despite these difficulties, male preschool teachers find their jobs valuable and feel good about themselves (Seno et al., 2022). These findings reflect the complexity of male ECE participants' journeys, which encompass both the inherent demands of the field and the social prejudices that need to be eliminated. These challenges collectively highlight the need for robust support mechanisms, awareness campaigns, and policy initiatives to create an environment in which preschool educators, regardless of gender, can thrive without excessive biases or unfounded assumptions.

CONCLUSSION, RECOMMENDATIONS and LIMITATIONS

This study was carried out to examine the reasons for choosing the professions of male preschool teacher candidates and their experiences and opinions during the education and internship process. As a result of the analysis of the data collected in the research, several important results have been obtained. First of all, it has been found that male preschool teacher candidates choose this profession for reasons such as job finding anxiety and popularity when choosing this profession. Within this framework, it has been found that in a country where traditional gender role separation is prominent, such as Turkey, anxiety about finding a job prevents suitability for a male role. The majority of male preschool teacher candidates interviewed within the scope of the research stated that sometimes they can be evaluated differently by children, parents, and sometimes even colleagues due to gender role expectations. In this context, they stated that they encountered difficulties such as seeing this profession as a woman's profession, reactions from the environment, and the implication of pedophilia. On the other hand, male ECE teachers can sometimes benefit from positive discrimination and can maintain the advantage of being a man in society by being promoted to administrator or other higher positions.

Also, the majority of the participants emphasized the importance of gender equality and it was observed that a certain awareness was formed on this issue. Again, it was observed that the participants emphasized that they had the opportunity to positively impact children's emotional and social development. As male role models, they have stated that they help children discover their own identity, especially in gender-diverse classrooms.

Based on the results of this study, it is thought that it will be useful to organize educational programs and awareness-raising activities for teachers in preschool educational institutions, gender equality, and gender diversity issues. In vocational guidance studies conducted at all levels of education, it should be emphasized that professions should be selected not by gender, but rather by considering interests and abilities.

While this study provides valuable insights into the perspectives of male students in early childhood education, several limitations should be acknowledged. Firstly, data collection solely from students and the absence of perspectives from children and parents within the educational setting represent limitation, potentially overlooking the holistic dynamics of early childhood education. Secondly, the participants being in the early stages of their teaching careers with limited practical experience may impact the depth of insights into their profession. These limitations should be considered when interpreting the study's outcomes and provide opportunities for further research to address these gaps and contribute to the comprehensiveness of future investigations in this area.

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KADINSILIK İLE KARAKTERİZE EDİLEN MESLEK ALANLARINDA ERKEKLER VE ERKEKLİKLER: OKUL ÖNCESİ ÖĞRETMENLİĞİNDE OKUYAN ERKEKLER ÖRNEĞİ

GİRİŞ

Bu çalışmanın amacı, kadınsı bir alan olarak görülen okul öncesi öğretmenliği bölümünde okuyan ve en az iki dönem staj deneyimi olan erkek okul öncesi öğretmen adaylarının mesleklerini nasıl değerlendirdiklerini, erkek olmaktan kaynaklı yaşadıkları avantaj ve dezavantajları ve bu alanda okumanın erkek olarak kimliklerini nasıl etkilediğini incelemektir. Araştırma, erkek okul öncesi öğretmen adaylarının mesleki deneyimlerini anlamak ve toplumsal cinsiyet normları bağlamında bu deneyimlerin nasıl şekillendiğini anlamak amacıyla yürütülmüştür.

Araştırma Soruları

Bu çalışma kapsamında, aşağıdaki araştırma sorularına yanıtlar aranmıştır:

1. Erkek okul öncesi öğretmen adaylarının bu mesleği seçme nedenleri nelerdir?

2. Erkek okul öncesi öğretmen adaylarının toplumsal cinsiyet rol normları ve meslekleri ile ilgili görüşleri nasıldır?

3. Erkek okul öncesi öğretmen adaylarının mesleklerine yönelik karşılaştıkları tepkiler nelerdir?

4. Erkek okul öncesi öğretmen adaylarının mesleklerine yönelik karşılaştıkları zorluklar nelerdir?

Bu araştırma, erkek okul öncesi öğretmen adaylarının mesleki deneyimlerini derinlemesine anlamayı ve toplumsal cinsiyet ilişkileri bağlamında bu deneyimlerin nasıl şekillendiğini aydınlatmayı amaçlamaktadır. Elde edilen bulgular, erkek öğrencilerin okul öncesi öğretmenliği alanında karşılaştıkları deneyimleri anlamak ve meslekleriyle olan ilişkilerini geliştirmek isteyen araştırmacılara, eğitimcilerine ve karar vericilere ışık tutabilir. Literatür incelendiğinde genel olarak erkek okul öncesi öğretmenleri ve öğretmen adaylarının toplumsal cinsiyet ile ilgili beklenti ve kalıpyargılar nedeniyle zorluklar yaşayabildiği görülmektedir (Erden, Özgün & Aydilek-Çiftci, 2011; Fu, 2012Weaver-Hightower, 2010). Örneğin erkek öğretmen adaylarının cinsiyetlerinden kaynaklı dirençle karşılaştıkları (Fu & Li, 2010), cinsiyetçi alaylar ve itirazlar nedeniyle cesaretlerinin kırıldığı (Weaver-Hightower, 2011) mesleklerinin değerinden şüphe etme eğilimine girdikleri (Fu & Li, 2010) ve onları okul öncesi öğretmenliğini bir kariyer olarak sürdürmekten caydıran cinsiyetçi varsayımlar ve klişelerle sıklıkla karşılaştıkları (Fu, 2012) belirtilmektedir.

YÖNTEM

Araştırma nitel bir yaklaşım olan derinlemesine görüşme tekniği kullanmıştır ve okul öncesi öğretmenliği alanında erkek öğrencilerin meslekleriyle ilgili görüş ve deneyimlerini belirlemeyi amaçlamıştır. Araştırmaya katılanlar, okul öncesi öğretmenliği programının 4. sınıf öğrencilerinden

seçilmiş ve orta Karadeniz bölgesindeki bir devlet üniversitesinde kayıtlı olan 12 öğrencidir. Katılımcılar, 4. sınıfta toplam 24 hafta boyunca haftada bir tam gün olarak bir anaokulunda öğretmenlik uygulaması derslerini tamamlamıştır.

Araştırma verileri, yarı yapılandırılmış görüşme formu kullanılarak toplanmıştır. Bu form, okul öncesi öğretmenliği bölümünde okuyan erkek öğrencilerin bölüm seçme nedenleri, okudukları süreçte bölüm ve erkeklik kimliği açısından yaşantılarına odaklanan açık uçlu sorulardan oluşmaktadır. Görüşmeler online olarak, ZOOM programı kullanılarak yapılmış ve kaydedilmiştir.

Verilerin analizi içerik analizi tekniği kullanılarak gerçekleştirilmiştir. Görüşmeler kaydedilip deşifre edilerek temalar oluşturulmuştur. Verilerin analizi QDA Miner Lite programı kullanılarak yapılmıştır. Analizde kodlayıcılar arası güvenirlik hesaplaması yapılarak güvenirlik değeri belirlenmiştir.

TARTIŞMA, SONUÇ VE ÖNERİLER

Araştırmanın bulguları, okul öncesi öğretmeni olmak isteyen erkek bireylerin toplumsal cinsiyet kalıp yargılarından dolayı çeşitli zorluklarla ve tepkilerle karşılaştıklarını göstermektedir. Bu zorluklar öncelikle cinsiyet önyargılarıyla bağlantılı olsa da, erkek eğitimci olmanın da avantajlı olabileceği durumlar vardır. Çalışma sıklıkla katılımcıların endişelerinin toplumsal stereotipler ve erkek okul öncesi eğitimcilerle ilgili cinsiyet önyargılarının ileri düzeyde yayılması etrafında döndüğünü vurguluyor. Dahası, katılımcıların bir alt kümesi bireysel başarılar ve performansla ilgili endişelerini dile getiriyor; bu da cinsiyet stereotiplerinin bu meslekte erkekler için ne kadar merkezi ve zorlu bir engel teşkil edebileceğini vurgulamaktadır.

Ayrıca bulgular, erkek öğretmen adaylarının erken çocukluk eğitimini bir kariyer yolu olarak seçme motivasyonlarını da tartışmaktadır. İş güvenliği, finansal istikrar ve sosyal kabul gibi faktörler temel motivasyon unsurları olarak vurgulanıyor. Çalışma, erken çocukluk eğitiminde bir yol izleyenler de dahil olmak üzere, kariyer kararlarında finansal hususların önemli bir rol oynadığını öne sürüyor. Erkek okul öncesi öğretmeni oranlarının bazı Batılı ülkelere göre nispeten daha yüksek olduğu Türkiye'de, finansal kaygıların bu kariyer seçiminin çekiciliğine katkıda bulunması muhtemeldir.

Özette aynı zamanda erken çocukluk eğitimindeki toplumsal cinsiyet rollerine ilişkin algılar da ele alınmaktadır. Kadınların bu alandaki tarihsel üstünlüğü kabul ediliyor ve erken çocukluk eğitiminin toplumsal algısının "kadın mesleği" olduğu vurgulanıyor. Katılımcılar, geleneksel toplumsal cinsiyet rolleriyle ilişkili toplumsal normlardan ve stereotiplerden kaynaklanan kimlik çatışmalarını dile getiriyorlar. Çalışma, kendilerini öğretme tutkuları ile toplumsal erkeklik beklentileri arasında kalmış bulan erkek katılımcıların mücadelesini tanımaktadır.

Erkek öğretmen adaylarının karşılaştığı zorluklar, çalışma ortamı ve okul öncesi ortamlardaki erkek eğitimcilere yönelik olumsuz algılar gibi faktörler de dâhil olmak üzere daha ayrıntılı olarak araştırılmıştır. Özetle ayrıca erkek eğitimcilerin toplumsal önyargılara ve temelsiz varsayımlara rağmen

gelişebilecekleri bir ortam yaratmada destek mekanizmalarının, farkındalık kampanyalarının ve politika girişimlerinin önemi ortaya çıkmıştır.

Erken çocukluk eğitiminde kariyer yapmak isteyen erkek bireylerin karşılaştığı deneyimlerin ve zorlukların kapsamlı bir incelemesini sunmaktadır. Erken çocukluk eğitiminin daha kapsayıcı ve çeşitli bir alanını yaratmak için cinsiyet önyargılarını ele almanın, destekleyici ortamları teşvik etmenin ve farkındalığı artırmanın öneminin altını çiziyor.

WRITING A THESIS IN A PANDEMIC: THE CASE OF SPECIAL EDUCATION

Ahmet Serhat UÇAR[1]

ABSTRACT

It is thought that examining the effects of the Covid-19 period from the perspective of academics is important to be more prepared for possible similar situations. In this study, it was aimed to determine the effects of Covid-19 pandemic on the thesis writing processes of academicians working in the field of special education. The research was conducted with a phenomenological approach from qualitative research methods. Purposive sampling was used to determine the participants in the study. The participants of the study were 11 research assistants who completed their doctoral studies in the Department of Special Education. Research data were collected through semi-structured interviews and researcher's diary. The data obtained were analyzed using content analysis, and eight themes were reached. The themes are; I should continue with this topic, I insisted on my method, I had difficulty finding participants, how was my data collection process affected, how was my reporting phase, what did my advisor do, how did other factors affect my research, and if the pandemic happens again. The Covid-19 pandemic has caused significant disruptions in academic studies as in every field. Academics tried to eliminate the problems they experienced with distance education platforms and individual solutions and to complete the process with minimal disruption. It is recommended that studies be conducted to identify, implement, and disseminate methods that can be used to overcome similar processes more easily in future research.

Keywords: Covid-19; Pandemic; academician; thesis writing; special education.

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PANDEMİDE TEZ YAZMAK: ÖZEL EĞİTİM ÖRNEĞİ

ÖZET

Covid-19 döneminin etkilerinin akademisyenlerin bakış açısıyla incelenmesinin olası benzer durumlara daha hazırlıklı olmak için önemli olduğu düşünülmektedir. Bu çalışmada özel eğitim alanında görev yapan akademisyenlerin tez yazma süreçlerinde Covid-19 pandemisinin etkilerinin belirlenmesi amaçlanmıştır. Araştırma nitel araştırma yöntemlerinden fenomenolojik yaklaşımla gerçekleştirilmiştir. Araştırmada katılımcıların belirlenmesi aşamasında amaçlı örneklem kullanılmıştır. Araştırmanın katılımcıları Özel Eğitim Bölümünde doktora eğitimlerini tamamlayan 11 araştırma görevlisidir. Araştırma verileri yarı yapılandırılmış görüşmeler ve araştırmacı günlüğüyle toplanmıştır. Elde edilen veriler içerik analizi kullanılarak analiz edilmiş ve sekiz temaya ulaşılmıştır. Temalar; bu konuyla devam etmeliyim, yöntemimde ısrarcı oldum, katılımcı bulmakta zorlandım, veri toplama sürecim nasıl etkilendi?, raporlama aşamam nasıl geçti?, danışmanım neler yaptı?, diğer etmenler araştırmamı nasıl etkiledi? ve bir daha pandemi yaşanırsa başlıklarından oluşmaktadır. Covid-19 pandemisi her alanda olduğu gibi akademik çalışmalarda da önemli aksamalara yol açmıştır. Akademisyenler yaşadıkları sorunları uzaktan eğitim platformları ve bireysel çözüm yolları ile ortadan kaldırmaya, süreci en az aksama ile tamamlamaya çalışmıştır. İleri araştırmalarda benzer süreçlerin daha kolay üstesinden gelinebilmesi amacıyla kullanılabilecek yöntemlerin belirlenmesi, uygulanması ve yaygınlaştırılmasına yönelik çalışmaların yapılması önerilmektedir.

Anahtar Kelimeler: Covid-19; pandemi; akademisyen; tez yazma; özel eğitim.

1. INTRODUCTION

The virus causing severe acute respiratory syndrome that emerged in Wuhan, China was named Corona (Xu et al., 2020). The situation, which started in late 2019 and turned into a global health crisis affecting the whole world, was declared as COVID-19 Pandemic (WHO, 2020). On March 11, 2020, it was announced that the first COVID-19 case was detected in Turkey (Ministry of Health, 2020).

The COVID-19 pandemic has had significant social, economic and psychological impacts. As in all areas, the pandemic affected the education process. With this impact, it is seen that many studies on the pandemic were carried out in the literature in a short time. Among national and international studies, the most frequently mentioned topic is the impact of the pandemic on education (Balcı, 2020; Can, 2020; Çiçek et al., 2020; Daniel, 2020; Hoofman & Second, 2021; Grek & Landri, 2020; Parkar, 2020; Schleicher, 2020). Another intensively studied topic is the problems experienced in distance education (Al Lily et al., 2020; Bergdahl & Nouri, 2021; Kavuk & Demirtaş, 2021; Khan, 2021; Rashid, 2021; Sari & Nayır, 2020).

In terms of participants, classroom teachers (de Oliveira Dias, 2020; Kurt et al., 2021; Rasmitadila, 2020; Saygı, 2021; Yolcu, 2020), preschool teachers (Hong et al., 2021; Steigleder 2023; Yıldırım, 2021), science teachers (Bakırcı et al., 2021; Verma et al., 2020), mathematics teachers (Baki & Çelik, 2021; Drijvers et al., 2021; İskenderoğlu-Aydoğdu & Konyalıhatipoğlu, 2021), special education teachers (Akbayrak et al., 2021; Lesh, 2020). In addition to teachers, there are also studies involving families (Bozkuş-Genç & Sani-Bozkurt, 2022; Dong et al., 2020; Misirli & Ergulec, 2021)

and undergraduate students (Arı & Kanat, 2020; Copeland et al., 2021; Duban & Şen, 2020; Maqableh et al., 2021) as participants.

Studies focusing on academia and academics can also be added to the studies given as examples in terms of subject and participants (Demirdağ & Altun, 2022; Gabster et al., 2020; Sani-Bozkurt et al., 2022; Strielkowski, 2020). All these studies include descriptions of the pandemic period, the difficulties experienced, the measures taken and solutions to the problems. However, it is understood that research assistants are rarely included among the working groups. As many stages of education were affected during the pandemic, doctoral thesis processes were also affected. There is no research on this issue. Therefore, within the scope of the research, it is aimed to determine the opinions of research assistants who had to write a doctoral thesis during the pandemic process. For this purpose, from the perspective of the participants, the effects of the COVID-19 Pandemic will be examined in all thesis processes from topic determination to reporting. In line with this purpose, the following questions were sought to be answered:

1. How did the pandemic affect the researchers' thesis topics, methods, findings and results?

2. What were the problems arising from the stakeholders in the thesis process (participants, supervisors, team members)?

3. How were the problems arising from the pandemic solved?

4. What are the participants' suggestions for researchers working in the field of special education in case of similar pandemics?

2. METHOD

2.1. Research Model

It was conducted with a phenomenological approach, one of the qualitative research methods. Van Manen (2007) states that the main perspective of phenomenology is to understand human experiences. This study was designed as phenomenology (Yıldırım & Şimşek, 2018; Wilson, 2015) in order to determine the opinions, perceptions, experiences and suggestions of research assistants who completed their doctoral dissertations during the pandemic process that suddenly emerged.

2.2. Participants

Eleven research assistants who completed their doctoral studies at Anadolu University Special Education Department were selected through purposive sampling. Among purposive sampling types, convenience sampling (Patton, 1987) was preferred. Details about the participants and semi-structured interviews are given in Table 1.

Table 1. Participant Characteristics and Semi-Structured Interview Information

	Branch	Age	Gender	Thesis Start	Thesis End	Method	Time	Date	Interview Location
Rıza	Hearing	35	Male	2019 May	2022 May	Mix	10:50	17.02.2022	Researcher office
Fahri	Intellectual	30	Male	2017 March	2021 June	Quantitative	24:13	17.02.2022	Researcher office
Timur	Hearing	33	Male	2019 September	2021 December	Quantitative	16:50	17.02.2022	Researcher office
Eda	Hearing	31	Female	2018 September	2022 May	Quantitative	19:21	18.02.2022	Researcher office
Tarık	Hearing	33	Male	2019 Şubat	2022 May	Quantitative	19:18	18.02.2022	Researcher office
Esma	Hearing	32	Female	2019 July	2022 May	Action research	27:14	21.02.2022	Researcher office
Sara	Autism	36	Female	2018 January	2022 January	Single-subject	23:08	28.02.2022	Researcher office
Ekrem	Autism	33	Male	2019 May	2021 June	Single-subject	15:29	01.03.2022	Zoom
Gaye	Special Talent	37	Female	2018 January	2021 December	Quantitative	28:02	02.03.2022	Researcher office
Serdar	Intellectual	33	Male	2018 February	2021 December	Qualitative	31:20	04.03.2022	Researcher office
Yavuz	Hearing	33	Male	2018 May	2022 March	Action research	36:54	07.03.2022	Researcher office

It was ensured that there was at least one participant who had completed their doctoral studies in the postgraduate programs of Anadolu University Department of Special Education in the fields of education of the mentally disabled, education of the hearing impaired, education of autism spectrum disorder and education of the gifted. The age range of the participants varied between 30 and 36. Four of the participants were female and seven were male. As can be seen, the participants started their dissertations before the pandemic and completed them while the pandemic continued. Two of the completed doctoral dissertations were action research, three were qualitative, three were quantitative, two were single-subject, and one was a mixed method research. The shortest semi-structured interviews conducted within the scope of the research lasted ten minutes and 50 seconds, and the longest interview lasted 36 minutes and 54 seconds. All interviews were completed between 17.02.2022 and 07.03.2022. Interviews were generally conducted at the participant or researcher's office. Due to the change of duty station of one participant, the interview was conducted remotely through the Zoom program.

2.3. Data Collection Tools

Semi-structured interviews were used as data collection technique in the study. Semi-structured interviews are among the most frequently used data collection techniques in qualitative research methods (Creswell, 2016; McMillan, 2004). The interview questions consisted of eight main and nine sub-questions. In addition, a reflective researcher diary was kept for data diversity. The diary is a

notebook in which the researcher records his/her thoughts about the data collection process, participants, experiences and the process (Glesne, 2014). The diaries were written in 12 font size, 1 line spacing, 12 pages and 33 pieces.

2.4. Data Analysis

The data were transformed into findings through content analysis. Content analysis consists of the steps of thematizing the raw data, associating the connections between themes, and interpreting and reporting these relationships (Patton, 2002; Yıldırım & Şimşek, 2018). The semi-structured interviews were transcribed before the analysis. The transcripts were first coded using the Nvivo 11 program and then themes were created. In the coding process, 14 themes were reached and seven themes were reached in the thematization phase. While the themes were transformed into findings, connections were established between the data and interpreted and reported by the researchers. On the other hand, the unrecorded data in the reflective researcher diary were used to support the themes.

2.5. Validity and Reliability

The validity and reliability of qualitative research is related to being credible, logical and defensible (Johnson & Christensen, 2014). With this point of view, at the beginning of the study, three academicians who have studies with qualitative research methods and who have a doctorate degree in special education were consulted during the preparation of semi-structured interview questions. After the feedback, a pilot interview was conducted with the revised questions and the final version was given. All of the interviews were recorded in audio or video format. No changes were made while transcribing these recordings. A special education specialist was involved in the process other than the researchers at the coding and thematization stage of the raw data obtained from the transcripts. The researchers thematized the codes simultaneously and independently with the expert, a consensus was reached, and then the reporting process began. Code names were used for all participants in the reporting process.

3. FINDINGS

The findings obtained after the analysis were grouped under eight themes. The themes are; I should continue with this topic, I insisted on my method, I had difficulty finding participants, how was my data collection process affected, how was my reporting phase, what did my advisor do, how did other factors affect my research, and if the pandemic happens again.

3.1. Should I Continue with This Topic?

The first theme of the research is the effect of the pandemic on the subject and method planned to be studied within the scope of the thesis. All of the participants stated that there was no change in the thesis topic with the pandemic announcement. Timur's 'The topic did not change', Eda's 'The topic did

not change. It was already a continuation of the master's thesis.' statements can be cited as examples. However, it is seen that even though the topic of study did not change, the researchers had great difficulty from time to time. Especially in subjects that require application in the field, it is seen that there is great panic and dilemmas. As a matter of fact, Sara's statement 'It was a subject that would affect the location a lot. It was dental health. With the pandemic, my field of study, the equipment I used, everything changed. The subject did not change, but I can say that adaptations were made." The difficulties experienced in order not to change the subject are understood from her statements.

3.2. I Insisted on My Method

All but one of the participants completed their thesis with the research method they designed. However, it is understood that there were difficulties in not changing the method due to reasons such as not reaching the expected level of participants, school closures, and avoiding contact. Gaye stated, 'My method did not change, but we had a lot of difficulties. My application was an application that required direct contact with a tablet and the question of how to do it occupied our agenda for a long time. Methodologically, it is understood that the planned process worked for most of the participants, while a few participants had to make changes in the research design. Timur's statement 'Methodologically, it was planned to be a case study, but it evolved into phenomenology' and Eda's statement 'Since the number of participants decreased, we switched from predictivism to collinearity' can be shown as examples of design changes. Serdar, who had to change the methodology due to the pandemic, said, 'We designed it as action research and we were conducting it as such. But when the implementation phase came, everything changed. When the schools closed, we realized that we could not cope with the pandemic. We returned to qualitative, that is, case study'.

3.3. I Had Difficulty Finding Participant

The most challenging aspect of conducting research during the pandemic was to find participants with the consensus of all participants or to ensure continuity with existing participants. Many participants withdrew from the studies due to fear of the disease, and even if they did not withdraw, there were problems in continuing. On the other hand, with the closure of the schools, researchers practicing in primary schools and smaller classes had to stop the thesis process for a while or change the participant group. As a matter of fact, Sara's statement 'Families did not want to participate, I was very tired' is one of the clear examples. On the other hand, Rıza mentioned similar difficulties regarding the participants with the statements 'Schools were closed because I was working on inclusion, we could not reach the participants' and Fahri said 'We tried to collect face-to-face as the schools opened, we tried to collect face-to-face! The consequences of the pandemic, which were not included in the planning of the thesis, also led to additional measures. Some researchers had to change the participant groups. Eda's statement 'Our priority was children with cochlear implants. In cases where I was not able to take camera shots, the participants were replaced with those with similar

characteristics.' is an example of this situation. A similar example is given by Ekrem: 'The participants were planned to be appointed MoNE teachers. However, when the schools were closed, we turned to rehabilitation teachers.'

3.4. How was My Data Collection Process Affected?

Necessary changes in the data collection process planned for the thesis with the pandemic process are also among the findings. In particular, it is understood that the disruptions in the data collection process caused methodological changes. Rıza summarizes the current situation with the statements 'The process prevented us from collecting data. On the other hand, Fahri stated, 'Our planning was in three phases. Everything was ready for school-wide support implementation. The pandemic affected data collection too much. For this reason, we were only able to realize the first phase." Fahri conveyed the problems experienced in the data collection process. Timur, on the other hand, stated that he restarted the data collection process twice due to the pandemic: 'I completed my observations. I set up the camera for the first time. While waiting for the class to get used to it, the pandemic broke out and the school was closed. The thesis was suspended for 6 months. Then a new planning was made.' The impact of the pandemic on people caused the manipulation of the subjects studied. Some of the researchers stated that during data collection, they went beyond the designed purposes and the focus was constantly on the pandemic. As a matter of fact, Eda summarizes this situation as 'Teachers were completely focused on the pandemic and I had difficulty in attracting them to the subject'.

Although the general opinion about the data collection process was that the pandemic had a negative impact on the data collection process, some participants also stated that this process provided advantages to their studies. For example, Tarık stated, 'I switched from printed material to online material. My data collection process has both accelerated and expanded numerically. I received data from almost all provinces'. Similarly, Yavuz summarized the situation in a similar way: 'There was some data I collected face-to-face and then we switched to online. It was actually an advantage, it was like hybrid data. It became easier for me to record the lessons.

3.5. How was My Reporting Phase?

Participants had three different views on the reporting stages of their theses. Some of the participants argued that the pandemic contributed positively to the thesis writing process. While some participants saw the relationship between the pandemic and reporting as neutral, the rest stated that there were also problems at this stage. Fahri, one of the researchers who turned the effects of the pandemic in his favor in the report writing process, said, "My workload decreased due to distance education. There were no tasks such as reading exam internship files. There were fewer people coming to the office. I concentrated and wrote. This was the biggest advantage of the pandemic. Similarly, Ekrem's statement 'Reporting was positive. I was able to allocate the time I allocated for individual training to the thesis.' His views are in parallel with the positive thoughts. Esma stated that the report

writing process became difficult due to the pandemic: 'In reporting, data accumulated as they were collected again due to the pandemic. The analysis and writing process turned into chaos. If I wrote everything, it would be 100 pages of findings. Tarık and Eda summarized that the pandemic did not have a positive or negative impact on the writing process as 'It did not affect reporting' and 'It did not affect reporting', respectively.

3.6. What Has My Counselor Done?

The opinions and attitudes of thesis advisors after the pandemic declaration are also among the findings that affect the research conducted. Participants had various opinions about thesis advisors. In general, it is understood that advisors make efforts to make the process easy and the research feasible. For example, Ekrem explained the support provided by the advisor as follows: 'My advisor has always made my work easier. We maintained our ideal order by meeting at my house or his house when necessary'. However, contrasting findings regarding the counselors are also among the findings. As a matter of fact, Yavuz described the problem he had with his counselor as follows: 'There were times when we had difficulties. For example, I offered to change the method, there was a problem and he got very angry. It took time to solve it. A similar example of the problems experienced with the advisor was given by Rıza: 'Communication with the advisor broke down. We communicated by e-mail and phone. I explain myself more comfortably face to face and there were problems.' It is also among the findings that the consultants did not have a positive or negative impact on the process, and that the work was carried out in a similar way after the pandemic as before the pandemic. As an example of this situation, Gaye's views can be given as 'It was difficult in general, but in my study, they did not force me, they did not react.

3.7. How Did Other Factors Affect My Research?

The pandemic had an impact on all steps of the doctoral thesis process, from topic identification to reporting. In addition, participants stated that some factors other than research steps also affected their theses due to the pandemic. These factors include illness, research permission, and thesis monitoring committee. The fact that the researchers, advisors or participants contracted covid during the process and had chronic diseases indirectly affected the theses. As an example of this situation, Tarık said, 'My advisor had a chronic illness and retired to his home. Communication became more difficult. On the other hand, the research permission requests required for data collection and implementation in schools remained unanswered or lost their validity due to the pandemic. As a matter of fact, Esma conveyed the negative reflection of the permission process on the thesis with the sentences 'I had to get permission from the National Education four times. I could not use the permissions I got because the school was closed. Another factor was the demands of the thesis monitoring committees. While some participants found the demands of the academics in the monitoring committee excessive, others stated that they tried to contribute to the completion of the thesis. As an example of the attitudes

of the thesis monitoring committee, which supported the researcher by taking into account the pandemic conditions, Eda's views can be given as 'We had no chance to collect data face-to-face, but I could not convince my advisor. With the support of the thesis monitoring committee, the work was made possible, he was convinced. As a contrasting finding, Esma's 'demands forced me. They made the family, teachers and students prepare a program. Yes, it is difficult for you, but the end of their sentences always ended with things that would force me.' statements are among the good examples.

3.8. If Pandemic Happens Again?

Participants' suggestions for future studies in case of a recurrence of the Covid-19 Pandemic or its derivatives are also among the findings. Suggestions are generally related to the planning phase. The most frequently expressed suggestion is that the data collection process should include designs that can be carried out remotely. Tarık said, 'Online data collection should be done', Serdar said, 'They should be technological. They should focus on the fastest and most convenient data collection method' are among the good examples of remote data collection. On the other hand, there were suggestions that applications should also be carried out on online platforms. Ekrem's statement 'I can recommend applications to be made on digital platforms' and Yavuz's statement 'Mobile designs can be made. At least you won't be dependent on others." The opinions of Ekrem and Yavuz are about the preparation of applications with remote content. Finally, preparing alternative plans and taking precautions are among the suggestions emphasized for the quick resolution of future chaotic events. Sara expressed this point of view as follows: 'There must be a plan b, alternative environments, participants, applications must be considered. We live in a difficult age now, planning should be done with a little paranoia at the beginning".

4. DISCUSSION AND CONCLUSION

In the study, it was aimed to determine the opinions of research assistants who had to write a doctoral thesis during the pandemic process. The findings obtained for this purpose were discussed and interpreted within the framework of the literature. When the first finding of the study is examined, most of the participants stated that they did not change the topic planned to be studied within the scope of the thesis. When the researches are examined, it is seen that research assistants have difficulties in determining the thesis topic (Akbulut et al., 2013; Kalem & Akman, 2007; Karadağ et al., 2018). Despite the difficulties brought by the pandemic, it is thought to be a positive situation that researchers do not change their study subjects and seek ways to overcome the process.

Considering the second finding of the study, all but one of the participants stated that they completed their thesis with the research method they designed. However, it is understood from the statements of the participants that there were many difficulties in not changing the method due to reasons such as not reaching the expected level of participants, school closures, and avoiding contact.

These difficulties are seen as inevitable situations brought about by the pandemic process. In the other finding of the study, all research assistants stated that they had problems finding participants or maintaining continuity with existing participants. They stated that many participants withdrew from the study due to fear of the disease or that they had difficulty continuing even if they did not withdraw. Due to the closure of schools, research assistants had to stop the thesis process or change the participant group. The pandemic process is one of the important facts known to cause uncertainty in educational organizations and students (Demirdağ & Altun, 2022). In addition, one of the most important problems experienced by researchers who plan the thesis process is the prolongation of the time they foresee for implementation and analysis (Barutçu & Onaylı, 2016). It is clearly seen in the statements of the research assistants that the prevention of the progress of the thesis process and the anxiety they experience about the continuity of the participants, as well as the uncertainty of that process, create negative anxiety and sadness on them. It is thought that the effect of the thesis advisor is an undeniable fact in overcoming this process in an easy way. In this regard, advisors are expected to help and guide their students in overcoming the problems they experience (Akbulut et al., 2013).

When the findings of what happened during the pandemic process and the data collection process planned for the thesis were examined, it was seen that the research assistants made statements such as that they experienced methodological changes, prevented data collection, had to apply it twice, the thesis was suspended, it went beyond the designed purpose, and the focus of the teachers being constantly on the pandemic had a negative impact. It is stated in the literature that researchers experience similar difficulties (Rodrigues et al., 2020).

Considering the findings of the research assistants in the reporting stages of their theses, some of the participants stated that the pandemic contributed positively to the thesis writing process, some participants stated that there was no positive or negative problem between the pandemic and reporting, while some of the participants stated that they had problems during the reporting stage. It is seen that the participants who stated that they had a positive contribution stated that their workload decreased, they concentrated and used their time efficiently. In the researches conducted, it is seen that the Covid-19-based working from home model brings advantages such as the time spent on the road or in traffic, the utilization of dead time in the workplace and increased productivity. (Akca & Tepe-Küçükoğlu, 2020; Crawford et al., 2020). In addition, working from home is considered to be a good alternative for multitasking (Allen et al., 2013). On the other hand, online learning environments are considered to be an important opportunity to overcome this crisis experienced by academics and students (Sahu, 2020).

Considering the findings of the research on the thesis advisor, the participants generally stated that their thesis advisors made efforts to make the process easy and the research feasible, while some of them stated that they had problems and difficulties with communication, and some of them stated that they did not have a positive or negative effect. Nacaroğlu and Bektaş (2022), Boufeldja and Bouhania (2020) and Gill et al. (2012) concluded that the participants carried out the process effectively with the advisor during the thesis process and did not experience problems with communication. These

findings on communication with the advisor and carrying out the process together effectively support the findings of the study. Koşar (2021) concluded that there was little advisor support during the thesis process, while Rodrigues et al. (2020) and Barutçu and Onaylı (2016) found that they had problems with the advisor. Lack of advisor support causes the thesis period to be problematic for the researchers and causes many problems such as unhappy and anxious (Pyhältö et al., 2016). Andrew (2012) conducted a study with participants who wrote their theses away from their thesis advisors and found that while the participants stated that being away did not cause a big problem, they felt lonely. In contrast to these studies, McAlpineAmundsen and Jazvac-Martek (2010) also found that students received full support from their advisors and felt important and valuable. Thesis supervisors should provide support to facilitate active and student-centered learning of doctoral students and provide opportunities for them to develop their research skills (Styles & Radloff, 2001). Considering all these negative situations, it is thought that thesis supervisors should support researchers in ensuring their personal motivation and using the thesis process and time effectively.

The pandemic had an impact on all steps of the doctoral thesis process, from topic identification to reporting. In addition, participants stated that some factors other than research steps also affected their theses due to the pandemic. These factors include illness, research permission, and thesis monitoring committee. The theses were indirectly affected by the fact that the researchers, advisors or participants contracted Covid-19 and had chronic diseases during the process. This situation, which is a natural result of the process, resulted in the completion of the research beyond the planned period.

When the last finding of the research is analyzed, the participants made some suggestions for the recurrence of the Covid-19 Pandemic or its derivatives. Looking at these opinions, it was seen that the participants made suggestions for the planning phase, the data collection process to include designs that can be carried out remotely, and also for the applications to be carried out on online platforms. In the researches conducted, it is stated that practices and policies should be determined to ensure organizational sustainability even in times of crisis by taking lessons learned from the Covid-19 process (Akca & Tepe-Küçükoğlu, 2020). It is also thought that academics, students and managers should learn from this critical situation and overcome these difficulties and turn this crisis into an opportunity (Sahu, 2020).

5. RECOMMENDATIONS

As a result, the Covid-19 pandemic has caused significant disruptions in academic studies as in every field. Academics tried to eliminate the problems they experienced with distance education platforms and individual solutions and to complete the process with minimal disruption. In further research, it may be recommended to identify, implement and disseminate methods that can be used to overcome similar processes more easily. The qualities that the methods and tools that can be used in extraordinary situations such as Covid-19 should have can be determined. Studies can be carried out to

eliminate the problems experienced on online platforms, which are frequently mentioned in existing research.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET
PANDEMİDE TEZ YAZMAK: ÖZEL EĞİTİM ÖRNEĞİ

GİRİŞ

COVID-19 pandemisinin önemli sosyal, ekonomik ve psikolojik etkileri olmuştur. Tüm alanlarda olduğu gibi eğitim süreci de salgından etkilenmiştir. Bu etkiyle birlikte kısa süre içerisinde literatürde pandemiye ilişkin birçok çalışmanın gerçekleştirildiği görülmektedir. Ulusal ve uluslararası çalışmalar arasında sıkça değinilen konu pandeminin eğitime etkisidir (Balcı, 2020; Can, 2020; Çiçek vd., 2020; Daniel, 2020; Grek ve Landri, 2020; Hoofman ve Second, 2021; Parkar, 2020; Schleicher, 2020). Yoğun şekilde çalışılan diğer konu ise uzaktan eğitimde yaşanan sorunlardır (Al Lily vd., 2020; Bergdahl ve Nouri, 2021; Kavuk ve Demirtaş, 2021; Khan, 2021; Rashid, 2021; Sari ve Nayır, 2020).

Çalışmalar salgın dönemine ilişkin betimlemeleri, yaşanan zorlukları, alınan önlemleri ve sorunlara ilişkin çözümlere değinmektedir. Ancak çalışma grupları arasında araştırma görevlilerinin nadiren yer aldığı anlaşılmaktadır. Salgın döneminde eğitimin birçok basamağı etkilendiği gibi doktora tez süreçleri de etkilenmiştir. Bu konuya ilişkin bir araştırmaya ise rastlanmamıştır. Dolayısıyla araştırma kapsamında pandemi sürecinde doktora tezi yazmak durumunda kalan araştırma görevlilerinin sürece ilişkilerinin görüşlerinin belirlenmesi amaçlanmıştır

YÖNTEM

Araştırmanın Modeli

Nitel araştırma yöntemlerinden fenomenolojik yaklaşımla gerçekleştirilmiştir. Van Manen (2007) fenomenolojinin temel bakış açısının insan deneyimlerini anlamak olduğunu aktarmaktadır. Bu çalışma aniden ortaya çıkan pandemi sürecinde doktora tezlerini tamamlayan araştırma görevlilerinin görüş, algı, deneyim ve önerilerini belirlemek amacıyla fenomenoloji (Yıldırım ve Şimşek, 2018; Wilson, 2015) olarak tasarlanmıştır.

Katılımcılar

Araştırmaya Anadolu Üniversitesi Özel Eğitim Bölümünde doktora eğitimlerini tamamlayan 11 araştırma görevlisi amaçlı örnekleme ile belirlenmiştir. Amaçlı örneklem türlerinden kolay ulaşılabilir örneklem (Patton, 1987) tercih edilmiştir. Katılımcıların yaş aralığı 30 ile 36 arasında değişmektedir. Katılımcıların dördü kadın, yedisi erkektir. Tüm görüşmeler 17.02.2022 ile 07.03.2022 tarihleri arasında tamamlanmıştır. Görüşmeler genel olarak katılımcı ya da araştırmacı ofisinde gerçekleştirilmiştir. Bir katılımcının görev yeri değişikliği nedeniyle görüşme Zoom programı aracılığıyla uzaktan yapılmıştır.

Veri Toplama Aracı

Araştırmada veri toplama tekniği olarak yarı yapılandırılmış görüşmeler kullanılmıştır. Yarı yapılandırılmış görüşmeler nitel araştırma yöntemlerinde en sık kullanılan veri toplama teknikleri arasında yer almaktadır (Creswell, 2016; McMillan, 2004). Görüşme soruları sekiz ana dokuz alt sorudan oluşmaktadır. Ek olarak veri çeşitliliği adına yansıtmalı araştırmacı günlüğü tutulmuştur. Günlük araştırmacının veri toplama sürecine, katılımcılara, yaşananlara ve sürece dair düşüncelerini kayıt altına aldığı defterdir (Glesne, 2014). Günlükler 12 punto, 1 satır aralığıyla bilgisayar ortamında, 12 sayfa ve 33 adet yazılmıştır.

Verilerin analizi

Veriler içerik analizi yoluyla bulgu haline dönüştürülmüştür. İçerik analizi, ham verinin temalaştırılması, temalar arası bağlantıların ilişkilendirilmesi ve bu ilişkilerin yorumlanarak raporlanması basamaklarından oluşmaktadır (Patton, 2002; Yıldırım & Şimşek, 2018). Yarı yapılandırılmış görüşmelerin analizler öncesi dökümleri gerçekleştirilmiştir. Dökümler Nvivo 11 programı kullanılarak önce kodlaştırılmış ardından temalar oluşturulmuştur. Kodlaştırma sürecinde 14, temalaştırma aşamasında ise yedi temaya ulaşılmıştır.

BULGULAR

Analizler sonrası elde edilen bulgular sekiz tema altında toplanmıştır. Temalar; bu konuyla devam etmeliyim, yöntemimde ısrarcı oldum, katılımcı bulmakta zorlandım, veri toplama sürecim nasıl etkilendi?, raporlama aşamam nasıl geçti?, danışmanım neler yaptı?, diğer etmenler araştırmamı nasıl etkiledi? ve bir daha pandemi yaşanırsa başlıklarından oluşmaktadır. Araştırmanın ilk teması tez kapsamında çalışılması planlanan konu ve yönteme pandeminin etkisidir. Katılımcıların tamamı pandemi ilanıyla birlikte tez konusunda herhangi bir değişikliğe gidilmediğini belirtmişlerdir. Katılımcıların biri dışında tamamı tasarladıkları araştırma yöntemiyle tezlerini tamamlamışlardır. Ancak beklenen düzeyde katılımcıya ulaşılamaması, okulların kapanması, temastan kaçınma gibi nedenlerle yöntem değişikliğine gitmemek için zorluk yaşandığı anlaşılmaktadır. Pandemi sürecinde araştırma yapmanın en zorlu yanı tüm katılımcıların görüş birliğiyle katılımcı bulmak ya da mevcut katılımcılarla devamlılık sağlamak olmuştur. Hastalık korkusuyla birçok katılımcı çalışmalardan çekilmiş, çekilmese de devam etmekte sorunlar yaşanmıştır. Öte yandan okulların kapanmasıyla birlikte ilkokul ve daha küçük sınıflarda uygulama yapan araştırmacılar bir süre tez sürecini durdurmak ya da katılımcı grubunu değiştirmek zorunda kalmışlardır. Pandemi süreciyle tez için planlanan veri toplama sürecinde yaşanan zaruri değişiklikler de bulgular arasında yer almaktadır. Özellikle veri toplama sürecinde yaşanan aksaklıkların yöntemsel değişikliklere neden olduğu anlaşılmaktadır. Katılımcılar, tezlerinin raporlaştırma aşamalarına ilişkin üç farklı görüşe sahiptir. Katılımcıların bazıları pandeminin tez yazım sürecine olumlu katkısı olduğunu savunmaktadır. Bazı katılımcılar pandemi ve raporlaştırma ilişkisini nötr görürken kalanlar bu aşamada da sorunlar yaşandığını belirtmiştir. Pandemi ilanı sonrası

tez danışmanlarının görüş ve tutumlarını da gerçekleştirilen araştırmalara etki eden bulgular arasında yer almaktadır. Katılımcılar tez danışmanları hakkında çeşitli görüşlere sahiptir. Genel olarak danışmanların süreci kolay, araştırmaları yapılabilir kılmak adına çaba gösterdiği anlaşılmaktadır. Konu belirlemeden raporlamaya kadar doktora tez sürecinin tüm basamaklarına pandeminin etkisi olmuştur. Ek olarak katılımcılar araştırma basamakları dışında bazı etmenlerin de pandemi nedeniyle tezlerini etkilediğini ifade etmiştir. Bu etmenler arasında hastalık, araştırma izni, tez izleme komitesi yer almaktadır. Araştırmacıların, danışmanların ya da katılımcılar süreç içerisinde covide yakalanması, kronik hastalıkları olması tezleri dolaylı şekilde etkilemiştir. Katılımcıların Covid-19 Pandemisi ya da türevlerinin tekrarlanması durumunda, gelecekte yapılacak çalışmalara ilişkin önerileri de bulgular arasında yer almaktadır. Öneriler genellikle planlama aşamasına yöneliktir. En sık ifade edilen öneri veri toplama sürecinin uzaktan şekilde yürütülebilecek tasarımlar içermesidir.

TARTIŞMA VE SONUÇ

Araştırmada pandemi sürecinde doktora tezi yazmak durumunda kalan araştırma görevlilerinin sürece ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Bu amaç kapsamında elde edilen bulgular alanyazın çerçevesinde tartışılmış ve yorumlanmıştır. Araştırmanın birinci bulgusu incelendiğinde katılımcıların çoğu tez kapsamında çalışılması planlanan konuyla ilgili değişikliğe gitmediklerini belirtmişlerdir. Yapılan araştırmalar incelendiğinde araştırma görevlilerinin tez konusunu belirleme konusunda zorluklar yaşadıkları görülmektedir (Akbulut vd., 2013; Kalem ve Akman, 2007; Karadağ vd., 2018). Pandeminin getirdikleri zorluklara karşın araştırmacıların çalışma konularını değiştirmeyip sürecin üstesinden gelmenin yollarını aramasının olumlu bir durum olduğu düşünülmektedir.

Okulların kapatılmasından dolayı uygulama yapan araştırma görevlilerinin tez sürecini durdurmak veya katılımcı grubunu değiştirmek zorunda kaldığı görüşleri dikkat çeken bulgulardandır. Pandeminin süreci; eğitim örgütlerinde ve öğrencilerde belirsizliğe neden olduğu bilinen önemli gerçeklerden bir tanesidir (Demirdağ ve Altun, 2022). Ayrıca tez sürecini planlayan araştırmacıların planlamada yaşadıkları en önemli aksaklıklardan bir diğeri de uygulama ve analizler için öngördükleri sürenin uzaması olarak belirtilmektedir (Barutçu ve Onaylı, 2016).

Pandemi süreciyle tez için planlanan veri toplama sürecinde yaşananların bulguları incelendiğinde araştırma görevlilerinin yöntemsel değişiklikler yaşadığını, veri toplamayı engellediğini, iki defa uygulamak zorunda kaldığını, tezin askıda kaldığını, tasarlanan amacın dışına çıktığını, öğretmenlerin odağının sürekli pandemi olmasının olumsuz etkilediği gibi ifadelerde bulundukları görülmüştür. Alanyazında araştırmacıların benzer zorluklar yaşadığı dile getirilmektedir (Rodrigues vd., 2020).

Sonuç olarak Covid-19 pandemisi her alanda olduğu gibi akademik çalışmalarda da önemli aksamalara yol açmıştır. Akademisyenler yaşadıkları sorunları uzaktan eğitim platformları ve

bireysel çözüm yolları ile ortadan kaldırmaya, süreci en az aksama ile tamamlamaya çalışmıştır. İleri araştırmalarda benzer süreçlerin daha kolay üstesinden gelinebilmesi amacıyla kullanılabilecek yöntemlerin belirlenmesi, uygulanması ve yaygınlaştırılmasına yönelik çalışmaların yapılması önerilebilir.

A STUDY ON CLASSROOM MANAGEMENT IN DISTANCE EDUCATION DURING EARTHQUAKE PROCESSES

Fatma Hümeyra YÜCEL[1]

ABSTRACT

After the earthquake centered in Kahramanmaraş on February 6, 2023, it was decided by the Council of Higher Education throughout Turkey to carry out educational activities through distance education. In the study, the perceptions of classroom management in distance education and the effects of the earthquake in online courses were measured by the students who received pedagogical formation training in earthquake processes. The research was prepared in the type of qualitative research and was designed in accordance with descriptive and content analysis. The data were provided in two parts consisting of personal and theoretical information, a semi-structured form containing a total of 8 statements, and the opinions of 163 participants were used. In line with the results obtained, "distance education" was found to be moderately efficient. During the earthquake processes, the positive situations encountered in distance education courses regarding classroom management were determined as "motivation", "positive classroom atmosphere and interaction", "course presentation styles of the instructors", and the negative situations emerged as "not being able to focus on the lesson during the lesson" and "worrying attitudes". The positive effects of distance education on online courses during the earthquake processes were stated as "recording the courses and being watchable later", "the course content and documents are already in the system", "being economical in terms of money and time", while the negative effects were "the intensity of the lessons in a row on the same days", "internet and system-related problems". It has been observed that there are significant differences between students who were exposed to earthquakes and those who were not. At the end of the research, some suggestions were made to reduce the possible effects of the earthquake on lecturers and university students and to increase the effectiveness of online courses.

Keywords: Earthquake; distance education; online course; classroom management; pedagogical formation

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DEPREM SÜREÇLERİNDE UZAKTAN EĞİTİMDE SINIF YÖNETİMİ ÜZERİNE BİR ÇALIŞMA

ÖZET

6 Şubat 2023 tarihinde Kahramanmaraş merkezli deprem sonrasında Türkiye genelinde Yükseköğretim Kurulu tarafından eğitim-öğretim faaliyetlerinin uzaktan eğitim aracılığıyla yürütülmesine karar verilmiştir. Araştırmada deprem süreçlerindeki pedagojik formasyon eğitimi alan öğrencilerin uzaktan eğitimdeki sınıf yönetimi algıları ile depremin çevrim içi derslerdeki etkileri ölçümlenmiştir. Araştırma nitel araştırma türünde hazırlanmış olup betimsel ve içerik analizine uygun olarak dizayn edilmiştir. Veriler kişisel ve kuramsal bilgilerden oluşan iki bölüm, toplam 8 ifadeyi içeren yarı yapılandırılmış form ile sağlanmış, 163 katılımcının görüşünden faydalanılmıştır. Elde edilen sonuçlar doğrultusunda "uzaktan eğitim" orta derece verimli bulunmuştur. Deprem süreçleri boyunca uzaktan eğitim derslerinde sınıf yönetimi ile ilgili karşılaşılan olumlu durumlar "motivasyon", "olumlu sınıf atmosferi ve etkileşim", "öğretim elemanlarının ders sunum biçimleri" biçiminde belirlenmiş, olumsuz durumlar ise "ders esnasında derse odaklanamama", "kaygı verici tutumlar" şeklinde ortaya çıkmıştır. Deprem süreçlerinde uzaktan eğitimin çevrim içi derslere yönelik olumlu etkileri "derslerin kayıt altına alınması ve sonradan izlenebilir olması", "ders içerik ve dokümanlarının hâlihazırda sistemde yer alması", " "para ve zaman açısından ekonomik olması" olarak belirtilmiş, olumsuz etkiler ise "aynı günler içerisinde arka arkaya derslerin yoğunluğu", "internet ve sistemsel kaynaklı problemler" şeklinde meydana gelmiştir. Depreme maruz kalan ve kalmayan öğrenciler arasında belirgin farklılıklar olduğu gözlemlenmiştir. Araştırmanın sonunda depremin öğretim elemanları ve üniversite öğrencileri üzerindeki olası etkilerini azaltmaya, çevrim içi derslerin etkinliğini artırmaya yönelik birtakım önerilere yer verilmiştir.

Anahtar Kelimeler: Deprem; uzaktan eğitim; çevrim içi ders, sınıf yönetimi, pedagojik formasyon

1. INTRODUCTION

In order to increase the quality of higher education and to create a quality culture in universities, the "Distance Education and Quality Assurance System in Higher Education" was developed and the work within the new Council of Higher Education [CoHE] gained momentum. The system was used intensively in universities during the pandemic processes and the practices in the same direction were continued in the management of earthquake processes. The components of qualified distance education determined by CoHE are determined as (i) distance education policy (ii) infrastructure facilities (iii) access situations (iv) usage competencies (v) education and training processes (vi) expert human resources (vii) support services (viii) information security and ethical dimensions (Akkoyunlu, 2020). Distance education policies designed in accordance with these components, compatible with the mission, objectives and education and training policies of the higher education institution, prepared with the participation of all stakeholders, integrated into the internal quality assurance system and systematically monitored in universities were driven. Similar policies related to distance education were established by the Ministry of National Education [MoNE] and effective activities were carried out as a whole in education systems. Together with the Education Information Network [EBA] established by the Ministry, distance education has been gathered under a single roof (Karasoy, Cebe and Babaoğlu, 2021). In this context, policies were adopted to establish television channels and to create distance

education portals. As the epidemic effect began to decrease, the areas of use of distance education were increased with hybrid learning and blended education applications, and enriched digital content was provided to students (Yaman, 2021). Therefore, policies that ensure equality of opportunity in education systems and pave the way for student-centered practices have been implemented.

On February 6, 2023, a second earthquake with a magnitude of 7.7 occurred in the Pazarcık district of Kahramanmaraş and then a second earthquake with a magnitude of 7.6 occurred in Elbistan, Turkey. The earthquake affected the citizens living in the cities of Kahramanmaraş, Gaziantep, Şanlıurfa, Hatay, Diyarbakır, Adana, Adıyaman, Malatya, Kilis, Osmaniye and Elazığ (Disaster and Emergency Management Presidency [AFAD], 2023). The earthquake occurred in the form of an extraordinary disaster. Although it differs between age groups after a disaster, it is stated that mood changes, behavioral disorders, psychophysiological reactions and cognitive changes starting from anxiety disorders to depression can occur in individuals (Yavuz and Dikmen 2015). Many studies reveal that stress level is high in individuals who have experienced disasters, and mental health problems such as anxiety disorder, post-traumatic stress disorder and depression are experienced (Bulut, 2009; Cankardaş and Sofuoğlu, 2019; Cénat and Derivios, 2014; Eroğlu, Keskin Tunç, Işık and Elasan, 2017; Taşçı and Özsoy, 2021). The earthquake disaster has affected university students as well as adults and has led to similar problems in their daily lives and educational processes.

CoHE has decided to hold the spring semester of the 2022-2023 academic year via distance education on February 11, 2023 in order to reduce the effects of the 2023 earthquake disaster throughout the country (CoHE, 2023a). On March 30, 2023, new interim decisions were taken by CoHE in the form of the continuation of the current distance education applications, the possibility of face-to-face courses without the attendance condition of the students who wish, and the determination of online courses and exams by the authorized boards of higher education institutions (CoHE, 2023b). Due to reasons such as the presence of students directly or indirectly affected by the earthquake and residing in almost every province, and the allocation of the dormitories of state universities to the earthquake victims, distance education applications have been taken as the basis for most of the universities.

Distance education is a form of education in which teachers and students are located in different places from each other. It is the realization of education by means of transportation to the student through tools such as multimedia technologies, computer, video, satellite, audio, graphics, including institutional, managerial and planned arrangements, where special course designs are used and applied as teaching methods (Moore and Kearsley, 2005; United States Distance Learning Association [USDLA], 2011). The components in distance education consist of (i) learning management system (ii) e-content (iii) virtual classroom (iv) measurement and evaluation processes (Demir, 2014). The application places of distance education components are course environments. Courses are (i) synchronous/online/synchronous: Students attend the course at the same time and be online, and (ii) asynchronous/offline/asynchronous: Students attend the course at the appropriate time and are online

(Romiszowski, 2004). Distance education usually has many opportunities in itself and is supported by various applications.

Distance education (i) providing equal opportunities and opportunities (ii) providing different educational options to individuals (iii) providing mass education (iv) creating standards and criteria in educational programs (v) reducing costs in education (vi) providing individual and independent learning environments (vii) enriched educational environments (viii) not being in closed spaces (ix) providing the opportunity to receive training from competent people in the field and benefiting a large number of people (x) providing two-way interaction and communication (xi) It has advantages in the form of receiving instant feedback (Demir, 2014, Hızal, 1983; Yurdakul, 2007). Distance education has its advantages as well as its disadvantages. These disadvantages can be listed as (i) lack of readiness for the process (ii) deficiencies encountered in measurement and evaluation (iii) loss of motivation (iv) computer and internet deficiencies (v) creating inequalities of opportunity (vi) technical problems (vii) limitations or inadequacies of interaction (viii) decrease or inhibition of socialization (Özdoğan &; Berkant, 2020). Instructors are expected to adopt distance education especially in extraordinary processes such as earthquakes and disaster situations, to run to work to work advantages, and to increase their effectiveness in online courses by using their professional competencies.

Classroom management is the continuation of the process by facilitating effective teaching and creating a learning environment with the effective use of managerial strategies (Sarpkaya, 2012). Virtual classroom management, on the other hand, is the sharing of information in a technology-based manner by the students in different places together simultaneously and in online environments under the guidance of the teacher, the creation of a virtual classroom order for the realization of learning, the determination and maintenance of rules (Kaya, 2011). In order to ensure effectiveness and efficiency in classroom management, it is necessary to approach teaching-learning with a multifaceted perspective and a holistic approach. Good classroom management requires (i) defining the desired classroom conditions, (ii) analyzing existing classroom conditions, (iii) utilizing managerial approaches and identifying practitioners, (iv) evaluating the effectiveness of classroom management (Cadoli, Hack and Ray, 2005).

The dimensions of classroom management in the classical sense provide the basic framework of classroom management. These dimensions consist of: (i) management of the physical environment of the classroom (ii) management of plan-program activities (iii) time management (iv) relationship management in the classroom (v) behavior management (Ağaoğlu, 2003; Çalık, 2009; Gündüz, 2004). The dimensions of classroom management, which are integrated and technologically oriented today, have been determined as (i) teaching environment (ii) management of teaching (iii) management of behaviors (iv) interaction (v) motivation (vi) management of technology (vii) management of special needs students (viii) time management to be applied in virtual classrooms (Can, 2020). In order to achieve efficiency in online courses, each dimension needs to be used functionally and monitored in virtual classroom environments. At the same time, it is very important to plan and organize learning

activities for use in virtual classrooms, to manage knowledge, to establish and support a self-directed learning system, to create and reflect information (Ophat, Atisabda, Plodkaew and Jatuporn, 2015). It is often necessary for teachers to interact, be technically sound, and perform timing and use of materials in order to effectively conduct their online lessons and increase their competence (Karaman, Aydemir, Küçük and Yıldırım, 2013).

When the field is scanned in the literature, a large number of publications or research related to distance education are reached. Regarding distance education (Akyürek, 2020; İşman, 2008; Kırık, 2014; Maguire, 2005; Rumble, 2019), the Covid-19 process and distance learning practices (Bergdahl and Nouri, 2021; Fidalgo, Thormann, Kulyk and Lencastre, 2020; Hebebci, Bertiz and Alan, 2020; Özüdoğru, 2021), examining virtual classroom environments (Can, 2020; Kalelioğlu, Atan and Çetin, 2016). At the same time, it has been seen that some researches on earthquakes, earthquake perception and post-earthquake mental health have been included in various areas (Cénat and Derivios, 2014; Karakuş, 2013; Özmen, 2012). After the earthquake process, no studies investigating distance education and including the management and effectiveness of online courses were found in the field literature. With the research prepared, it is aimed to contribute to the literature and to eliminate the gap in the field.

1.1. Aim of the Research

The aim of the study is to examine the classroom management perceptions of the students who receive pedagogical formation education at a state university in distance education courses during earthquake processes and to determine their current situation. In line with the previous objectives, the sub-problems of the research are expressed as follows:

1. According to the opinions of the students, what is the efficiency of online courses in distance education during earthquake processes?

2. According to the opinions of the students, what are the positive situations encountered regarding classroom management in distance education courses during earthquake processes?

3. According to the opinions of the students, what are the negative situations encountered regarding classroom management in distance education courses during earthquake processes?

4. According to the opinions of the students, what are the positive effects of earthquake processes on online courses in distance education?

5. According to the opinions of the students, what are the negative effects of earthquake processes on online courses in distance education?

2.1. Limitations of Research

Considering the research topic (i) experiencing the earthquake process (ii) being a fourth-year student at the Faculty of Arts and Sciences and the Faculty of Fine Arts (iii) being subject to pedagogical formation training (iv) attending online classes via distance education is restricted. In the study (i) those who continue their education in the Faculty of Arts and Sciences and the Faculty of Fine Arts but do not receive pedagogical formation education (ii) Students of the Faculty of Education (iii) students in face-to-face education are excluded.

2. METHOD

2.1. Pattern of the Research

The research has been prepared in accordance with the qualitative research method. Qualitative research is one that presents participants' thoughts, evaluates data in real environments, reveals how the process develops, and focuses on small clusters (Creswell, 2017). This research, which examined the effects of the earthquake process on classroom management in distance education, was preferred in order to discover their current situation, to present different perspectives on the reflections of the earthquake phenomenon on education and to make comparisons.

2.2. Participants

In the study, the diversity situations to be reflected in the sampling were decided based on the purpose of the research and the stratified sampling method was used. This sampling method is aimed at determining the subgroups in the universe and representing them with their ratios in the universe (Balcı, 2016). In accordance with the problem of the research, homogeneous groups emerged due to the students who had earthquake experience and were subject to distance education, and participation in the research was provided from different departments.

Descriptive statistics about university students who received pedagogical formation training in the study group of the study are given in Table 1.

Table 1. Descriptive Statistics on University Students Studying Pedagogical Formation

Departments	Number of participants (n)	Percent (%)	Gender	Number of participants (n)	Percent (%)
Turkish Language and Literature	65	39.9	Female	118	72.4
History	33	20.2	Male	45	27.6
Geography	24	14.7			
Mathematics	19	11.7			
Molecular Biology and Genetics	9	5.5			
Music	7	4.3			
Sociology	6	3.7			
Total	163	100		163	100

Department: A total of 7 different departments, including Turkish Language and Literature, History, Geography, Mathematics, Molecular Biological and Genetics, Sociology Department, and Music Department of the Faculty of Fine Arts participated in the research. The total number of participants is n=163. The highest participation was in the Department of Turkish Language and Literature, while the lowest participation was in the Department of Sociology. This can be attributed to the conditions and number of appointments to the teaching profession.

Gender: When the gender of the research participants is examined, the proportion of female participants is higher compared to male participants and is about 3 times higher. This situation can be explained by the interest and demands of female participants for the teaching profession.

2.3. Data Collection Tools

The data in the study were obtained with a semi-structured interview form used in qualitative researches, which offers the opportunity to reach the relevant field in depth and simultaneously includes fixed-option answering. In order to develop the data collection tool, first of all, the field type was scanned and a draft form including the problem, sub-problems, interview questions, data type and data sources was prepared. The draft form was structured through 4 different elements, namely the effects of the earthquake, distance education, online courses and classroom management, and the basic framework was determined. The form is organized into the first section, which contains personal information, and the second section, which contains theoretical information. The draft form was revised in line with the opinions of an academician from the field of educational administration2 and from the field of computer and educational technology education. The main form is formatted to include 2 expressions in the first part and 6 open-ended and fixed options in the second part, for a total of 8 expressions. Care was taken to ensure that the expressions were appropriate for the purpose of the research, and semantic integrity was ensured by using consecutive expressions and performing grammar checks. The form was delivered to the students in the pedagogical formation groups of the Faculty of Arts and Sciences and the Faculty of Fine Arts of a state university in an electronic computer environment due to the distance education due to the earthquake. The research was conducted in accordance with the ethical rules and it was stated that the response time of the form presented to the volunteer participants was approximately 15 minutes.

2.4. Data Collection and Analysis

Descriptive analysis and content analysis method were applied in the study. Descriptive analysis is research in which a theoretical framework is prepared, data are processed into themes, and findings are defined and interpreted (Sönmez and Alacapınar, 2011). Content analysis is a method in which similar data are brought together through certain concepts and themes and interpreted by organizing them appropriately (Yıldırım and Şimşek, 2016). The data, which are summarized and interpreted with descriptive analysis, are processed in depth with the content analysis, thus discovering new concepts or the relationships between the concepts (Baltacı, 2019).

In order to perform the data analysis, the university students who received pedagogical formation training were given the abbreviation of the word "F = Formation" and coded and sorted by giving numbers as F1-F163. Statistically, percentage (%) and frequency (f) values were calculated and included in categories, and the results were shown in the form of tables by preferring a plain and simple written language in the research. Participant opinions were presented below the tables and the data obtained through direct quotation were supported. The concepts formed were examined according to similarities and differences, interpreted and expressed by considering a holistic approach.

2.5. Validity and Reliability

In order to ensure the validity of qualitative researches, it is necessary to reflect the current situation of the data obtained and to concentrate on all the features of the cases considered (Baltacı, 2019). In the study, based on the post-earthquake basis, it covers the education and training activities in a certain period and the existing situations are transferred. By generalizing, comparing and transforming the results, the external validity, the recording of the obtained data and the internal validity conditions were provided in terms of reflecting the reality of the determined categories (Büyüköztürk, Çakmak, Akgün, Karadeniz and Demirel, 2017).

In order to ensure the reliability conditions in the prepared research, the data should be obtained by various tools and should be stated in writing. Miles and Huberman's formula "Reliability =Consensus/Consensus+Disagreement" was used to meet the consensus condition between coders, and reliability is based on more than 70% (Miles and Huberman, 1994). According to the calculation in this study, it was ensured that the reliability criterion was met with %91.7. In order to meet the reliability, external and internal reliability criteria are also taken as basis. Repetition of the research in similar environments, specifying the characteristics of the participants, participant confirmation, presenting data sources and external reliability; Internal reliability criteria were met by expert review, systematic display of data, participation from different sociodemographic environments, adherence to the conceptual framework in data analysis, and the development of the topics in detail (Başkale, 2016; Merriam and Grenier, 2019).

3. FINDINGS

In this study, it was tried to determine the perceptions of classroom management in distance education during earthquake processes of university students who received pedagogical formation education. In the light of the findings obtained, analyzes were carried out in accordance with the sub-problems and presented below respectively.

3.1. Findings on the Efficiency of Online Courses in Distance Education in Earthquake Processes

The efficiency levels of online courses in distance education during earthquake processes are expressed in Table 2.

Table 2. Efficiency Levels of Online Courses

Efficiency level	Number of participants (n)	Percent (%)
Moderately efficient	83	50.9
Efficient	40	24.5
Inefficient	40	24.5
Total 163		100

When Table 2 was examined, the number of students (n=83) who found online courses moderately efficient was found to be at a high level of 50.9%. The number of students who found online

courses efficient (n=40) was 24.5% and the number of students who found them inefficient (n=40) was 24.5%. It can be stated that two completely different views have an equal distribution.

3.2. Findings on Positive Situations Encountered Regarding Classroom Management in Distance Education Courses in Earthquake Processes

The positive situations encountered regarding classroom management in distance education courses during earthquake processes are shown in Table 3.

Table 3. Positive Situations Encountered Regarding Classroom Management in Distance Education Courses in Earthquake Processes

Dimensions and criteria of classroom management	Number of participants (n)	Percent (%)
Motivation	36	22.1
Positive classroom atmosphere and interaction	33	20.2
Course presentation styles of instructors	22	13.5
Forms of communication	19	11.7
Little or no discipline problems	15	9.2
Effective use of time management	12	7.4
Encouraging attitudes of instructors	11	6.7
Competencies of instructors	9	5.5
Using the appropriate software for the lesson	3	1.8
Teaching method of the course	3	1.8
Total	163	100

When Table 3 is examined, categories were created based on the dimensions and criteria of classroom management, and a total of 10 categories emerged. Among these categories, "motivation" (n=36) was matched at the highest level with 22.1%, "positive classroom atmosphere and interaction" (n=33) with 20.2%, and "course presentation styles of instructors" (n=22) with 13.5%. The lowest level of pairings were determined as "using the appropriate software for the course" and "teaching method of the course", and it was determined that (n=3) had a distribution rate of 1.8%.

The opinions of the students who received pedagogical formation training about "motivation" included in the categorical assessment were stated as follows: "Our motivation during the lesson was very high and the lessons were processed efficiently." F6 "Each individual tried to accept the situation and gain motivation against the lesson." F25 "Our teachers motivated us in terms of the lesson. At the same time, I was motivated by the fact that there was a majority of attendance in the class." F33 "Because I was in the earthquake zone, I could not attend the classes for the most part. Only motivation was important for us." F51 "Motivation and focus are better in the classroom because the communication with our teachers is one-to-one." F55 "During the online education process where I experienced the pain of the earthquake heavily, seeing the damaged buildings in the vicinity created anxiety disorder and constant fear of earthquakes. For me, it was more important to be highly motivated in the lessons." F92

"I am pre-prepared and interested in the lessons." F130 "Motivation because many of our teachers have been our supporters during this challenging period." F133.

The opinions of the students who received pedagogical formation training on "positive classroom atmosphere and interaction" from categorical pairings were expressed as follows: "The positive approach of the teachers and our friends to the course encouraged me to the lesson." F40 "Because our instructors who teach the course ensure that the lesson is efficient due to their interaction with their students." F69 "The lessons are processed in a pleasurable way and thus the time passes very quickly." F98 "Attendance has increased because communication within the classroom has been very nice and positive." F134.

From the categorical pairings, the opinions of the students who received pedagogical formation training regarding the "course presentation styles of the instructors" were stated as follows: "Our instructors explain the course in a way that will attract the attention of the students." F31 "The fact that it was in the form of a slide helped us to visually comprehend and understand the subject better." F49 "The presentation styles of our instructors play an effective role in understanding the subject." F59.

In categorical matching, "using the appropriate software for the course" and "teaching method of the course" are the cases where the least distributions occur. F157 regarding the "use of software suitable for the course" stated that "Ahi Competency-Based Education Project [AYDEP] has had a positive impact on the existence." F116, on the other hand, stated that "the teaching method of the course" was "It has facilitated understanding for me with the teaching method in the form of narration."

3.3. Findings on the Negative Situations Encountered Regarding Classroom Management in Distance Education Courses in Earthquake Processes

The negative situations encountered regarding classroom management in distance education courses during earthquake processes are shown in Table 4.

Table 4. Negative Situations Encountered Regarding Classroom Management in Distance Education Courses in Earthquake Processes

Negativities in online courses		Number of participants (n)	Percent (%)
Inability to focus on the lesson during class		76	46.6
No negative situation		38	23.3
Anxious attitudes		20	12.3
Other negative situations		16	9.8
Low class attendance		13	8
	Total	163	100

When Table 4 was evaluated, the negativities in online courses were associated with 5 categories. According to these categories, the highest association was "not being able to focus on the lesson during the lesson" (n=76) at a rate of 46.6%. Contrary to this view, "no negative situation" (n=38)

was determined at a rate of 23.3%. The lowest associations were "other adverse situations" (n=16) with 9.8% and "low class participation" (n=13) with 8%.

The opinions of the students who received pedagogical formation training regarding "not being able to focus on the lesson during the lesson" in the categorical determinations are described as follows: "I could not focus on the lessons because I lived in the earthquake zone." F1 "I am an earthquake victim student. I live in Malatya. I couldn't focus on the lesson because I felt like there was going to be an earthquake at any moment." F5 "I can't make eye contact because the lessons are online. That's why I have trouble focusing." F19 "Technology makes me very tired. There are many factors that distract me in my environment, but when you are in a classroom environment, you sit and listen to the lesson." F33 "Feeling like an earthquake is happening all the time caused distraction." F49 "I had a focus and attention gathering problem because there was psychological wear." F55 "We could not focus on the lesson because there was no classroom environment and we lost our relatives in the earthquake." F63 "Due to the fact that there is a constant earthquake panic and the pain of the earthquake is more recent, Although I had difficulty focusing, over time this problem began to decrease." F92 "In the early days, watching the news all the time and people talking affected me in a way. There were constant rumors. I was worried about whether there would be an earthquake or a flood." F121 "I was worried that something would happen at any moment. I wasn't affected by the earthquake, but the earthquake changed my focus as we were alive." F124 "I was living in the earthquake zone and listened to the lectures under the influence of the earthquake." F133 "I am from Adana. I experienced the earthquake myself, so I felt like I was shaking constantly during class and at other times. That's why I was on edge." F134 "Teaching in the comfort zone as it is online, sitting in that comfort zone for a long time and being in that comfort zone is inevitably distracting." F160.

The opinions of the students who received pedagogical formation training regarding "not encountering a negative situation" in categorical pairings are as follows: "I did not encounter a negative situation. It wasn't too challenging." F89 "Everything was as it should be in the lessons." F98 "I didn't have any problems." F115.

The opinions of the students who received pedagogical formation training on the "worrisome attitudes" included in the categorical formatting were stated as follows: "Since I am in the Niğde region, the earthquake disaster affects us as well. We're worried that something is going to happen at any moment." F52 "It looked like there was going to be a problem at any moment. There was concern about the disruption of education." F54 "It was constantly worrying that something was happening to my loved ones." F80 "After so many losses, I am very worried on behalf of my family and the whole nation. The constant aftershocks are causing uneasiness." F94 "Little doom has broken out. People are still afraid, but there is a lesson." F123 "I have experienced a fear of death, a situation where life is empty." F161.

The opinions of the students who received pedagogical formation training regarding the "other negative situations" included in the categorical pairings were expressed as follows: "Psychological factors." F2 "I am from Kahramanmaraş. I suffered because of the region I was in. I had problems

especially with the internet, family, earthquake." F11 "Because I had to attend classes in difficult conditions in the earthquake zone." F30 "I experienced the negative impact of family reasons and home environment on studying." F109 "I live in the village. I had an internet problem." F137.

The opinions of the students who received pedagogical formation training about "low participation in the course" in the categorical evaluation emerged as follows: "I could not attend the class because I had internet problems because I lived in Hatay." F36 "Internet infrastructure was damaged due to the earthquake." F40 "At first, we did not have electricity and internet. It was very difficult to get into class in the tent." F51.

3.4. Findings on the Positive Effects of Earthquake Processes on Online Courses in Distance Education

The positive effects of earthquake processes on online courses in distance education are given in Table 5.

Table 5. The Positive Effects of Earthquake Processes on Online Courses in Distance Education

The positive effects of distance learning on online courses	Number of participants (n)	Percent (%)
Recording of the lessons and making them traceable afterward	53	32.5
Course content and documents are already included in the system	39	23.9
Economical in terms of money and time	24	14.7
Motivating attitudes of instructors	16	9.8
The university has software for the distance education system	7	4.3
Providing equal opportunities for different geographical regions	7	4.3
Does not require physical preparation before class	6	3.7
Providing feedback at the end of the lesson	4	2.5
Oral and written access to faculty members during the course	4	2.5
Professional competencies of instructors	3	1.8
Total	163	100

When Table 5 is examined, the positive effects of distance education in earthquake processes on online courses are associated with a total of 10 categories. The highest level matches were found to be "recording the courses and being watchable later" (n=53) 32.5%, "course content and documents are already in the system" (n=39) 23.9%, "being economical in terms of money and time" (n24) 14.7%. The lowest correlation was "providing feedback at the end of the course", "oral and written access to faculty members during the course" (n=4) with a rate of 2.5% and "professional competencies of instructors" (n=3) with a rate of 1.8%.

3.5. Findings on the Negative Effects of Earthquake Processes on Online Courses in Distance Education

The negative effects of earthquake processes on online courses in distance education are presented in Table 6.

Table 6. Negative Effects of Earthquake Processes on Online Courses in Distance Education

Negative effects of distance education on online courses	Number of participants (n)	Percent (%)
The intensity of consecutive lessons on the same days	43	26.4
Internet and systemic problems	39	23.9
Social problems after the earthquake	19	11.7
Stimuli in family or housing settings during class	16	9.8
Psychological and biological problems	15	9.2
Heavily technology-driven	10	6.1
Failure to carry out the applications of the courses	10	6.1
Crowding of class sizes	5	3.1
Too many homework	4	2.5
Realization of the course presentation by the students	1	0.60
Inadequacies in the teaching method of the instructor	1	0.60
Total	163	100

Considering the findings in Table 6, the negative effects of distance education on online courses during the earthquake process are matched in a total of 11 categories. The highest level of matching was found to be "the intensity of consecutive lessons on the same days" (n=43) 26.4% and "internet and system-related problems" (n=39) 23.9%. The lowest matching was determined as "course presentation by students" and "inadequacies in the teaching method of the instructor" (n=1) at the rate of 0.60%.

4. DISCUSSION AND CONCLUSION

With the active implementation of distance education processes in higher education, it is aimed to integrate current trends worldwide into education and to create a vision of the future. The key components of distance learning are interaction, effective participation, research-basedness, reliance on trust, establishment of individualized environments, and improvement and enrichment of self-learning conditions (Cleveland-Innes, Garrison and Vaughan, 2019; Thomas and Rogers, 2020). Standards are established in universities by providing the necessary infrastructure and increasing access opportunities, student-centered, performance and competency-oriented activities are prioritized, and mobility in distance education is monitored and measured. Therefore, quality services in higher education are gaining momentum with distance education applications (Quality Assurance Agency [QAA], 2020).

Since the pandemic period, the distance education format in higher education institutions has varied in a wide range from virtual classroom applications where instructors and students can see, hear and effectively participate in the course to applications where only text or visual sharing can be used. Within the services provided, social interaction structures are established to increase instructor-student or student-student interaction in order to increase "classroom management" skills and human and professional competencies are tried to be gained (CoHE, 2020). At the same time, it is necessary to

benefit from multifaceted educational interaction channels in order to increase the quality of distance education processes. The structure should be strengthened with online/simultaneous teaching activities where instructors and students exchange instant information, as well as offline/asynchronous activities where students can express themselves, receive feedback, develop cognitive competencies and different perspectives (Akkoyunlu, Bardakçı and Dağhan, 2020).

The earthquake process has closely affected all segments of society throughout the country and caused a number of devastating and traumatic emotional states. Among young adults subjected to distance education, it was observed that there were significant differences between those who were directly exposed to earthquakes and those who were not exposed to earthquakes, and that university students, especially those living in the earthquake zone, faced many negative situations. In this process, online courses were mostly found to be moderately efficient by students who received pedagogical formation training in distance education. Although there are researches in the literature that distance education is inefficient (Buzpınar and Tosun, 2021; Karakuş, Ucuzsatar, Karacaoğlu, Esendemir and Bayraktar, 2020) can be considered as an indication that distance education has become more functional and effective after the pandemic period.

In online courses, the "motivation" factor has emerged as a positive factor. Organizing the learning environment in classroom management, choosing the appropriate teaching method and technique, using instructional technologies, creating an open classroom climate, preventing unwanted student behaviors and creating classroom rules, planning educational activities are necessary elements for motivation (Argon and Nartgün, 2014). In addition, it is necessary to attract the attention of students to the course or topics, to arouse interest, to establish a reward system, to relate the topics to real life, to keep the communication channels open for the students, to ensure that the students participate in the decision processes in the class and to pay attention to their suggestions, to value their students and to set goals, to make them feel the need for learning. In online courses, the classroom environment should be remarkable, audio and video (Akçay, 2018; Kaya, 2011), creating a quality course content (Bilgiç and Tüzün, 2015), conveying positive messages to the instructor, making explanations, announcements, informing about the course, using e-mail or channels within the system to reach the students, presenting their lessons energetically, having short conversations with the students from time to time, informing the students about their expectations, making them feel their support in extraordinary processes such as earthquakes can increase motivation. One of the results of the research, creating a "positive classroom atmosphere and interaction", makes students feel happy and increases participation (Aydın, 2008); "Course presentation formats of instructors" increase the efficiency of online courses by using the professional competencies of the instructors by considering the interests and needs of the students and taking on the role of facilitator as a guide that accelerates the learning process (Bakioğlu, 2009).

The negative situations encountered in online courses were identified as "not being able to focus on the lesson during the course", "worrying attitudes" and "other negative situations" including the continuation of earthquake processes, continuing education in housing conditions such as earthquake

tents or containers, internet problems, being with family. The reason for experiencing these negative situations can usually be associated with the emergence of "post-traumatic stress disorders that develop as a result of earthquakes" as a result of natural disasters in students who are directly exposed to earthquakes. The person's personal encounter with the trauma increases with the severity of the trauma and the duration of the trauma (Labbate and Snow, 1992). Being used in earthquakes, losing relatives from near/distant family, losing home/work also cause these situations to be experienced more deeply (Thursby, 2006, p. 6; Yelboğa, 2023). In this process, it may be recommended that students receive psychological or social services to reduce cognitive, physical, behavioral, physical grief responses and to improve mental health. The fact that the instructors are in a supportive attitude, that the students use the technological intermediaries that will facilitate distance education, and that they include facilitating elements in their educational activities can increase the students' attitudes towards the course in a good way.

In earthquake processes, "recording the courses and being able to watch them later", "the course content and documents are already included in the system", "being economical in terms of money and time" were determined as positive effects. The recordability and traceability of the courses provide a great advantage for the students, and the students can easily access the course contents at any time they want (Genç, Engin and Yardım, 2020). At the same time, the fact that this system is more economical than face-to-face education for transportation or personal needs makes distance education more attractive. Negative effects were determined as "intensity of consecutive courses on the same days" and "internet and systemic problems". Spreading courses across different time zones on different days and on the same day by university administrations, providing internet support to students by policy practitioners and universities can contribute to improving the process. The improvement of distance learning conditions will in any case increase the participation, benefit and demand for online courses.

5. RECOMMENDATIONS

It has been determined that earthquake processes greatly affect distance education in higher education, the use of "classroom management" competencies and the way they perceive students. Therefore, as a result of the findings obtained from the study data, some constructive and holistic suggestions were tried to be developed. The suggestions created are expressed in three different ways.

1. Suggestions developed for instructors to increase the effectiveness of online courses in distance education during earthquake processes:

● Immediately after the earthquake process, meetings on emergencies and the prevention of emergencies can be organized quickly in the dean's offices and departments of universities.

● By increasing the effectiveness of the Psychological Counseling and Guidance Research and Application Centers in universities, seminars can be given to lecturers, brochures can be prepared, and information content can be published on the corporate website in order to improve extraordinary processes.

● Students who are exposed to earthquakes can be identified by university administrations and instructors can be informed.

● By encouraging the motivation of the instructors towards their students, class participation and interaction, it can be ensured that the students exposed to the earthquake focus on the course.

● Instructors should monitor their students who attend online classes with anxiety and provide positive feedback.

● Instructors should give feedback and keep communication channels open so that the student can reach him / her not only in online courses but also in offline activities.

● Instructors should meet with students not only in distance education but also in face-to-face educational environments, be sharing, and make recommendations for the development of their students' "classroom management" skills.

2. Suggestions created for students who receive pedagogical formation training to increase the effectiveness of online courses in distance education during earthquake processes:

● Students affected by the earthquake can be provided with support from the Disaster Coordination Center and the Psychological Counseling and Guidance Research and Application Center of the university in their universities.

● By conducting interviews with the advisor instructor at their universities, they can get information about their online courses and increase their motivation.

● They can benefit from internet incentives from universities to attend online classes.

3. Recommended recommendations for researchers:

● In earthquake processes, studies can be carried out at pre-school, primary and secondary education levels that deal with online course activities with distance education.

● At the higher education level, comparative analyzes examining distance education in times of pandemics and earthquakes can be made.

Ethical Information and Statement

For the prepared study, there is a 2023/07/24 issue of Kırşehir Ahi Evran University Social and Human Sciences Scientific Research and Publication Ethics Committee, and all of the rules within the scope of the "Higher Education Institutions Scientific Research and Publication Ethics Directive" have been complied with. None of the actions under the heading "Actions Against Scientific Research and Publication Ethics" in the second part of the directive have been carried out.

Conflict of Interest Statement

In the study, there is no issue or situation that may constitute a conflict of interest between research-oriented institutions and individuals.

Contribution Ratio of Authors

This study was prepared by a single author. Therefore, the author's contribution rate was 100%.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

DEPREM SÜREÇLERİNDE UZAKTAN EĞİTİMDE SINIF YÖNETİMİ ÜZERİNE BİR ÇALIŞMA

6 Şubat 2023 tarihinde Kahramanmaraş'ın Pazarcık ilçesinde 7,7 büyüklüğünde bir deprem, ardından Elbistan'da 7,6 büyüklüğünde ikinci bir deprem meydana gelmiştir. Deprem Kahramanmaraş, Gaziantep, Şanlıurfa, Hatay, Diyarbakır, Adana, Adıyaman, Malatya, Kilis, Osmaniye, Elazığ illerinde yaşayan vatandaşları etkilemiştir (Afet ve Acil Durum Yönetimi Başkanlığı [AFAD], 2023). Deprem olağanüstü bir afet şeklinde meydana gelmiştir. Afet sonrası yaş grupları arasında farklılık gösterse de bireylerde duygudurum değişiklikleri, davranış bozuklukları, psikofizyolojik tepkiler ve anksiyete bozukluklarından depresyona kadar uzanan bilişsel değişikliklerin meydana gelebileceği belirtilmektedir (Yavuz ve Dikmen 2015). Yükseköğretimin kalitesini artırmak ve üniversitelerde kalite kültürü oluşturmak amacıyla "Yükseköğretimde Uzaktan Eğitim ve Kalite Güvence Sistemi" geliştirilmiş ve yeni Yükseköğretim Kurulu [YÖK] bünyesindeki çalışmalar hız kazanmıştır. Sistem pandemi süreçlerinde üniversitelerde yoğun olarak kullanılmış ve deprem süreçlerinin yönetiminde de aynı yöndeki uygulamalara devam edilmiştir. YÖK 2023 deprem felaketinin ülke geneline etkilerini azaltmak amacıyla 2022-2023 eğitim-öğretim yılı bahar döneminin 11 Şubat 2023 tarihinde uzaktan eğitim yoluyla yapılmasına karar vermiştir. Uzaktan eğitim (i) fırsat ve imkân eşitliği sağlama (ii) bireylere farklı eğitim seçenekleri sunma (iii) kitle eğitimi sağlama (iv) eğitim programlarında standart ve ölçütler oluşturma (v) eğitimde maliyetleri azaltma (vi) bireysel ve bağımsız öğrenme ortamları sağlama (vii) zenginleştirilmiş eğitim ortamları katma (viii) kapalı alanlarda bulunmama (ix) alanında yetkin kişilerden eğitim alma fırsatı sunması ve çok sayıda kişinin faydalanması (x) çift yönlü etkileşim ve iletişim sağlama (xi) anında geri bildirim alma şeklindeki avantajları barındırmaktadır (Demir, 2014, Hızal, 1983; Yurdakul, 2007). Sanal sınıf yönetimi ise bilginin teknoloji tabanlı bir şekilde öğrenciler tarafından farklı yerlerde aynı anda ve online ortamlarda öğretmen rehberliğinde paylaşılması, öğrenmenin gerçekleşmesi için sanal sınıf düzeninin oluşturulması, kuralların belirlenmesi ve sürdürülmesidir (Kaya, 2011). Literatürde alan tarandığında uzaktan eğitim ile ilgili çok sayıda yayın veya araştırmaya ulaşılmaktadır. Deprem sürecinden sonra alan literatüründe uzaktan eğitimi araştıran, online derslerin yönetimi ve etkinliğini içeren herhangi bir çalışma bulunmamıştır. Hazırlanan araştırma ile literatüre katkı sağlanması ve alandaki boşluğun giderilmesi hedeflenmektedir.

Araştırmada deprem süreçlerindeki pedagojik formasyon eğitimi alan öğrencilerin uzaktan eğitimdeki sınıf yönetimi algıları ile depremin çevrim içi derslerdeki etkileri ölçümlenmiştir. Araştırma nitel araştırma türünde hazırlanmış, betimsel ve içerik analizine uygun olarak tasarlanmıştır. Veriler, kişisel ve teorik bilgilerden oluşan iki bölüm ve toplam 8 ifadeden oluşan yarı yapılandırılmış bir form ile sağlanmış ve 163 katılımcının görüşleri kullanılmıştır. Elde edilen sonuçlar doğrultusunda "uzaktan eğitim"in orta düzeyde verimli olduğu tespit edilmiştir. Deprem sürecinde uzaktan eğitimde sınıf

yönetimi ile ilgili karşılaşılan olumlu durumlar "motivasyon", "olumlu sınıf atmosferi ve etkileşimi", "öğretim elemanlarının ders sunum biçimleri", olumsuz durumlar ise "ders süresince derse odaklanamama" ve "endişe verici tutumlar" olarak belirlenmiştir.

Deprem sürecinde uzaktan eğitimin online dersler üzerindeki olumlu etkileri "derslerin kayıt altına alınması ve sonrasında izlenebilir olması", "ders içeriği ve dokümanlarının zaten sistemde olması", "para ve zaman açısından ekonomik olması", olumsuz etkilerin ise "derslerin aynı günlerde yoğunluğu", "internet ve sistemik sorunlar" olduğu belirtildi. Depreme maruz kalan öğrenciler ile maruz kalmayanlar arasında anlamlı farklılıklar olduğu gözlenmiştir. Araştırma sonunda depremin öğretim elemanları ve üniversite öğrencileri üzerindeki olası etkilerinin azaltılması ve online derslerin etkinliğinin artırılması yönünde bazı önerilerde bulunulmuştur.

Belirlenen farklı önerileri kısaca özetlemek gerekirse öğrencilerin dikkatini derse veya konulara çekmek, ilgi uyandırmak, ödül sistemi kurmak, konuları gerçek hayatla ilişkilendirmek, iletişim kanallarını öğrenciler için açık tutmak, öğrencilerin sınıftaki karar süreçlerine katılmalarını sağlamak ve önerilerine dikkat etmek, öğrencilerine değer vermek ve hedefler koymalarını sağlamak, öğrenmeyi bir ihtiyaç olarak hissettirmek gerekmektedir. Online derslerde sınıf ortamının dikkat çekici, sesli ve görüntülü olması, kaliteli bir ders içeriği oluşturması, öğretim elemanının olumlu mesajlar iletmesi, ders hakkında açıklamalar, duyurular yapması, bilgilendirme yapması, öğrencilere ulaşmak için sistem içerisinde e-posta veya kanalları kullanması, derslerini enerjik bir şekilde sunması, zaman zaman öğrencilerle kısa sohbetler yapması, öğrencilerden beklentilerini iletmesi, deprem gibi olağanüstü süreçlerde desteklerini hissettirmek motivasyonu artırabilir. Araştırmanın sonuçlarından biri olan "olumlu bir sınıf atmosferi ve etkileşimi" yaratmak, öğrencileri mutlu hissettirmekte ve katılımı artırmaktadır. Öğretim elemanlarının mesleki yeterlikleri ve ders sunum biçimleri, öğrencilerin ilgi ve ihtiyaçlarının göz önünde bulundurulması çevrimiçi derslerin verimliliğini artırmakta ve öğrenme sürecini hızlandıran bir rehber olarak kolaylaştırıcı rol üstlenmektedir.

A STUDY OF THE GERMAN SOCIAL STUDIES CURRICULUM: THE CASE OF BADEN-WÜRTTEMBERG[1]

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ABSTRACT

In Turkey, the social studies course is organised to include learning objectives related to history, geography, civic education, and rules of social life. In the German state of Baden-Württemberg, on the other hand, the course is designed to include learning objectives for social life and civic education that are independent of the learning objectives for history and geography. Separate courses for history and geography are also planned. In this study, which aims to examine the social studies curriculum of the German state of Baden-Württemberg, the document analysis method and the descriptive analysis method were used to analyze the data. In line with the findings obtained, it was found that skills training was intensively included in the curriculum. Results showed that the subjects and outcomes are compatible with each other and that they are mostly related to citizenship education. It is understood that the curriculum aims to raise European citizens with political awareness as well as good German citizens. The curriculum focuses mainly on topics such as social life, rights, responsibilities, media and its impact on society, participation, politics, peace, human rights, decision-making processes in Germany and the European Union, migration, and life in Europe. At the end of the study, suggestions were made to renew the program, which has not been updated since 2016, in the context of changing global conditions and views of citizenship, to include a measurement and evaluation section in the program formally, and to make the program more functional.

Keywords: Germany; social studies; state of Baden-Württemberg; curriculum

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ALMANYA SOSYAL BİLGİLER ÖĞRETİM PROGRAMININ İNCELENMESİ: BADEN-WÜRRTEMBERG EYALETİ ÖRNEĞİ

ÖZET

Sosyal Bilgiler dersi Türkiye'de tarih, coğrafya ve vatandaşlık eğitimi ile toplumsal yaşam kurallarına ilişkin öğrenme hedefleri barındıran bir ders olarak düzenlenmiştir. Almanya Baden Württemberg eyaletinde ise bu ders tarih ve coğrafya öğrenme hedeflerinden bağımsız olarak sadece bireyin toplumsal yaşam ve vatandaşlık eğitimine yönelik öğrenme hedefi içerikleri ile oluşturulmuştur. Tarih ve coğrafya konularına ilişkin ise ayrıca müstakil dersler planlanmıştır. Almanya Baden-Württemberg eyaleti Sosyal Bilgiler Öğretim Programını incelemeyi amaçlayan bu araştırmada doküman analizi yöntemi kullanılmış, verilerin analizinde betimsel analiz yöntemi kullanılmıştır. Elde edilen bulgular doğrultusunda öğretim programında beceri eğitimine yoğun olarak yer verildiği belirlenmiştir. Konu ve kazanımların birbiriyle uyumlu olduğu sonucuna ulaşılmış, büyük oranda vatandaşlık eğitimiyle ilgili oldukları tespit edilmiştir. Programda iyi bir Alman vatandaşının yetiştirilmesinin yanında politik bilince sahip Avrupa vatandaşlarının da yetiştirilmesinin amaçlandığı anlaşılmıştır. Öğretim programında daha çok toplumsal yaşam, hak, sorumluluk, medya ve medyanın toplum üzerindeki etkisi, katılım, politika, barış, insan hakları, Almanya'da ve Avrupa Birliği'nde karar alma süreçleri, göç ve Avrupa'da yaşam gibi konular üzerinde durulduğu görülmüştür. Çalışma sonunda; 2016 yılından itibaren güncellenmeyen programın değişen küresel şartlar ve vatandaşlık olgusuna bakış bağlamında yenilenmesi, biçimsel olarak programda ölçme-değerlendirme kısmına yer verilmesi ve programın daha işlevsel hale getirilmesine yönelik öneriler sunulmuştur.

Anahtar Kelimeler: Almanya; sosyal bilgiler; Baden-Württemberg eyaleti; öğretim programı

1. INTRODUCTION

The global changes and transformations that have accelerated in recent years affect the political, social, and economic structures and education systems of all countries. Societies that cannot keep up with this situation will find it challenging to find a place for themselves in the global arena (Çöl, 2022). Therefore, societies should keep up with the developments taking place in the world and be prepared for the problems they face. This is because the changes experienced by humanity and nature have both positive and negative results. The development of information, transportation, and communication technologies has made it much easier and faster to cross borders. Almost all of humanity can quickly become aware of the knowledge acquired or inventions made by any society. These conveniences provided by information, communication, and transportation technologies have increased the living standards of human beings (Kitapçı, 2017). With the development of production technologies, convenience has become more crucial to human life than ever before in history. However, the development of science and technology has also brought many consequences that negatively affect human beings and nature. For example, the development of transportation technology allows people to move quickly and easily. This can have many benefits. However, the increase in human mobility has caused epidemics to spread faster and subcultures to disappear. The speed and intensity of wars and terrorist attacks have increased. Advances in production technologies have raised the standard of living,

but have also led people to consume more and interfere more with nature. This has led to many global problems. Obesity, climate change, environmental degradation, and colonialism are just a few. Although rapid development in recent years has brought important benefits to people, it has also brought many problems (Kurtoğlu, 2017). Therefore, countries must both contribute to world developments by keeping up with them and be prepared for many problems caused by these developments. It can be said that the most important way to achieve this is through education (Kara, 2022).

The survival of societies depends on their ability to transfer their knowledge to future generations. In this context, education is of vital importance to all societies, and for this reason, it has managed to remain at the top of countries' agendas. However, to meet rapidly changing, increasingly complex, and often unpredictable challenges, people need to rethink and redesign how they think and how they organize knowledge (Mayor, 1999). Perhaps a century ago, educators could expect that the knowledge they taught students would last the rest of their lives, but today, due to rapid changes and developments, education systems, schools, teachers, and curricula must prepare students for jobs yet to be done, problems yet unknown, and technologies yet to be invented (Schleicher, 2016). Today, educating future generations is about equipping them with the skills needed to thrive in the new century and contribute to solving many societal and global challenges (Lawlor, 2017; Tharumaraj et al., 2018). However, with the transition to the information age, the economy is increasingly based on knowledge and education (Hanushek, 2007). Around the world, countries are working hard to make the most effective use of their resources. In particular, in order to make efficient and effective use of human resources, research is continuously being conducted in the field of education, existing educational policies are being updated according to the requirements of the time, and educators, decision-makers, and all other common stakeholders are trying to create new standards for education in order to raise individuals with qualifications that meet the needs (Şengüleç, 2021).

The importance attached to education is related to society's concern for its own future, the future of children, and the future of humanity as a whole. At the same time, educational efforts are aimed at helping students achieve their personal goals and raising them as autonomous citizens with the self-confidence to create their own future. Every young person has the right to education and training for the future, regardless of gender, race, language or disability. Every young person has the equal right to attend mainstream schools according to his or her abilities and aptitudes. Article 1, paragraph 20 of the Berlin Basic Law provides for this (Böhm, 2004). The ultimate goal of countries is to raise good generations that will ensure the continuity of society. Accordingly, the quality of educational institutions is being improved and changes are being made in curricula. These changes take into account social, regional, and global changes. Therefore, it is necessary to follow the changes and developments nationally and globally. Because social development depends on educating individuals who can look at life from a framework of tolerance and logic, and who are entrepreneurial, critical, questioning, sensitive, problem-solving, and empathetic. In order to realize social goals, ideal citizens should be

educated. Although the meaning attributed to the concept of the ideal citizen varies from society to society, there are some universal values and characteristics that every person should possess. In today's world, where globalization is increasing day by day with the development of science and technology, it is important for countries to follow each other in the field of education and eliminate each other's deficiencies (Mundy & Manion, 2008). Otherwise, societies that cannot keep up with the times will not be able to educate their future generations in the direction they want. In order to raise good citizens, states must have a modern and effective education system and curricula. In particular, the curricula of courses such as social studies, which play a fundamental role in citizenship education, should be qualified (Körükçü, 2015).

The social studies course, taught in the fourth grade of primary school and middle school in Turkey, aims to provide students with the values, skills, attitudes, and knowledge of social life. The social studies curriculum aims to raise responsible, rational individuals who can think logically, rational individuals, and good citizens by taking into account students' developmental periods, physical characteristics, ages, and mental states (Yazıcı & Koca, 2008). However, in order for the social studies course to achieve its goals, the curriculum should be up-to-date and qualified. Because teachers generally act in line with the curriculum, and social studies courses are organized according to the curriculum. Therefore, social studies teaching and curriculum should always be updated and improved. For this purpose, it is especially important to examine the current situation in social studies teaching in countries that are considered developed (Kara, 2022).

Germany is one of the most developed countries in the European Union, with which Turkey has had intense communication and interaction throughout history (Demant, 2017). Moreover, there are more than 3 million Turkish citizens living in Germany today (Ministry of Foreign Affairs of the Republic of Turkey, 2023). There are 16 states in Germany. Each of these states has different curricula. These curricula are determined by the state ministries of education. The curriculum discussed here is the "Gemeinsamer Bildungsplan der Sekundarstufe I", which came into force in Baden-Württemberg on 1 August 2016. It is important that the programme is a new and up-to-date programme. When the Social Studies curriculum is examined, it is seen that the curriculum is given under five main headings. The first title of the programme is "Basic Perspectives in Acquiring Skills". The second title of the programme is "Process-oriented competencies". Under this title, it is aimed to gain four basic skills. The third title is "Content Related Competences". In other words, the gains according to the subjects targeted by the programme are expressed under this title. The fourth title of the programme is "Operatoren". In other words, the operation verbs that the child can do are divided into three and these are expressed under this heading. The last heading of the programme is "Ahnung", i.e. the section on affixes. Here, it is seen that there are expressions related to the suffixes, abbreviations, the language of the programme and writing in the programme. Analyzing the social studies curricula implemented by these countries and evaluating their strengths and weaknesses will benefit curriculum developers,

teachers, and researchers conducting studies on the related literature. In particular, it is useful to examine the social studies curricula taught in countries where there are intense relations in economic, cultural, and political fields.

When the relevant literature is examined, it is found that there are almost no studies on the teaching of social studies in Germany (Pamuk & Pamuk, 2016; Bilici & Bedirhanoğlu, 2020; Pamuk, 2021). It is noted that there is only one study conducted by Kaya (2021) on the social studies curriculum in Germany. In this context, it is believed that the investigation of the Social Studies Curriculum taught in Germany will contribute to the literature.

The purpose of this study is to examine the German social studies curriculum using the state of Baden-Württemberg as an example. Baden-Württemberg is the third largest state in Germany in terms of population and area. It is also one of the most cosmopolitan states in Germany. In addition, a large number of Turkish citizens live in this state. This state is considered to reflect and represent the whole of Germany in terms of demographic characteristics (Diefenbach, 2010).

Within the scope of the study, answers to the following questions were sought:

1. What is the general structure of the social studies curriculum?
2. How are skills addressed in the social studies curriculum?
3. How is content organized in the social studies curriculum?

2. METHOD

In this section of the study, information about the research model, research design, data sources and data analysis are given.

2.1. Research Design

This study on the examination of a curriculum was conducted in line with qualitative research principles. Qualitative research generally aims to obtain an in-depth understanding and to reveal the problem in a realistic and holistic way about the situation that is the subject of the study. With such studies, perceptions and events can be examined with an in-depth understanding in realistic, natural environments. In such studies, qualitative data are usually collected through open-ended questions, observations and analyses of written and visual materials. In this study, the Social Studies Curriculum, which has been implemented in Baden-Württemberg State of Germany since 2016, was examined.

2.2. Research data sources

The social studies curriculum taught in the state of Baden-Württemberg, Germany, was used for data collection. In this sense, the social studies curriculum that was implemented in the 2016-2017 school year and is currently in use was used. Document analysis allows the researcher to work

systematically with documents. This method of analysis facilitates the classification of data sources of the phenomena and events studied and the creation of new data sets (Baxter & Jack, 2008). Schools in Germany are not centralized. Germany consists of 16 federal states, and the authority for education lies with the ministries of education of these states. Therefore, differences between states may exist in terms of curricula, schedules, diplomas, courses, or school transitions. Although curricula vary from state to state, they are generally similar in structure and content. The social studies curriculum examined for this study was obtained from the official website of the Baden-Württemberg Ministry of Education.

2.3. Research Data Collection

In this study, document analysis, one of the qualitative research methods, was preferred. Document analysis is a qualitative research method that involves the analysis of written materials that contain information about the subject to be researched and studied. This research method can be used alone or as a supporting method (Yıldırım & Şimşek, 2018). The method in question makes it possible to access sources suitable for the purpose of the research being conducted and to identify useful information through the data accessed. Document analysis involves finding sources in line with the purpose of the research, reading the sources, taking notes, and finally evaluating them (Karasar, 2005). In other words, document analysis is a set of processes that take place in stages in the process of examining and evaluating printed and electronic materials within the scope of the research topic (Bowen, 2009). In addition, the collection, systematic examination, and evaluation of official or private records related to the topic is a set of processes that take place within the scope of document analysis (Ekiz, 2015). Document analysis provides researchers with the opportunity to collect and examine various written texts, which are referred to as primary data sources, and to analyze them through questioning (O'Leary, 2017). The collection and examination of various documents, writings, or productions produced by individuals or institutions related to the research topic are considered document analysis (Seyidoğlu, 2016). Document analysis includes not only written documents but also a variety of sources such as maps, graphic bases, diagrams, photographs, and graphics (Merriam, 2009). Curricula, course contents, documents related to the effectiveness of education, and educational practices in the field of education can be studied using the document analysis method (Sak et al., 2021). Forster (1994) stated that document analysis can be done in a total of five stages and listed these stages as accessing documents, checking the authenticity of documents, understanding, analyzing, and using the data obtained. The best way to understand the meaning that a country attaches to a course and its objectives for that course is to examine the curriculum of that course. For this reason, document analysis can provide important advantages in this type of research. In this context, the document analysis method was preferred in this research, which aims to examine the social studies curriculum taught in Germany.

2.4. Data Analysis

The data obtained in this study were analyzed using the descriptive analysis technique. In descriptive analysis, data are interpreted according to predetermined themes. The aim of this technique is to present the findings obtained at the end of the research in an organized and interpreted form (Yıldırım & Şimşek, 2018). In this type of analysis, the information obtained is systematically and accurately presented and analyzed, the results of the analysis are interpreted, and the results are clearly expressed. In descriptive analysis, direct quotations are often used in order to present the obtained data in a clear, impressive, and unambiguous way. This also contributes to the reliability and validity of the research. In this study, which aims to examine the german social studies curriculum in the context of the state of Baden-Württemberg, direct quotations are often used to reveal the social studies curriculum in every aspect. This is because the main objective of descriptive analysis is to summarize and interpret the results obtained. Descriptive analysis consists of four stages: creating a framework, processing the data according to the thematic framework, defining the results, and interpreting the results (Yıldırım & Şimşek, 2018).

2.5. Validity and Reliability

For research to be accepted as scientific, it must have a certain level of reliability and validity. Various methods can be used to measure the reliability and validity of quantitative research. However, it is not possible to make a definitive determination of reliability and validity in qualitative studies (Shenton, 2004). This is because qualitative research focuses on the meaning of a phenomenon and the dynamics of its existence. Quantitative research, on the other hand, aims to determine how much or to what extent a phenomenon exists. Qualitative research emphasizes the quality of the subject under study. Validity in qualitative research is the degree to which the researcher examines the subject as objectively as possible (Sandelowski, 1986). In this study, the subject under investigation was treated in an unbiased manner. One of the most important evidence of this is the frequent use of direct quotes in this study. The frequent use of direct quotations in the results section allows the reader to see directly what exists. The opinions of language experts and field experts were sought at every stage of the study. Since one of the researchers is fluent in German, the curriculum was translated into Turkish. Then, the opinions of two language experts who were fluent in both German and Turkish were sought. After the feedback, necessary arrangements were made, and the translation was completed. During the data analysis, the opinions of two field experts who are fluent in both German and Turkish were sought. During the data analysis, the researchers organized online meetings at certain intervals to obtain the opinions of these experts. The fact that one of the researchers and one of the field experts worked as an educator in Germany provided a more effective understanding of the nature of the social studies course taught in Germany, the structure of the curriculum, the elements of the curriculum, and the content of the curriculum. Sandelowski (1986) stated that obtaining and confirming expert opinions about the data

contributed positively to the validity of the research. The studies in the literature were reviewed, and the results obtained were supported by comparing them with the results of different studies. To increase the internal reliability of the research, the data obtained were presented directly in the research report descriptively and systematically. Before data collection, a comprehensive literature review was conducted, and a detailed conceptual framework was developed.

2.6. Research Ethics

As this research is based on document analysis, it falls within the scope of studies that do not require an ethics committee decision. In addition, the "Directive on the Ethics of Scientific Research and Publication in Higher Education Institutions" was followed during the current research.

3. FINDINGS

This section of the study presents the results obtained in relation to the sub-problems identified in accordance with the research purpose.

3.1. General Structure Features of the Social Studies Curriculum

In this study, the "Gemeinsamer Bildungsplan der Sekunderstufe I" Gemeinschaftskunde course implemented in schools in the state of Baden-Württemberg was examined. This program, which is taught as part of the social studies course at the first level of secondary education, covers students between the seventh and tenth grades. In the state of Baden-Württemberg, the social studies course is taught for two hours each in the 7th and 8th grades and one hour each in the 9th and 10th grades. This program entered into force on August 1, 2016, and is still in progress. Under the first title of the social studies curriculum, guiding principles are given in order to provide students with skills. Under the second title, skills are included. Under the third title, the content of the curriculum is presented.

Looking at the first title of the program, it is seen that the educational value of social studies is included under this title, and the concept of maturity and value is explained. The contribution of the Social Studies course to the guiding perspectives is expressed. In addition, suggestions for the teaching process are made under this heading. Skills are included under the second heading. The skills section identifies four skills and the behaviors expected of students related to these skills. These skills are listed as analytical skills, judgment (decision-making) skills, taking action skills, and methodological skills. Under the third heading of the curriculum, the content of the curriculum is given. For the 7th, 8th, and 9th grades, there are learning areas called society, law, political system, and international relations, and for the 10th grade society and political system. In addition, the learning outcomes within these learning areas are listed. At the end of the curriculum, it is explained that the curriculum is an interdisciplinary program, and finally, references are listed, and abbreviations are explained in the appendices.

It was noted that there was no section in the social studies curriculum on educational situations and measurement and evaluation. Other parts of the curriculum were found to need explanations of educational situations and measurement and evaluation.

When the social studies curriculum implemented in Turkey and last updated in 2023 was examined in terms of its general structure, it was found that the curriculum first included a section titled "Specific Objectives of the Social Studies Curriculum," and in this section, the specific objectives of the curriculum were mentioned. In the second stage, a section titled "Basic Skills in the Social Studies Curriculum" was included, and 27 skills were listed in this section. The curriculum also includes a section titled "Values Education in the Social Studies Curriculum" in which 18 values are listed. In the section titled "Issues to Consider in Implementing the Social Studies Curriculum," suggestions were made for teachers on how to implement the curriculum. The section titled "The Structure of the Social Studies Curriculum" explains how the curriculum is structured, and provides information about the learning areas, the number of learning outcomes, and the duration of the courses. In the remainder of the curriculum, content is provided, and learning areas and outcomes are presented by grade level. In addition, short explanations are given for each outcome. In the social studies curriculum implemented in Germany, under the first heading of the social studies curriculum, guiding principles are given to provide students with skills. Under the second heading, the skills are listed. The content of the curriculum is presented under the third heading. Unlike in Turkey, the social studies curriculum in Germany does not include a separate section on values.

3.2. Skills in the Social Studies Curriculum

In the social studies Curriculum, skills are divided into four basic areas. These are *analytical, judgment, taking action* and *methodological skills.*

Analytical Skills

The curriculum states that with the ability to analyze, students will be able to examine political, economic, and social realities, conflicts, and problems in a systematic and purposeful way, using the knowledge they have acquired in the social studies course, and to question existing decisions and judgments based on this knowledge. The behaviors expected of students in the context of the ability to analyze are presented in Table 1.

Table 1. Behaviors Expected from Students within the Scope of Analytical Skills

Students with Analytical Skills
1. Can express political, economic and social conflicts and problems in a structured way using technical language.
2. Will be able to analyze political, economic, social realities, conflicts and problems by using the information learned in the course.
3. Can analyze political, economic, and social conflicts and problems using the political cycle (problem, decision, debate, evaluation of decision, and reactions).
4. Can objectively formulate questions, formulate hypotheses and examine them for factual accuracy for any problem.
5. Can take into account different fields (society, economy, politics) when analyzing factual, conflictual and problematic situations.
6. Can consider different perspectives (individual, public, systemic) when analyzing political, economic, and social conflicts and problems.

Looking at Table 1, the curriculum states that students with analytical skills will be able to express political, economic, and social conflicts and problems in a structured way using technical language. In addition, the curriculum states that students with analytical skills will be able to examine political, economic, and social conflicts and problems using the information they have learned in the course. In addition, students with analytical skills are expected to be able to examine political, economic, and social conflicts and problems using the political cycle. The curriculum emphasizes that with this skill, students will be able to objectively formulate questions about any problem, formulate hypotheses, and test them for factual accuracy. In addition, it is stated that they will be able to take into account different fields, such as society, economy, and politics, and to consider different perspectives when examining factual, conflictual, and problematic situations. The curriculum states that students with analytical skills can make judgments and decisions about values.

Judgment (Decision-Making) Skills

The social studies curriculum states that students can independently develop critical and rational judgments through judgment (decision-making) skills. This skill emphasizes that students can formulate proposals to address political, economic, and social challenges. The behaviors expected of students within the framework of the judgment (Decision-Making) skill are presented in Table 2.

Table 2. Behaviors Expected from Students within the Scope of Judgment (Decision-Making) Skills

Students with Judgment (Decision-making) Skills
1. Can consider arguments for and against, take into account different points of view, and independently draw a well-founded conclusion about a particular problem.
2. Can independently formulate, comprehend, and explain judgments based on criteria (efficiency, effectiveness, legality, legitimacy, fairness, sustainability, transparency, representation, participation), taking into account different perspectives.
3. Can revise their own judgments after critically examining and learning new facts.
4. Can formulate well-founded proposals to tackle political, economic and social problems.

Looking at Table 2, we can see that the curriculum states that students with judgment (decision-making) skills will be able to make reasoned conclusions about a given problem. In addition, students with these skills are expected to be able to formulate, understand, and explain judgments about human life. In addition, students with judgment (decision-making) skills are expected to be able to revise their own judgments after critically examining and learning new facts. Finally, the curriculum states that students with these skills will be able to formulate sound recommendations for addressing political, economic, and social problems.

Taking Action Skills

This skill is intended to enable students to organize their judgments, decisions, and interests and to represent them to others. As a result, they are expected to be able to negotiate, compromise, and make democratic decisions. The behaviors expected of students in the context of taking action are presented in Table 3.

Table 3. Behaviors Expected from Students within the Scope of Taking Action Skills

Students with Taking Action Skills
1. Can represent their own interests, judgments, and decisions - even in minority situations - in an objective and convincing way.
2. Can objectively and critically question the reasons of those who think differently.
3. Can deal with conflicts in political debates, but also make compromises.
4. Can follow rules for the rational and non-violent resolution of political conflicts.
5. Can participate in democratic processes at school and in daily life.
6. Can develop texts and other tools that serve and encourage participation in political, economic and social processes.

Looking at Table 3, we can see that the social studies curriculum states that with the ability to act, students can represent their own interests, judgments, and decisions in an objective and convincing way. It also emphasizes that students should be able to do this when they are in the minority. Students with this skill are expected to be able to objectively and critically question the motives of those who think differently, manage conflict in political debates, and make compromises. The curriculum explains that students with taking action skills should follow the rules to resolve political conflicts in a rational and tolerant manner. They are also expected to be able to participate in democratic processes at school and in everyday life and to be willing to participate and encourage participation in political, economic, and social processes.

Methodological Skills

The social studies curriculum states that with this skill, students will be able to acquire independent knowledge about current, political, economic, and social issues. They will be able to engage critically with media and text types, work increasingly on technical issues using different

methods, and analyze their own learning. The behaviors expected from students within the scope of methodological skills are presented in Table 4.

Table 4. Behaviors Expected from Students within the Scope of Methodological Skills

Students with Methodological Skills
1. Can use research techniques independently, including gathering and processing information in places of learning outside of school (e.g., parliament, city hall, court).
2. Can critically question the information obtained and evaluate its reliability.
3. Can evaluate linear (comments, speeches, reports) and non-linear texts (cartoons, diagrams, structural models).
4. Can gather information from legal texts.
5. Can draw various diagrams (structural model, mind map, concept map) to visualize and structure political, economic, and social problems.
6. Can write product, role or interlocutor-oriented texts.
7. Can portray a political action using techniques such as drama and role-playing.
8. Can, like a social scientist, conduct research appropriate to their level.

As seen in Table 4, the curriculum states that students who acquire methodological skills will be able to use research techniques independently, as well as collect and process information in places of learning outside of school. In addition to this, it is explained that they will be able to critically question the information obtained and evaluate its reliability. On the other hand, it is explained that they can evaluate linear (comments, speeches, reports) and non-linear texts (cartoons, diagrams, structural models). In the curriculum, students who have acquired this skill are expected to be able to gather information from legal texts and draw various diagrams to visualize and structure political, economic, and social problem situations. They are also expected to be able to write product-, role- or interlocutor-oriented texts, dramatize a political action with techniques such as drama or role-playing, and conduct research appropriate to their level as a social scientist.

Students are expected to use these skills to broaden their perspectives. The goal of the learning process in the curriculum is to broaden the reference environment for one's own judgments, to broaden one's perspective, and to make one's analysis and judgments more professional and complex. They are expected to broaden their perspectives beyond their own worldview. To this end, the need to develop individual, societal, and systemic perspectives at every stage of the curriculum is frequently stated in relation to skills and content. The individual perspective requires students to consider their own interests and the interests of society when analyzing real conflict situations and problems. The societal perspective emphasizes that the interests and values of different actors should be considered when solving problems and conflicts. The systemic perspective, on the other hand, requires students to analyze and evaluate conflict and problem situations with a focus on social science theories and models. From this perspective, students draw general conclusions, ask questions about the effects on the whole system, and examine political problems rationally.

In the Social Studies Curriculum in Turkey, in line with the Turkish Qualifications Framework (TQF), the 27 skills to be learned in the course are listed as follows: Research, environmental literacy, perception of change and continuity, digital literacy, critical thinking, empathy, financial literacy, entrepreneurship, observation, map literacy, legal literacy, communication, cooperation, and recognizing stereotypes and prejudice, using evidence, decision making, location analysis, media literacy, perceiving space, self-control, political literacy, problem-solving, social participation, drawing and interpreting tables, graphs, and diagrams, using Turkish correctly, beautifully and effectively, innovative thinking, perceiving time and chronology.

3.3. Content of the Social Studies Curriculum

The social studies curriculum states that the transmission of knowledge is not an end in itself, but rather the development and improvement of skills. Accordingly, one of the objectives of the social studies course is to improve students' knowledge both quantitatively and qualitatively and enable them to create a structured technical language. It is emphasized that the formation of these skills will facilitate the acquisition of conceptual knowledge. The acquisition of conceptual knowledge is directly related to the acquirement of skills. The content of the curriculum is designed by considering the relevant society, law, political system and international relations. The content is generally structured according to the principle of "from near to far".

The objectives in the social studies curriculum are organized in three levels: basic, intermediate and advanced. The fact that the objectives are divided into three levels for the learning areas and subjects is an indication of the depth and detail of the treatment of phenomena, conflicts and problem situations. In principle, the scope and complexity of the content may differ according to these three levels. Advanced students have to deal with more comprehensive and complex problems and issues. The increase in complexity enables students to grapple with theories and models, draw general conclusions from individual cases, adopt a systematic perspective and understand the complex interactions between different fields. It is stated that the knowledge and skills to be acquired in the curriculum are related to six basic concepts. These concepts and explanations of these concepts in the curriculum are as follows:

Power and Decision: Politics implies power and its consolidation within structures of domination. Domination means the ability to make a binding decision. Power is the ability to influence the decision.

Order and Structure: Societies create orders, structures, and systems (e.g., political orders, legal orders, economic orders, social structures) that are both the result and the condition of politics. These orders, structures, and systems vary from society to society.

Rules and Law: Rules provide the framework for human, economic, and political action. Through the legalization of rules, policymakers seek to control social, political, and economic processes. In addition to the rules contained in the legal system and enforced by institutions, there are also rules that govern human life on a customary basis.

Interests and the Common Good: Politics refers to values about what constitutes "good" politics. This includes values such as seeking justice and the normative nature of politics. The common good refers to the idea of what is best for a society. The common good may conflict with individual interests, and therefore both goals cannot be achieved at the same time. However, the question remains unanswered as to whether there is such a thing as the common good or whether the common good can only be recognized in retrospect as the result of a political process.

Privacy and the Public Sphere: Politics refers to the public sphere of human life. The private sphere is separate from it. The protection of privacy and the private sphere from the reach of state power is one of the most important tasks and achievements of democracy. However, the question of where an individual's privacy begins and ends is the subject of protracted political debate.

Scarcity and Distribution: In all societies, unlimited human wants and needs are met with limited resources. This tension is the starting point for economic activity. Each society must decide for itself how to solve the problem of scarcity and distribution. To do otherwise can open the door to colonialism.

The social studies curriculum states that a number of factors are considered when organizing content in the curriculum and that teachers should pay attention to these factors. These factors and their explanations are as follows:

Student and Content Alignment: The learning content is based on students' levels, experiences and interests. In addition, the process of organizing the content aims to make students, as subjects of the learning process, more professional and political in their choices. Students' prior knowledge was taken into account in the content and planning. The level of readiness of the students was considered crucial. Identifying prior learning and readiness is the basis and starting point for designing appropriate learning opportunities in the classroom.

Problem and Content Match: Politics is concerned with solving problems that affect the general public and create pressure to act. Through the content in the curriculum, students engage with political problems, analyze them, and examine political decisions and options for solving political problems.

Discussion: Issues discussed in politics and society should be presented in class through discussion. Political problems should be analyzed from different perspectives in class. It is the students'

responsibility to evaluate problems and perspectives. The content of the social studies curriculum is organized in this way.

Case Study: The case study is particularly important for the social studies course. In modern societies, students are confronted with a complex political reality. Not only the large number of political problems, but also their dynamics and complexity require a careful selection of examples. The cases selected and included in the content are exemplary for politics. In the case studies, students are expected to engage intensively with individual problem situations and conflicts to develop their skills and ensure that their further learning is effective and that they are able to apply the knowledge they have learned in real life and adapt it to other situations.

Timeliness: Current national and global problems and solutions have been considered in the selection of content. The Social Studies course encourages and equips students to address these issues.

Being action-oriented: Students actively engage with social issues in planned, simulated, productive, and creative ways, both in the classroom and everyday life. Opportunities for content-related, student-activated, action and problem-based learning are essential in social studies courses.

The social studies curriculum is taught in grades 7, 8, 9, and 10. The content of the curriculum is common to the 7th, 8th, and 9th grades. The content for 10th grade has been created separately. The content section of the curriculum consists of learning areas, topics and outcomes. The learning outcomes are organized into three levels: basic, intermediate and advanced. To give an example for a better understanding: In grades 7, 8 and 9, the first learning area "Society" has a total of six outcomes, two at the basic level, two at the intermediate level and two at the advanced level, which belong to the first theme "Living together in social groups". Certainly the objectives for the level are prepared by considering the principles of simple to complex and easy to difficult. The general structure of the content of the social studies curriculum can be seen in the example in Table 5.

Table 5. General Structure of the Content of the Social Studies Curriculum

Grade Level: 7th, 8th, and 9th		
Learning Area: Society		
Theme: Living Together in Social Groups		
Outcomes		
Basic Level	Intermediate Level	Advanced Level
1. Describe expectations for adolescents in the family, peer group, and school and compare them with their own ideas using pre-structured materials.	1. Describe and compare their own ideas about the roles and responsibilities of adolescents in families, peer groups and schools.	1. Explains the role conflicts that students who have different roles in family, friends and school may experience.
2. Analyze a predetermined conflict in a social group under guidance, develop a solution approach and discuss predefined solutions under guidance.	2. Analyze a specific conflict within a social group, develop a solution approach and discuss solutions under guidance.	2. Analyze a specific conflict within a social group, develop a solution approach, discuss solutions under guidance, and rationally communicate the positive aspects of their proposed solution to others.

The curriculum includes 4 learning areas for grades 7, 8, and 9. There are a total of 11 topics within these learning areas. At the 10th grade level, there are 2 learning areas. Again, depending on these learning areas, there are 3 themes. The learning areas and themes in the content of the social studies curriculum are shown in Table 6.

Table 6. Learning Areas and Themes in the Social Studies Curriculum

GRADE LEVEL	LEARNING AREA	THEME
7th, 8th and 9th Grades	Society	Living Together in Social Groups
		Life in the Media
		Family and Society
		Immigration to Germany
	Law	Children's Rights
		Legal Status of the Child
		Fundamental Rights
	Political System	School Engagement
		Politics in Society
		Political Decision Making in Germany
	International Relations	Peace and Human Rights
10th Grade	Society	Duties and Problems of the Welfare State
	Political System	Political Decision Making in Germany
		Living in the EU

Looking at Table 6, we can see that the first learning area for grades 7, 8 and 9 in the social studies curriculum is the learning area called "*Society*". It is noted that this learning area includes a total of four themes. The first of these themes is called "Living together in social groups". The curriculum states that through this theme, students will be able to understand the role expectations adolescents are exposed to, the role conflicts that arise as a result (private and public), and how conflicts in family and social groups can be resolved (rules and law). It can be seen that there are a total of six outcomes related

to this theme: two basic, two intermediate and two advanced. With these results, which are prepared according to the principles of simple to complex, and easy to difficult, the aim is that the students understand the expectations of the family, environment and society from them, compare them with their own ideas and understand how to solve role conflicts that arise as a result of role expectations. It is stated in the curriculum that through this subject students will learn how to propose solutions to any social problem or conflict. For the second theme of the first learning area, "Life in the Media", there are five basic, five intermediate and five advanced outcomes. It is emphasized that with these outcomes students will understand how to handle personal data responsibly, how media representations affect young people (privacy and public sphere) and what the legal provisions are for the protection of personal data (rules and law). The third theme of the first learning area is "Family and Society". With this theme, which includes 19 objectives (six basic, six intermediate and seven advanced), students will be able to find answers to questions such as which forms of coexistence (privacy and public sphere) are particularly promoted by the state, which possibilities exist for overcoming inequalities between the sexes (interests and the common good), which legal provisions pursue this goal (rules and law), how life plans and growing populations shape society (order and structure). The fourth theme of the learning area is "Immigration to Germany". With a total of 13 objectives (four basic, four intermediate and five advanced), it is emphasized that students should understand how German society is formed (order and structure), the importance of immigration for Germany and how immigration policy should be shaped (interests and the common good).

An analysis of Table 6 shows that the second learning area taught in grades 7, 8 and 9 is "*Law*". Within the first theme of this learning area, entitled "Children's Rights", it is noted that there are 9 outcomes, three at the basic level, three at the intermediate level and three at the advanced level. In the curriculum it is emphasized that with these learning outcomes students will be able to improve themselves on issues such as what legal provisions exist to protect children (rules and law) and how children's rights can be realized (interests and the common good). The second theme of the learning area is "Legal status of the child". With this theme, which contains a total of 22 objectives (seven basic, seven intermediate and eight advanced), the curriculum explains that students will learn how the state protects young people in the public sphere (privacy and public sphere), what principles a constitutional state must fulfill, why juvenile offenders are punished differently from adults (rules and law), how legal regulations and conflict resolution methods protect peaceful coexistence in Germany (interests and the common good). The third theme, with a total of 13 learning outcomes (four basic, four intermediate and five advanced), is called "Fundamental Rights". The curriculum states that these topics and outcomes will help students find answers to questions such as what legal provisions exist to protect fundamental rights (rules and law) and how crucial fundamental rights are for living together well in Germany (interests and the common good).

Table 6 shows that the third learning area for 7th, 8th and 9th graders is called "*Political system*". It can be seen that the first theme of this learning area is called "school engagement". With 24 outcomes (eight basic, eight intermediate, and eight advanced), the curriculum states that students will understand what opportunities they have to include their own abilities and interests in the decision-making process at school. They will also learn how decisions are made in school (Power and Decision) and what the legal rules are that govern school life (Rules and Law). Questions such as how stakeholders in the school interact (Order and Structure) and how procedures help to resolve conflicts of interest in the school (Interests and the Common Good) are also answered through this topic. The second theme of the third learning area is "Politics in society". The curriculum includes a total of 16 objectives (five basic, five intermediate and six advanced) and it is stated that students will be able to find answers to the question of what opportunities (power and decision) citizens have. It is emphasized that students will understand how the Constitution regulates participation (rules and law). It also addresses how participatory processes contribute to the democratic and non-violent resolution of conflicts of interest, how democracy can be secured and protected, and the importance of the media for a democratic society.

Analyzing Table 6, it can be seen that the fourth learning area belonging to the 7th, 8th and 9th grades is "*International Relations*". There is only one theme that belongs to this learning area. This theme is called "Peace and Human Rights". There are a total of 28 objectives in this subject, which includes nine objectives at the basic level, nine at the intermediate level and ten at the advanced level. The curriculum states that this theme will enable students to find answers to the questions of how human rights can be protected at the international level, how peace can be achieved, maintained, and secured, what rules govern international politics and where they are based, and how the UN makes decisions.

Table 6 shows that there are a total of two learning areas being taught at the 10th grade level. Again, there are three themes within the scope of these learning areas.

It can be seen that the first learning area of the 10th grade social studies course is called "*Society*". The first theme of this learning area is "Duties and Problems of the Welfare State". With six basic, six intermediate and eight advanced objectives, the curriculum states that students will be able to find answers to the questions of how the welfare state provision of the Constitution is formulated, what different ideas there are for implementing the welfare state provision, and how the welfare state is structured.

It is understood that the second learning area is "*Political System*". It is determined that the first theme of this learning area, which comprises two themes in total, is called "Political Decision Making in Germany". With a total of 23 outcomes (seven basic, seven intermediate, and nine advanced), students will be able to find answers to questions such as how power is distributed among constitutional bodies in Germany, how individual institutions in Germany interact, and how processes and institutions

contribute to regulation and protection in order to maintain peaceful coexistence. The second and final theme of the learning area is "Living in the EU". This theme, which has four basic, four intermediate and six advanced outcomes, states that students will understand how citizens can contribute to the policy-making process in the European Union, how power is distributed among the institutions of the European Union, how different institutions interact within the European Union, and how decisions made by the European Union affect the lives of citizens.

The social studies curriculum currently being implemented in Turkey includes a total of 7 learning areas and 131 learning outcomes. In the curriculum, it is stated that the learning area named "*The Individual and Society*" basically includes the processes of being "I" and "We" and that in this learning area, psychology, sociology and social psychology from the social sciences are focused and an interdisciplinary approach is adopted. Accordingly, it is stated that students will have the opportunity to evaluate the spatial, historical and cultural factors that influence the processes of being "I" and "we". It was stated that the learning area entitled "*Culture and Heritage*" is basically history-oriented and has a structure that emphasizes culture and cultural heritage. It was emphasized that this learning area aims to create a national consciousness that will ensure the protection and development of culture based on the fundamental elements that make up Turkish culture. Thus, it is emphasized that students will understand that cultural elements are the characteristics that distinguish one society from other societies. It is stated that the learning area "*People, Places and Environments*" aims to provide students with the basic spatial knowledge, skills and values that are necessary for human life and that it is essentially geography-oriented. Through this learning area, students at all grade levels where social studies is taught are expected to develop skills in research, environmental literacy, perception of change and continuity, observation, map literacy, and perception of space. In the "*Science, Technology and Society*" learning area, students are expected to learn that innovative, critical and scientific thinking is the basis of developments in science and technology; to understand the development process of science and technology and its impact on social life; and to acquire the ability to use technology to access information. The "*Production, Distribution and Consumption*" learning area is based on the development of students' entrepreneurial and conscious consumer skills. They are expected to understand that resources are limited in the national economy, to believe in the importance of protecting existing resources, to compare their own economic life with that of others and to identify differences and similarities, to examine the economic conditions of the place where they live and to make efforts to improve these conditions. The aim is for students to recognize professions and to know the characteristics required by the professions they are interested in. The "*Active Citizenship*" learning area focuses on the concept of effective citizenship within the framework of sociology, political science and law. In light of the information provided in this strand, students should be able to answer the following questions: "What is the role of groups, institutions, and social organizations in our society and other societies? How do groups, institutions, and social organizations affect me? How are groups, institutions,

and social organizations changing? What is my role in these changes? By understanding how social problems are solved and order is maintained, they realize how individual rights and social order are protected in governments where the source of sovereignty is based on the nation. By learning how to participate in social services and various official activities, they understand the democratic ways in which they can influence government. The "*Global Connections*" learning area aims to create active and responsible Turkish citizens who can follow the agenda of the developing world and find solutions to the problems they face. Clearly the social studies curriculum in Germany and Turkey differ in some respects. While the program taught in Turkey includes history and geography, the program taught in Germany does not include history and geography.

4. DISCUSSION AND CONCLUSION

The purpose of this study was to examine the German Social Studies Curriculum in the context of the state of Baden-Württemberg. It was found that the social studies curriculum is taught at the 7th, 8th, 9th, and 10th grade levels. First, it was noted that the curriculum went into effect on August 1, 2016 and is still in use. Curriculum development is a dynamic structure and continuous development is important to create a quality program. For this reason, after it is put into practice, it should be continuously monitored, evaluated, its shortcomings should be eliminated, and it should be updated according to the conditions of the day. This is because the curriculum is the very heart of the educational process (Null, 2017). Especially in this age of rapidly developing information, transportation, communication and production technologies, significant changes are taking place both nationally and globally. Therefore, since August 1, 2016, there have been major global problems that affect all of humanity. For this reason, it is believed that a program implemented since 2016 cannot be very effective in responding to the needs of today. In addition, when the content of the curriculum was examined, it was found that there was no content related to the global issues that have arisen in recent years. This situation can be considered normal because the curriculum is not up to date. It is especially crucial that the curricula of courses such as social studies, which prepare students for life and deal with all phenomena related to society and human life, are up-to-date (Duman, 2004). It is difficult for a curriculum that does not address current problems to prepare students for life and make them resistant to issues. Programmes should especially develop problem solving skills. This depends on interrelated concepts, skills, processes, attitudes and knowledge (Mathematic Syllbaus Primary, 2007). In this context, the fact that the social studies curriculum is not up to date to take into account the social and sociological changes that have occurred globally in recent years is seen as an important deficiency. The same situation is observed in the social studies curriculum taught in France and Turkey. Accordingly, the social studies curriculum (history-geography) taught in France was implemented in 2015, and some minor adjustments were made in 2018. Therefore, it can be said that the social studies curriculum taught

in France is also outdated (Kara, 2022). The social studies curriculum currently taught in Turkey was adopted in 2018 (Ministry of National Education, 2018).

Under the first title of the social studies curriculum, it was found that guiding principles were included to provide students with skills, under the second title, skills were included, and finally, under the third title, the content of the curriculum was presented. However, educational situations (learning-teaching process) were not included. Curricula, which have a very dynamic structure, generally consist of four parts: learning outcomes, content, training and testing situations. When planning the teaching-learning process, the question "How should we teach?" The teaching-learning process refers to the arrangements and studies related to the most effective teaching of the content created in accordance with the achievements to realize the intended results. In other words, it is the appropriate component of all conditions that have the power to influence students, learning and the quality of teaching. The teaching strategy, methods, techniques, tools and materials to be used in the education and training process are largely clarified in the information on educational situations in the curriculum (Karacaoğlu, 2011). Although the teacher can take the initiative to a certain extent, it is crucial that a specific framework for the learning-teaching process is drawn in the curriculum. This is especially important in countries such as Germany, which has received intensive labor migration and has a very cosmopolitan structure. However, as mentioned above, it has been concluded that there is no section on educational situations in the curriculum and there are no explanations on this issue in the curriculum. This situation can be described as another significant shortcoming of the curriculum. In addition, there were no testing situations in the curriculum. The last element of the curriculum is testing (measurement and evaluation) situations. In this section the answer to the question "To what extent and at what level have the objectives been achieved?" It is determined whether the previously determined goals were achieved or not, or at what level the goals were achieved, and which goals there are problems in achieving. In this way the deficiencies of the student, the teacher, the learning environment are identified, and the quality control of the program is carried out (Çepni & Çil, 2010). From this point of view, the absence of testing situations in the curriculum can be considered an notable deficiency. Although teachers have a certain degree of autonomy in terms of measurement and evaluation, a certain framework should be drawn in the curriculum. It can be said that the social studies curriculum in Germany is similar to the social studies curriculum in Turkey in some aspects. It is seen that skills are also included in the Turkish social studies curriculum. It is also noted that there is a content section. However, there is no separate section on educational situations in the program. In the introduction of the program, there is a section called "Measurement and Evaluation Approach in Curricula". In this section a general and holistic framework for measurement and evaluation is drawn. In this respect, it can be said that the social studies curricula of Germany and Turkey are similar. What is different is that the Turkish social studies curriculum includes values. There is no section on values in the German social studies curriculum (Ministry of National Education, 2018). Bilici and Bedirhanoğlu (2020) found in their study that there is no section

on values in the German social studies curriculum. Accordingly, the study conducted by Bilici and Bedirhanoğlu (2020) supports the results of this study.

It was concluded that the skills in the German social studies curriculum are divided into four main areas: analytical, judgment, taking action, and methodological skills. In addition, there was evidence that the skills have an important place in the curriculum and that these skills have been explained in detail. What students can do with these skills and what gains they can make are listed in the program. In recent years, one of the most discussed and researched topics in the field of education around the world is 21st century skills and the acquisition of these skills by students through education. The general framework of 21st century education programs is defined as raising awareness of the factors that will develop the social, economic, and belief systems of society, equipping individuals with the necessary personal characteristics and skills, and thus creating citizens who are willing to take responsibility in this increasingly globalized, diverse world, equipped with a holistic perspective and worldview (Tutkun, 2010; Kaya, 2021). This is only possible through education, and therefore through qualified curricula. It can be said that the most significant tool for integrating the skills required by the 21st century into existing courses is the curriculum. From this point of view, it can be seen as a positive feature that skills are given a wide coverage to the social studies curriculum taught in Germany, and what kind of achievements these skills will provide to the students are listed. The social studies curriculum states that the transfer of knowledge is not an end in itself, but rather the development and improvement of skills. This is considered as one of the positive aspects of the curriculum. Similar results were found in the study conducted by Kaya (2021). The study conducted by Kaya (2021) supports the results of this study. Thus, the social studies curricula of Turkey and Germany are similar in terms of including skills.

The content of the curriculum has been developed considering factors such as society, law, political system and international relations. In addition, the content is generally structured according to the principle of "from near to far". The outcomes in the social studies curriculum are organized into three levels: basic, intermediate and advanced. The preparation of outcomes organized in three levels for learning areas and subjects is an indication of how in-depth and detailed the phenomena, conflicts and problem situations are treated. It was determined that the knowledge and skills to be acquired in the curriculum are related to six basic concepts (power and decision, order and structure, rules and law, interests and the common good, privacy and public sphere, scarcity and distribution). It was also concluded that some factors were taken into consideration in organizing the content of the curriculum. It was determined that teachers should pay attention to these factors in the social studies curriculum. These factors are: Student and content alignment, Problem and content match, Discussion, Case study, Action orientation. It is believed that paying attention to these factors while organizing the curriculum content will increase the effectiveness of the content and will be functional in preparing students for life (Kaya,2021).

The social studies curriculum is taught in grades 7, 8, 9, and 10. The content of the curriculum is common to the 7th, 8th, and 9th grades. The content for 10th grade has been created separately. The content section of the curriculum consists of learning areas, themes and outcomes. The outcomes are organized into three levels: basic, intermediate and advanced. Although each outcome is prepared at three levels, the same content and achievements are available for the 7th, 8th and 9th grade levels. In other words, the content does not change from grade to grade, except for grade 10. However, it was stated that the factor of student and content compatibility was taken into consideration when organizing the content in the curriculum. Nevertheless, it was found that the content was not arranged in a different way depending on the grade level. At this point, it can be said that the curriculum has a contradiction in itself. The characteristics of students vary greatly from grade to grade. On the other hand, the principle of child relativity is one of the most important teaching principles. Each individual has different abilities, study habits, intelligence levels and learning styles. The content and the learning-teaching process should be organized accordingly. The principle of child relativity requires that the learning and teaching process be organized according to the developmental level of the students. It is also based on taking into account the individual differences of students. In particular, the curriculum, tools and materials, environment and teaching environment should be organized according to the principle of child relativity (Taşpınar, 2012). Considering these issues, the fact that the content in the curriculum is not organized according to grade levels can be described as a negative situation.

The subjects and outcomes were found to be compatible. In addition, it was found that the learning area, subject and outcomes were compatible with the skills in the curriculum and aimed at achieving these skills. Based on this information, it can be said that the curriculum is generally consistent within itself. Looking at the content of the curriculum, it can be said that the subjects and outcomes are mostly related to citizenship education. The curriculum aims to educate good German citizens as well as politically aware European citizens. It can be noted that the curriculum focuses mainly on topics such as social life, rights, responsibility, media and its impact on society, participation, politics, peace, human rights, decision-making processes in Germany and the European Union, migration and life in Europe. This can be attributed to the fact that Germany has received a lot of labor migration in the last half century. The integration of citizens of foreign origin in Germany and Europe is an important issue in all European countries. It is assumed that the inclusion of content related to the European Union in the curriculum is also related to the ideal of educating European citizens. Finally, it has been observed that there are almost no elements related to global citizenship in the curriculum, and that the curriculum is largely focused on Germany and Europe, ignoring societies, geographies and cultures in other parts of the world. It is predicted that this situation will have a negative impact on the education of global citizens in Germany. Kara (2022) states in his study that a similar situation is seen in the (history-geography) curricula taught in France. He states that this situation will slow down integration and reduce the effectiveness of efforts to educate world citizens. In this context, it is noted

that the German and French curricula are similar. Finally, the social studies curricula taught in Germany and Turkey differ in some respects. While the program taught in Turkey includes history and geography, the program taught in Germany does not involve history and geography.

5. RECOMMENDATIONS

Based on the results and conclusions of the study, the following recommendations can be made:

- As a result of the study, it was concluded that the curriculum was outdated. In today's world, where information, communication, transportation and production technologies are developing rapidly, there is a rapid change and transformation in the world. Germany undoubtedly has its share in this change and transformation. In this context, it can be proposed to update the curriculum by considering the current conditions, national and global needs.

- When planning the teaching-learning process, the answer to the question "How should we teach?" is hidden in the educational situations part of the curriculum. The teaching-learning process, also known as educational situations, refers to the arrangements and studies related to the most effective teaching of the content created in accordance with the achievements in order to realize the intended results. In other words, it is the appropriate component of all conditions that have the power to affect students, learning, and the quality of teaching. However, it was noted that educational situations were not included in the research. For this reason, it can be suggested to include information about educational situations in the curriculum.

- The final element of the program is assessment and evaluation. This section seeks to answer the question "To what extent and at what level have the objectives been achieved? Through assessment and evaluation, the deficiencies of students, teachers and the learning environment are identified and the quality control of the program is carried out. As a result of the study, it was found that the curriculum did not include information on assessment and evaluation. Testing situations can be included in the curriculum.

- It was observed that the content of the curriculum was not organized by grade level. The characteristics of students differ significantly from one grade to another. Therefore, it can be suggested that the content should be organized separately according to grade levels.

- It was found that the social studies curriculum taught in Germany mainly includes content related to Germany and Europe. However, for the purpose of raising world citizens, content related to different parts of the world can be included in the program.

In this study, the social studies curriculum was examined using the document analysis method. The opinions of social studies teachers and students in this course can be examined regarding social studies teaching and curriculum in Germany.

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ALMANYA SOSYAL BİLGİLER ÖĞRETİM PROGRAMININ İNCELENMESİ: BADEN-WÜRRTEMBERG EYALETİ ÖRNEĞİ

GİRİŞ

İlkokul dördüncü sınıf ve ortaokul aşamasında Sosyal Bilgiler dersi aracılığıyla toplumsal yaşama ait değer, beceri, tutum ve bilgilerin öğrencilere kazandırılması amaçlanmaktadır. Sosyal Bilgiler Öğretim Programında öğrencilerin gelişim dönemleri, fiziksel özellikleri, yaşları ve ruhsal durumları dikkate alınarak sorumluluk sahibi, mantıklı düşünebilen, akılcı bireylerin ve iyi vatandaşların yetiştirilmesi hedeflenmektedir (Yazıcı ve Koca, 2008). Ancak Sosyal Bilgiler dersinin hedeflerine ulaşabilmesi için öğretim programı güncel ve nitelikli olmalıdır. Çünkü öğretmenler genel olarak öğretim programı doğrultusunda hareket etmekte ve Sosyal Bilgiler dersleri öğretim programına göre düzenlenmektedir. Bu nedenle Sosyal Bilgiler öğretimi ve öğretim programı daima güncellenerek geliştirilmelidir. Bunun içinse diğer ülkelerin özellikle de gelişmiş olarak kabul edilen ülkelerin Sosyal Bilgiler öğretimindeki mevcut durumunun incelenmesi önemlidir. Bu ülkelerin uygulamakta olduğu Sosyal Bilgiler Öğretim Programlarının analiz edilerek güçlü ve zayıf yönlerinin değerlendirilmesi hem program geliştiricilere hem öğretmenlere hem de ilgili alan yazına yönelik çalışmalar yürüten araştırmacılara fayda sağlayacaktır. Bilhassa ekonomik, kültürel ve siyasal alanlarda yoğun ilişkilerin olduğu ülkelerde okutulmakta olan Sosyal Bilgiler Dersi Öğretim Programlarının incelenmesi yararlıdır.

Türkiye'nin tarih boyunca her alanda yoğun iletişim ve etkileşim içerisinde olduğu Almanya en gelişmiş Avrupa Birliği ülkelerinden biri durumundadır. Ayrıca Almanya'da günümüzde yaklaşık 3 milyonu aşkın Türk vatandaşı yaşamaktadır (Türkiye Cumhuriyeti Dışişleri Bakanlığı, 2023). Eğitim konusunda Avrupa ülkeleri içerisinde belirli bir standardı yakalamış olan Almanya kozmopolit yapısına rağmen toplumsal anlamda çok önemli problemlerle karşılaşmamaktadır. Şüphesiz bunu sağlamasında Sosyal Bilgiler öğretiminin önemli bir payının olduğu düşünülmektedir. Ancak ilgili alan yazın incelendiğinde Almanya'daki Sosyal Bilgiler öğretimine yönelik çalışmaların yok denecek kadar az (Pamuk ve Pamuk, 2016; Bilici ve Bedirhanoğlu, 2020; Pamuk, 2021) olduğu görülmektedir. Almanya'daki Sosyal Bilgiler Öğretim Programına yönelikse yalnızca bir (Kaya, 2021) çalışmanın olduğu tespit edilmektedir. Bu bağlamda Almanya'da okutulmakta olan Sosyal Bilgiler Öğretim Programının incelenmesi önemli görülmektedir. Bu çalışmada Almanya Sosyal Bilgiler Öğretim Programının Badem-Würrtemberg Eyaleti örneği üzerinden incelenmesi amaçlanmıştır. Bu amaç kapsamında aşağıdaki sorulara yanıt aranmıştır:

1. Sosyal Bilgiler Dersi Öğretim Programı genel yapı özellikleri açısından nasıldır?

2. Sosyal Bilgiler Dersi Öğretim Programında beceriler nasıl ele alınmıştır?

3. Sosyal Bilgiler Dersi Öğretim Programında içerik nasıl düzenlenmiştir?

YÖNTEM

Bu çalışmada nitel araştırma yöntemlerinden biri olan doküman incelemesi tercih edilmiştir. Doküman analizi araştırılmak ve incelenmek istenen konuyla ilgili bilgi içeren yazılı materyallerin analizini kapsayan bir nitel araştırma yöntemidir. Bu araştırma yöntemi tek başına kullanılabileceği gibi destekleyici bir yöntem olarak da tercih edilebilir (Yıldırım ve Şimşek, 2018). Doküman analizi, araştırmanın amacı doğrultusunda kaynakları bulma, bulunan kaynakları okuma, not alma ve son olarak da değerlendirme işlemlerini içermektedir (Karasar, 2005).

Verilerin toplanmasında Almanya'nın Badem-Würrtemberg eyaletinde okutulan Sosyal Bilgiler Dersi Öğretim Programından yararlanılmıştır. Bu anlamda 2016-2017 eğitim öğretim yılında uygulanmaya başlanan ve günümüzde de kullanılmakta olan Sosyal Bilgiler Öğretim Programı kullanılmıştır.

Elde edilen veriler betimsel analiz tekniği ile çözümlenmiştir. Betimsel analizde veriler daha önceden belirlenen temalara göre yorumlanır. Bu teknikte amaç; araştırma sonunda elde edilmiş olan bulguların düzenlenmiş ve yorumlanmış bir biçimde sunulmasıdır (Yıldırım ve Şimşek, 2018). Betimsel analizde elde edilmiş olan verilerin açık, çarpıcı ve net bir biçimde yansıtılarak sunulabilmesi için doğrudan alıntılara sık sık yer verilir. Bu durum aynı zamanda araştırmanın güvenirliğine ve geçerliğine katkı sağlar. Bu araştırmada da Sosyal Bilgiler Öğretim Programını her açıdan ortaya koyacak doğrudan alıntılara sıkça yer verilmiştir.

BULGULAR

Sosyal Bilgiler dersi kapsamında okutulan bu program yedinci ve onuncu sınıf arası öğrencileri kapsamaktadır. Sosyal Bilgiler dersi Badem-Würrtemberg eyaletinde 7. ve 8. sınıflar da ikişer saat 9 ve 10 sınıflarda birer saat okutulmaktadır. Program 1 Ağustos 2016 tarihinde yürürlüğe girmiş olup hala devam etmektedir. Sosyal Bilgiler Öğretim Programının ilk başlığı altında öğrencilere becerilerin kazandırılabilmesi için yol gösterici ilkelere yer verilmiştir. İkinci başlığı altında ise becerilere yer verilmiştir. Üçüncü başlık kapsamında öğretim programının içeriği sunulmuştur. Sosyal Bilgiler Öğretim Programında eğitim durumlarına ve ölçme değerlendirmeye yönelik herhangi bir bölüme yer verilmediği tespit edilmiştir. Öğretim programının diğer bölümlerinde de eğitim durumlarına ve ölçme değerlendirmeye yönelik açıklamalar yapılmadığı saptanmıştır. Öğretim programında becerilere ayrıntılı olarak yer verilmiştir. Beceriler kısmında dört beceri ve bunlara ilişkin öğrencilerden yapmaları beklenen davranışlar belirtilmiştir. Bu beceriler *analiz becerisi, yargı (karar verme) becerisi, harekete geçme becerisi* ve *metodolojik beceri* olarak sıralanmıştır.

Sosyal Bilgiler öğretim programında bilginin aktarılmasının kendi başına bir amaç olmadığı becerilerin geliştirilmesinin ve iyileştirilmesinin hedeflendiği ifade edilmektedir. Sosyal Bilgiler dersinin

amaçlarından birinin de öğrencilerin bilgilerini niteliksel olarak arttırmanın yanı sıra niceliksel olarak da geliştirmek ve yapılandırmış bir teknik dil oluşturmalarını sağlamak olduğu bildirilmektedir. Bu becerilerin oluşmasının kavramsal bilgilerin elde edilmesini kolaylaştıracağı vurgulanmaktadır. Kavramsal bilginin elde edilmesi de becerilerin kazanılması ile doğrudan ilgilidir. Öğretim programının içeriği ilgili toplum, hukuk, siyasal sistem ve uluslararası ilişkiler göz önünde bulundurularak oluşturulmuştur. İçerik genel olarak "yakından uzağa" ilkesine göre yapılandırılmıştır.

Sosyal Bilgiler Öğretim Programında yer alan kazanımlar temel, orta ve ileri seviye olmak üzere üç seviyede oluşturulmuştur. Öğretim programında kazandırılmak amaçlanan bilgi ve becerilerin altı temel kavramla bağlantılı olduğu ifade edilmektedir. Bu kavramlar şunlardır: *Güç ve karar, düzen ve yapı, kurallar ve hukuk, çıkarlar ve kamu yararı, mahremiyet ve kamu, kıtlık ve dağıtım.* Öğretim programında yer alan içerik düzenlenirken birtakım faktörlere dikkat edildiği ve öğretmenlerin de bu faktörlere dikkat etmesi gerektiği Sosyal Bilgiler Öğretim Programında ifade edilmektedir. Söz konusu bu faktörler ve açıklamaları şunlardır: *Öğrenci ve içerik uyumu*, *problem ve içerik uyumu, tartışma, örnek olay, güncellik, eyleme yönelik olma.* Öğretim programında toplam 6 öğrenme alanının ve 14 konunun yer aldığı görülmüştür.

TARTIŞMA VE SONUÇ

Bu araştırmada Almanya Sosyal Bilgiler Öğretim Programının Badem-Württemberg eyaleti örneği bağlamında incelenmesi amaçlanmıştır. Sosyal Bilgiler Öğretim Programının 7. 8. 9. ve 10 sınıf seviyelerinde okutulduğu görülmüştür. Öncelikle öğretim programının 1 Ağustos 2016 tarihinde yürürlüğe girmiş olup hala kullanılmakta olduğu tespit edilmiştir. Program geliştirme sonu olmayan bir süreçtir. Bu nedenle uygulanmaya başladıktan sonra devamlı olarak izlenmesi ve değerlendirilmesi, eksiklerinin giderilmesi ve günün koşullarına göre güncellenmesi gerekmektedir. Çünkü öğretim programı eğitim öğretim sürecinin kalbi durumundadır (Null, 2017). Bu nedenle sürekli olarak beslenmesi gerekmektedir.

Sosyal Bilgiler Öğretim Programının ilk başlığı altında öğrencilere becerilerin kazandırılabilmesi için yol gösterici ilkelere yer verildiği, ikinci başlığı altında becerilere yer verildiği ve son olarak da üçüncü başlık kapsamında öğretim programının içeriğinin sunulduğu tespit edilmiştir. Ancak öğretim programında eğitim durumlarına (öğrenme-öğretmen süreci) yer verilmediği sonucuna ulaşılmıştır. Oldukça dinamik bir yapıya sahip olan öğretim programları genel olarak kazanım, içerik, eğitim ve sınama durumları şeklinde dört bölümden oluşmaktadır. Öğrenme-öğretme süreci planlanırken "Nasıl öğretelim?" sorusuna cevap aranması gerekir. Öğretme-öğrenme süreci, amaçlanan kazanımların gerçekleştirilmesi için kazanımlar doğrultusunda oluşturulan içeriğin en etkili şekilde öğretilmesi ile ilgili düzenlemeleri ve çalışmaları ifade etmektedir. Eğitim öğretim sürecinde işe koşulacak olan öğretim stratejisi, yöntemleri, teknikleri, araç-gereçleri öğretim programında yer alan eğitim durumlarına (öğrenme-

öğretmen süreci) yönelik bilgilerde büyük oranda netliğe kavuşur (Karacaoğlu, 2011). Ancak yukarıda da bahsedildiği gibi öğretim programında eğitim durumlarıyla (öğrenme-öğretme süreci) ilgili herhangi bir bölümün olmadığı ve öğretim programının genelinde de bu konuya yönelik açıklamaların yapılmadığı sonucuna ulaşılmıştır. Bu durum öğretim programında yer alan önemli bir diğer eksiklik olarak nitelendirilebilir. Bunun yanı sıra öğretim programında sınama durumlarının yer almadığı sonucuna ulaşılmıştır. Programın son öğesi sınama (ölçme değerlendirme) durumlarıdır. Bu bölümde "Hedeflere ne kadar ve ne düzeyde ulaşıldı?" sorusuna cevap aranır. Daha önceden tespit edilen hedeflere ulaşılıp ulaşılmadığı veya ulaşılan hedeflere ne seviyede ulaşıldığı, hangi hedeflere ulaşmada problemler yaşandığı tespit edilir. Böylece öğrencinin, öğretmenin, öğrenme ortamının eksikleri tespit edilmiş ve programın kalite kontrolü yapılmış olur (Çepni ve Çil, 2010). Bu açılardan bakıldığında öğretim programında sınama durumlarına yer verilmemesi önemli bir eksikli olarak değerlendirilebilir.

Sosyal Bilgiler Öğretim Programında becerilerin analiz, yargı, harekete geçme ve metodolojik yetkinlik şeklinde dört temel alana ayrıldığı sonucuna ulaşılmıştır. Ayrıca öğretim programında becerilere geniş yer verildiği ve bu becerilerin ayrıntılı olarak açıklandığı görülmüştür. Bu durumun da öğretim programının olumlu yönlerinden birini oluşturduğu düşünülmektedir.

Öğretim programının içeriği ilgili toplum, hukuk, siyasal sistem ve uluslararası ilişkiler göz önünde bulundurularak oluşturulmuştur. Ayrıca içerik genel olarak "yakından uzağa" ilkesine göre yapılandırılmıştır. Sosyal Bilgiler Öğretim Programında yer alan kazanımlar temel, orta ve ileri seviye olmak üzere üç seviyede oluşturulmuştur. Öğrenme alanlarına ve konulara yönelik olarak düzenlenen kazanımların üç seviye şeklinde hazırlanması ele alınan olgu, çatışma ve problem durumlarının ne kadar derinlemesine ve ayrıntılı olarak ele alındığının göstergesidir. Öğretim programında kazandırılmak amaçlanan bilgi ve becerilerin altı temel kavramla (güç ve karar, düzen ve yapı, kurallar ve hukuk, çıkarlar ve kamu yararı, mahremiyet ve kamu, kıtlık ve dağıtım) bağlantılı olduğu tespit edilmiştir. Öğretim programında yer alan içerik düzenlenirken birtakım faktörlere de dikkat edildiği sonucuna ulaşılmıştır. Öğretmenlerin de bu faktörlere dikkat etmesi gerektiğinin Sosyal Bilgiler Öğretim Programında ifade edildiği tespit edilmiştir. Bu faktörler şunlardır: Öğrenci ve içerik uyumu, problem ve içerik uyumu, tartışma, örnek olay, eyleme yönelik olma. Öğretim programı içeriğinin düzenlenmesi sırasında bu faktörlere dikkat edilmesinin içeriğin etkililiğini arttıracağı ve öğrencilerin yaşama hazırlanması noktasında yararlı olacağı düşünülmektedir.

Sosyal Bilgiler Öğretim Programı 7. 8. 9. ve 10 sınıf seviyelerinde okutulmaktadır. Öğretim programında içerik 7. 8. ve 9. sınıflar için ortak düzenlenmiştir. 10. sınıf seviyesine yönelik içerik ise ayrı oluşturulmuştur. Öğretim programının içerik bölümü öğrenme alanları, konular ve kazanımlardan oluşmaktadır. Kazanımlar temel, orta ve ileri seviye olmak üzere üç

seviye olacak biçimde hazırlanmıştır. Her ne kadar her kazanım üç seviyede hazırlanmış olsa da 7. 8. ve 9.sınıf seviyeleri için aynı içerik ve kazanımlar mevcuttur. Yani içerik sınıf seviyelerine göre değişmemektedir (10. sınıf hariç). Oysa öğretim programında içerik düzenlenirken öğrenci ve içerik uyumu faktörünün göz önünde bulundurulduğu ifade edilmiştir. Ancak içeriğin sınıf seviyelerine göre farklı düzenlenmediği tespit edilmiştir. Bu noktada öğretim programının kendi içerisinde bir çelişki yaşadığı söylenebilir. Her sınıf seviyesinde öğrenci özellikleri oldukça değişmektedir. Öte yandan çocuğa görelik ilkesi, en önemli öğretim ilkelerinden biridir. Her birey farklı yeteneklere, çalışma alışkanlıklarına, zekâ düzeylerine ve öğrenme stillerine sahiptir. İçerik ve öğrenme-öğretme süreci buna uygun düzenlenmelidir.

Konu ve kazanımların birbiriyle uyumlu olduğu görülmüştür. Ayrıca öğrenme alanı, konu ve kazanımların öğretim programında yer alan becerilerle uyumlu olduğu ve bu becerileri kazandırmaya yönelik olduğu tespit edilmiştir. Bu bilgilerden yola çıkarak öğretim programının genel olarak kendi içerisinde tutarlı olduğu söylenebilir. Öğretim programının içeriği incelendiğinde konu ve kazanımların büyük oranda vatandaşlık eğitimiyle ilgili olduğu ifade edilebilir. Programda iyi bir Alman vatandaşının yanı sıra politik bilince sahip Avrupa vatandaşlarının da yetiştirilmesinin amaçlandığı görülmektedir. Öğretim programında daha çok toplumsal yaşam, hak, sorumluluk, medya ve medyanın toplum üzerindeki etkisi, katılım, politika, barış, insan hakları, Almanya'da ve Avrupa Birliği'nde karar alma süreçleri, göç ve Avrupa'da yaşam gibi konular üzerinde durulduğu belirtilebilir. Bu durumun Almanya'nın son yarım asırda çok fazla işçi göçü almasına bağlanabilir. Öğretim programında Avrupa Birliği'ne yönelik içeriklere yer verilmesinin de Avrupa vatandaşı yetiştirme idealiyle ilgili olduğu düşünülmektedir. Son olarak öğretim programında küresel vatandaşlıkla ilgili öğelerin yok denecek kadar az olduğu, programın çok büyük oranda Almanya ve Avrupa odaklı olduğu, dünyanın diğer bölgelerinde bulunan toplumların, coğrafyaların ve kültürlerin görmezden gelindiği görülmüştür. Bu durumun Almanya'da dünya vatandaşı yetiştirme bağlamında olumsuz etki yaratacağı öngörülmektedir.

EXAMINATION OF MATHEMATICS TEACHERS' BELIEFS AND ATTITUDES REGARDING TEACHING STATISTICS

Orkun COŞKUNTUNCEL[1]

Fatih KALE[2]

ABSTRACT

This study aimed to examine the beliefs and attitudes of mathematics teachers towards statistics education. The sample of the research consisted of 11 mathematics teachers. A semi-structured interview form was used as the data collection tool, and the data was analyzed using the "cut and sort" technique. Based on the analysis, it was concluded that it is critical to consider both student needs and teacher needs to improve statistics education. Therefore, professional development programs should be organized to help teachers understand and teach basic statistical concepts effectively. In this way, teachers can better equip their students with the skills to think statistically and make rational and informed decisions.

Keywords: Beliefs and attitudes; teaching statistics; mathematics teachers

MATEMATİK ÖĞRETMENLERİNİN İSTATİSTİK ÖĞRETİMİNE İLİŞKİN İNANÇ VE TUTUMLARININ İNCELENMESİ

ÖZET

Bu çalışmanın amacı, matematik öğretmenlerinin istatistik ve istatistik öğretimine yönelik inançlarını ve tutumlarını incelemektir. Araştırmanın örneklemini 11 matematik öğretmeni oluşturmaktadır. Veri toplama aracı olarak yarı yapılandırılmış görüşme formu kullanılmıştır ve verilerin analizi "kesme ve sıralama" tekniği kullanılarak yapılmıştır. Analizlere göre, istatistik eğitimini geliştirmek için hem öğrenci ihtiyaçlarını hem de öğretmen gereksinimlerini göz önünde bulundurmanın kritik önem taşıdığı sonucuna varılmıştır. Bu nedenle öğretmenlere, temel istatistik kavramlarını anlama ve etkili bir şekilde öğretme konusunda yardımcı olacak profesyonel gelişim programları düzenenmelidir. Bu sayede öğretmenler, öğrencilerini istatistiksel düşünme ve rasyonel ve bilinçli kararlar alma becerileriyle daha iyi donatabilirler.

Anahtar Kelimeler: İnanç ve tutumlar; istatistik öğretimi; matematik öğretmenleri

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1. INTRODUCTION

Each branch of science has its problems and methods for solving them, making them separate disciplines. Statistics is a separate discipline and science, consisting of many techniques. British Sir Francis Galton (1822-1911), one of the scientists who contributed significantly to the development of statistics, said of the importance of statistics: "There is a great deal to be written on tatistics; however, I feel that my explanation will be insufficient to present it in a way that is easily understood, without compromising on rigour, without missing any of its aspects. It is thought that statistics today sheds light on the future with the collection, analysis, and interpretation of data, and plays an important and critical role in analyzing data from different segments of society, determining future decisions, and evaluating current situations. However, statistics has the potential to be easily used as a tool for deception. Huff (2002) stated that abused statistics can distort many facts, and a well-made statistic is more effective in Hitler's 'big lie'. He also emphasized that these statistics can lead society in the wrong direction and that no one can blame those who put it forward.

When it is considered that statistics, beyond being just an academic field, can guide citizens in the analysis of situations encountered in daily life and in decision-making processes, the teaching of statistics is brought to a critical point. Herbert G. Wells' statement that "Statistical thinking will one day be one of the most necessary elements of being a good citizen, just like being literate" summarizes the importance of statistics education (Huff, 2002). In light of this, students with a good statistics education can be expected to have the following characteristics:

i. They may be more resistant to misleading information (they know how to evaluate and critically examine the data sets they come across, how to draw conclusions. Statistical data is often used for various purposes and can sometimes be distorted. Statistics education is a critical approach to statistics that children encounter in the media or in their daily lives. aids in their evaluation).

ii. They can make better decisions about many situations they encounter throughout their lives (such as academic success, hobbies, social relationships, career plans. For example, it can help them understand which course/courses they need to devote more time to in order to increase academic success).

iii. They can better understand trends occurring in society (data related to issues such as economic inequality, environmental change or health habits can help them understand and find solutions to problems, and encourage them to act more consciously and effectively on such issues).

iv. Statistical skills are highly valued in many professions today. For example, marketing, finance, healthcare, sports, etc. Individuals who can understand and interpret statistical data in many fields may be more competitive in the business world. Therefore, basic statistical skills acquired during childhood can give them an advantage in their future careers.

In this context, considering the important benefits of statistics education for children, it is thought that teaching them basic statistics concepts from an early age will help them improve their cognitive thinking and decision-making abilities.

Tanilli (2012) stated that training and teaching are different and sometimes independent activities and that both should not be done at the same time and should not be left to a single person. In addition, Mother and Father emphasized that, although they are knowledgeable, they are not enough to teach and educate their children, as they can be too impatient, nervous, and passionate. On the other hand, she stated that a teacher is neither a father nor a second mother, and their role is to teach something, not to love or endear themselves. In this case, the teacher's beliefs and attitudes towards statistics and teaching are important in teaching statistics, which are thought to have important contributions to children's lives. Beliefs affect the behaviour of teachers who teach statistics (Estrada, Batanero, & Lancaster, 2011). When teaching statistics, the teacher is interested in whether it is important for students to master the math skills of central tendency units, whether statistics are relevant to real-world situations, and whether technology can help students learn. It is important to let students choose the appropriate tools. Examining students' and teachers' views on mathematics education has a long and detailed history. However, when it comes to statistics education and especially focusing on teachers' beliefs, the number of studies is negligible (Pierce & Chick, 2011).

According to Philipp (2007), belief; is defined as the facts considered, psychologically held understandings, premises, or propositions about the accepted world. Beliefs are somewhat recognizable because they are cognitively accepted, can be accepted with varying degrees of confidence, and appear inconsistent or contradictory from an observer's perspective. As a result, beliefs cannot be measured using scales. Philipp (2007) also compares beliefs with emotional attitudes. Attitudes are defined as "behaviours, feelings and thoughts that reflect one's temperament or thinking". Contrary to a common misconception, attitudes are often evaluated using a variety of scales. A person's beliefs affect, but do not definitively determine their attitudes. Attitudes are considered a reflection of a person's beliefs, but they can often change according to beliefs. The influence of environment and culture plays a big role. For example, while a person is expected to act according to cultural norms, they may act contrary to their own beliefs. Similarly, attitudes can directly affect interactions between people. Establishing relationships with other people, sharing a common feeling or thought, and as a result, can lead to changes in people's attitudes. Therefore, the relationship between beliefs and attitudes is quite complex and multifaceted (Philipp, 2007; Tavşancıl, 2014).

In the studies, the importance of students' beliefs about statistics was emphasised (Hirsch & O'Donnell, 2001; Hulsizer & Woolf, 2009; Schau et al., 1995). Gal et al. (1997) emphasize that students' beliefs affect their teaching-learning processes and their relationship with statistics outside the classroom. Teaching-learning processes are also valid for teachers' beliefs. Relationships with statistics outside the classroom, emphasized by Estrada and Batanero (2008), are influenced by teachers' beliefs. In this context, it is considered important to examine teachers' beliefs about teaching statistics. Previous studies conducted in Turkey, unlike this study, are generally related to pre-service teachers' attitudes towards statistics or the statistics courses they take. In this study, it was aimed to examine mathematics teachers' beliefs about statistics and statistics teaching.

2. LITERATURE REVIEW

Pfannkuch and Wild (2008) conducted a study on the development of statistical thinking skills of teachers and concluded that teachers play a critical role in the development of their students' statistical thinking skills, and should have sufficient statistical content knowledge to do so. He also noted that teachers do not differ much from students in terms of statistical thinking, which is a worrying situation. Cobb and Moore (1997) highlighted the uniqueness of statistics by stating that "statistics requires a different way of thinking because data are not only numbers but also numbers with context". Wild and Pfannkuch (1999) further emphasised that statistical reasoning includes features such as inquiry cycles, unique thinking styles and characteristic tendencies that make mathematical reasoning distinct. This supports Pfannkuch and Wild's (2008) statement that "being a statistics teacher is different from teaching mathematics" and "statistical thinking, reasoning and literacy are especially important skills for those who teach statistics".

Pierce and Chick (2011) stated that teachers' beliefs about statistics can affect their teaching methods. For example, if a teacher believes that a statistics course consists only of data collection and analysis, they may teach only these topics to their students and ignore a broader understanding of statistics. Similarly, if a teacher believes that statistics is tightly linked to mathematics, they may use mathematical approaches to teach mathematical concepts to their students. However, teachers' beliefs about statistics can also have an impact on students' learning process and their engagement with statistics. Teachers' beliefs about the importance of statistics education can be influenced by many factors, such as external factors such as curriculum or policy, which can shape teachers' beliefs about the importance of statistics education. While some teachers believe that an informed citizen in today's world should have a basic understanding of statistics, others may question its importance. In addition, teachers' own statistical education experiences may also influence their beliefs. Teachers with statistics training may appreciate the importance of statistics more, while those without statistics training may appreciate it less. Understanding teachers' beliefs about statistics can help to improve statistics education for students. Teachers' beliefs about statistics can influence students' attitudes and achievement in the subject. For instance, if a teacher believes that statistics is only connected to mathematics, students' attitudes towards statistics may be adversely affected and their performance in the subject may be poor. However, understanding teachers' beliefs about statistics can help to devise suitable strategies to enhance students' attitudes towards and achievement in statistics. For example, professional development activities can be organized to alter teachers' beliefs about statistics or research can be conducted to comprehend teachers' beliefs about statistics. In this way, a more effective statistics education can be provided to students.

Lovett and Lee (2017) stated in their evidence-centered design approach study with pre-service mathematics teachers that some pre-service mathematics teachers view statistics as a "grey area" where "uncertainty" or "the correct answer is uncertain". They also highlighted that some pre-service teachers think of statistics as "an art" and that pre-service teachers' ideas about statistics can be altered through

different learning experiences that will help them to improve their teaching of statistics. The researchers stated that providing pre-service teachers with learning opportunities in statistics can increase their interest in statistics and alter their thoughts about statistics. They also stated that providing pre-service teachers with different resources to help them improve their teaching of statistics can also change their thinking about statistics.

Harrell-Williams et al. (2015) measured the statistics self-efficacy of 208 secondary school mathematics teachers in the United States using the Statistics Teaching Efficacy Survey (SETS) questionnaire. The findings of this study suggest that teacher education programs focusing on statistics education need to develop a better strategy for teaching statistical concepts to help teachers better understand statistical concepts and increase their self-efficacy. Statistical concepts that are associated with high levels of self-efficacy for teaching statistics at the secondary school level include central measures, data variation, probability, and graph interpretation and construction.

In a study conducted by Begg and Edwards (1999), 22 New Zealand primary school teachers and 12 pre-service teachers participated. In the study, teachers' views on statistics is devided into four main categories as; beliefs and attitudes about statistics, statistical field information, their beliefs and attitudes about teaching statistics, their knowledge and understanding of statistics teaching. In this study, data collection methods included unstructured, semi-structured and clinical interviews, discussion-orientated questionnaires and concept maps. It was emphasised that teachers generally agreed that a good understanding and knowledge of statistics is important for teaching statistics, but they generally disagreed that statistical knowledge is less important for providing students with appropriate statistical activities.

Watson (2006) stated in his study that the curriculum covers statistical subjects and that because students may have different levels of statistical literacy skills, it may require teachers to develop teaching strategies suitable for their different learning styles. He also stated that it is important for teachers to use real-life examples and applications to help students understand statistical concepts, but that teachers do not feel competent in statistics and do not have enough equipment to train students on this subject. He also stated that some teachers may think that statistical concepts are complex and that it is difficult for students to understand these issues. For this reason, he emphasized that teachers should improve their knowledge of statistics and develop appropriate teaching strategies to increase students' statistical literacy.

Carvalho's (2008) study includes research on the development of statistical thinking skills by analyzing the dialogues of seventh-grade students during their collaborative work. The research was conducted with the participation of 533 students and examined how students' statistical and cognitive performance could be improved through peer interaction. The results showed that collaborative work plays an important role in developing students' statistical thinking skills and helps to foster students' positive orientations towards statistics. Additionally, each teacher's understanding of statistics, statistical knowledge, and didactic statistical knowledge determines how their work with students will proceed.

In the study conducted by Sedlmeier and Wassner (2008), teachers were asked how effective statistics education should be, and it was determined that teachers generally believed that student's special interests and activities should be included. However, it was also determined that teachers were reluctant to include student activities, as they are time-consuming and require preparation. Furthermore, the teachers thought that the use of computers and appropriate software was essential for students to develop their data collection and analysis skills.

Leavy et al., (2013) stated in their study that pre-service teachers thought it was difficult to learn statistics and that they misunderstood statistical terms. They also noted that pre-service teachers had positive attitudes towards statistics, but they still perceived it as difficult to learn, which could be reflected in their students. In order to develop students' statistical thinking skills, they suggested that teachers should teach students data collection, data analysis, and interpretation skills; students should learn statistical concepts with real-life examples; students should interpret statistical graphs, and students should present examples that students can use their statistical thinking skills in daily life.

Shin (2021) conducted a study with eight pre-service mathematics teachers at a major public university in the southeastern United States. These pre-service teachers took a statistics course for statistics teachers and a statistics teaching pedagogy course for secondary and high school teachers during another semester. As a result of this research, it was emphasized that the pre-service teachers focused more on the teacher's pedagogy than on the statistical thinking of the students, which could make it difficult for the students to fully understand and learn. In addition, it was revealed that pre-service teachers do not have the professional knowledge to help them understand the statistical thinking of students when teaching statistics. Therefore, teacher education programs have reported that prospective teachers should include professional knowledge in their curriculum to help them understand students' statistical thinking when teaching statistics.

Batanero and Díaz (2011) stated in their study that some teachers think that students' mathematical skills are insufficient when teaching statistics, resulting in difficulty for students in understanding the subject. Furthermore, teachers have difficulty in finding enough examples and applications to demonstrate real-life applications of statistics. Additionally, it was also stated that while teaching statistics, students had difficulty understanding statistical terminology, thus making it difficult for them to comprehend the subject.

3. METHOD

This study uses basic qualitative research methods commonly used in educational settings. Yıldırım and Şimşek (2011) defined qualitative research as research in which qualitative data collection methods such as document analysis, observation, and interviews are used, and a qualitative process is followed to reveal perceptions and events in a natural environment. The phenomenology design, one of the qualitative research designs, was used in the study. The phenomenology design allows us to focus on the facts that we are aware of but do not have in-depth and detailed knowledge and understanding

(Yıldırım & Şimşek, 2011). This study, it is aimed to examine the beliefs and attitudes of mathematics teachers towards statistics and statistics education in depth.

3.1. Working Group

For this study, 11 mathematics teachers working in the Ministry of National Education were selected using the purposive sampling method. Bernard et al. (2016) describe the purposive sampling method as the researcher identifying and communicating with people who will provide rich data suitable for the purpose of the study. In order to participate in the study, the participants had to have graduated from the Department of Mathematics of the Faculty of Education, have taken a course in Statistics, and volunteered to work. A total of 11 teachers, 7 of whom were at secondary school and 4 at high school level, participated in the study voluntarily. The teachers participating in the study were all mathematics teachers working under the Ministry of National Education. Five of the participants were male, six were female, and their ages ranged from 30 to 40. Although it is not possible to determine the exact number of participants in qualitative studies, it is stated that approximately 20 to 60 participants may be sufficient to provide detailed information about their situation or experiences. However, in this study, 11 participants were considered sufficient because the data saturation was reached, as when the pilot study and after it were evaluated together, no new or different information emerged (Bernard et al., 2017; Yıldırım & Şimşek, 2011).

3.2. Data Collection Tool

A semi-structured interview form was used as a data collection tool for the working group. This form was determined by a literature review on the subject and focused on the relationships between teachers' beliefs and attitudes about statistics education. The final interview form, consisting of 11 questions about the beliefs and attitudes of mathematics teachers on statistics and statistics education, was obtained by removing some questions from the draft form of 15 questions, in accordance with the opinions of two expert faculty members. A pilot study was conducted with four mathematics teachers, two of whom were from middle school and two from high school, who were not participants in this study.

3.3. Data Collection Process

The data for the study was collected in February 2023. During the data collection process, mathematics teachers were informed about the purpose of the research and many teachers refused to participate due to the relevance of the study to statistics. Interviews were conducted with those who volunteered to participate. The use of audio recordings of the interviews was preferred to shorten the interview time and help to accurately record the answers of the pre-service teachers, and all participants agreed to the audio recording. The interviews were conducted one-on-one in suitable environments where the participants would feel comfortable, thus taking their comfort and safety into account.

3.4. Data Analysis

First of all, the recorded interviews were analyzed. To ensure the reliability of the study, the data were analyzed by two people: the researcher and a faculty member experienced in qualitative data analysis.

The "cutting and sorting" technique (Lincoln and Guba, 1985) was used for data analysis. This method involved cutting quotes from the data and writing the participant's code name (e.g. L1, O1) behind each quote. These quotes were then randomly sorted on a table and those with similar emphasis were brought together. After this, two coders examined the resulting codes together and evaluated them. When there was no consensus in the discussion regarding the differences between the codes, the relevant code was removed from the findings. This allowed for a deeper examination of the data and increased the reliability of the study.

4. FINDINGS

In this section, the teachers' opinions about statistics and statistics education and the findings about the level of statistical content knowledge are given.

4.1. Findings on teachers' views on statistics education

The findings of the teachers' views on the necessity of statistics education are given in Table 1.

Table 1. The results of the answers to the question, "Is statistics education necessary?"

	Frequency	Participant Code
Required	11	O1, O2, O3, O4, O5, O6, O7, L1, L2, L3, L4
It is necessary for raising inquisitive individuals	5	O1, O2, O4, O6, L1, L2
It is necessary to interpret the data	3	O3, L1, L2

When we look at Table 1, all the answers reflect different perspectives on the necessity of statistics education, while emphasizing that statistics education is necessary and that it can be used in many areas of life. Seven participants stated that statistics education is necessary and justified their reasoning, stating that the purpose of this education is to train individuals who can question and interpret data. One participant (L4) even stated that they considered it necessary even if not for every profession. For example, O6 coded teacher answered this question.

If thinking, questioning and researching individuals are to be trained, this job will pass by predicting where the results of the events can lead. This job also provides statistics.

While answering as L1 coded teacher;

Statistics education. Of course, I think it is necessary. We already had this training in college. Why it is necessary? Because companies can have prior knowledge of what they should invest in, what they should focus on according to the needs of their customers, what it is, which company and which products they should focus on. That's why it's necessary.

replied as. The findings of the teachers' views on the level of statistics education should be given in Table 2.

Table 2. Results related to the answers given to the question "At what level should statistics education be?"

	Frequency	Participant Code
Explained from simple to difficult	10	O2, O3, O4, O5, O6, O7, L1, L2, L3, L4
It should be given at a medium level	1	O1

When the answers were examined, 10 participants who agreed with the view that "statistics education should be explained from simple to difficult" emphasized that it should start from the basic level and be presented according to the level. It was suggested that basic concepts be explained in simple ways, that students gain statistical thinking skills, and that increasingly complex topics be covered at advanced levels. According to these views, the view that statistics education should be given with a gradually increasing level of difficulty, starting from the basic level, is dominant. In other words, teachers think that children should be familiar with basic statistics concepts at an early age. They suggest that a basic understanding should be established to teach the basic statistical concepts that have practical use in daily life and to move on to further analysis. A teacher (O1) stated that statistics education should be given at least at an intermediate level to be able to make inferences. For example, O3 coded teacher.

I think Statistics is a difficult course to understand, so it should be started early. Maybe even downgraded to elementary school. In other words, I think that it should be given at a very simple level in this way, by increasing the level a little more in secondary school. Maybe that's why we find it difficult. Because we never took such classes. I mean, when I think of my own school life, not only in terms of mathematics but also in terms of statistics, I do not remember such a course.

O1 coded teacher;

So I think it may not be enough to make simple-level inferences. Yes. It needs to be a little more advanced.

replied as. The findings regarding the methods suggested by teachers for statistics education are presented in Table 3.

Table 3: "What kind of method do you think should be used in statistics education?" answers the question.

	Frequency	Participant Code
Using ready-made data with traditional methods	2	O1, O5
Using computer programs	2	O1, O2
It should be done with real-life examples.	4	O2, O7, L3, L4
They should do it by collecting their data	6	O2, O4, L1, L2, L3, L4
Project-based processing	2	O4, L3
No action should be taken until assimilated	1	O6

When we look at Table 5 regarding how statistics education should be conducted, the view that it should be done with an applied and case-based approach, allowing students to work with real-life data and develop their ability to analyze it, is prominent. One participant (O1) stated that contrary to this view, it is necessary to reinforce theoretical knowledge by using ready-made data and computer programs, and by giving some theoretical information using traditional methods. He also emphasized that using technology tools and visual materials can be effective. Another participant (O6) stated that in statistics subjects, students should not proceed to the process part without learning the subject well. Additionally, he emphasized that, as statistics is a field based on reasoning, although it includes

mathematical operations, it would be more beneficial to first give students the ability to interpret statistical data and then teach calculations. For example, O2 coded teacher is expressing it as

> *While we teach the statistics lesson. In other words, different methods can be followed according to class levels. But I think it is more permanent and understandable to use data from real life no matter what grade level it is. In other words, it can make the data more understandable with the data it reaches, not with ready-made data. Technology support is available. Definitely in terms of making calculations easier. Because calculations can be daunting sometimes. Such methods can be used.*

O1 coded teacher;

> *In other words, the subject of the method, that is, the method may change according to the age group. In other words, we can change the method according to the level of the group that the student will give. In other words, sometimes it is determined by traditional methods and sometimes by using such technological tools, at least by doing it visually or by using old statistics. Ready. Data usage is the same as using data.*

and O4 coded teacher emphasised the importance of project-based teaching as;

> *I think it should be applied, for one thing, very little place is given in mathematics. It can be a separate elective course. In other words, I think it would be more beneficial if it was given as a lesson rather than in a course, that is, it could be done in a project style.*

Finally, O7 coded teacher is expressed an opinion as;

> *In my opinion, statistics education should be given more practically in all education levels and programs based on concrete data and case studies. I think that information that is not associated with daily life is not permanent and effective.*

The teachers were then asked a question about whether Probability is a subfield of statistics.

Table 4. "Is probability a subfield of statistics?" answers the question.

	Frequency	Participant Code
Subfield	8	O1, O2, O3, O4, O5, O6, O7, L2
Not subfield	3	L1, L3, L4

The views of eleven mathematics teachers reflect a generally accepted understanding of the complexity and interdependence between probability and statistics. While these views state that probability is a part of the field of statistics, they also suggest that these two disciplines have a close relationship. It is emphasized that both fields are used together to solve real-world problems. However, there are disagreements among the participants as to whether probability is only a subcomponent of statistics, or whether these two disciplines should be considered separately. While some opinions suggest that probability and statistics should be handled separately (O3, L3, L4), others argue that these two disciplines complement each other. It can be thought that these differences stem from individual experiences, pedagogical approaches, and general perspectives. The complexity of the relationship

between probability and statistics and the ability of these two fields to collaborate are evaluated by the participants from various perspectives. L4 commented on this subject.

> *Probability. They are interconnected fields, but I think they can be taught separately at first and then combined.*

O2 coded teacher expressed the following opinion;

> *I mean, since we look at statistics as probability, I think that it is a sub-field. I mean, it is like a part of statistics.*

The findings related to the opinions of the teachers about the level at which a possible statistics course should be implemented by the Ministry of National Education are given in Table 5.

Table 5. "At what level should a possible statistics course begin?" Answers to the question:

	Frequency	Participant Code
It should start from primary school	1	L3
Starting from middle school	5	O1, O2, O3, O4, L4
Starting from high school	2	L1, L2, O6, O7
There is no need for a separate course.	1	O5,

The question of which school level the statistics course should be given points to different perspectives. The answers examined show varying perspectives on which levels of statistics topics should be presented in more meaningful ways. According to the view shared by most of the participants (7 participants), statistical concepts should be studied more comprehensively at secondary or high school levels, where abstract thinking can develop. These views suggest that to be able to understand these topics, students should have already grasped some basic mathematical concepts. There is also a belief that it is more accessible to introduce the basic principles of statistics at primary or pre-school levels. From this perspective, introducing children to these topics from an early age can contribute to a better understanding of more complex issues in the future. There are varying approaches to the complexity of the content of the statistics course and the level of education among different perspectives. According to one view (L3), these subjects should be taught at primary school level and included in general mathematics education. However, there is a consensus among the answers that while determining the education level of statistics courses, factors such as the education level and abstract thinking abilities of students should be taken into consideration, as well as complexity. Overall, there are marked differences in opinion on this basis.L3 on this subject;

> *Especially when we look at our students. In other words, I think that it should be started in the fourth grade of primary school, at least in the fourth grade. Because people who meet statistics at an early age can behave more realistically in terms of determining their careers. Otherwise, statistics made in high school years and there are definitely benefits. Since the past life of the child cannot be changed, it is of course great in shaping the future life of the child, but at least in order to benefit from it, I think it should be started from primary school.*

On the other hand, O2;

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In other words, I think that statistics education as a separate course should be included in the lives of children starting from primary school and even pre-school. But for it to be taught as a separate course, it is given at slightly larger grade levels, that is, within the mathematics course in primary school, but I think that it should be taught as a separate course in secondary school, at least from the fifth grade.

He stated that statistics should be taught to students starting from Kindergarten, but it should be at least secondary school level as a course.

And L2 is,

So it can be at least 10th Grade. It should be given at least in the 10th grade, but as I said in mathematics, 1-2 times in every fifth or seventh. This should be shown to children little by little, then it can be considered as a separate lesson.

4.2. Findings on teachers' beliefs and attitudes about statistics education

In the interview form, some questions were included to see the beliefs and attitudes of teachers about statistics education. First, the participants were asked, "What is statistics? What does it mean to you?" questions were asked. The findings regarding the teachers' views on the subject are given in Table 6.

Table 6. "What is statistics? What does it mean to you?" results in the answers to the question.

	Frequency	Participant Code
Interpreting the data	6	O1, O3, O6, L2, L3, L4
Is to see the future	6	O1, O2, O4, O5, L2
It is a science	6	O4, O5, O6, O7, L2, L3, L4
It doesn't mean anything	3	L1, L3, L4

When the answers given by the teachers were examined, it was seen that they discussed statistics from different perspectives with concepts such as data, interpretation, estimation, profit, comparison, and probability. The common points of the definitions made were that statistics is the process of making meaning through the collection and interpretation of data and is often used to make predictions for the future or to understand events in the past. In some answers, it was emphasized that statistics is accepted as a science and that it works with mathematical methods. In addition, it can be said that the view that statistics is a part of daily life and helps in decision-making processes was expressed in common. In the answers given to the question of what is statistics, it can be said that instead of defining statistics in a narrow sense, such as tables, graphs, and numbers, teachers tried to define it from a broader framework. When asked what statistics means to them, six participants started to explain by stating that they see statistics as a branch of science. Contrary to expectations, three participants, who are high school teachers, tried to make a definition, although they stated that statistics did not mean anything to them, and they used the concepts of interpretation and profit in their definitions. For example, L4 coded participants.

Statistics. So it doesn't mean much to me, but you know, it is used as a science to compare general situations. I think it is a science used to compare some situations, that is, to interpret data.

It can be said that the attitudes of high school teachers towards statistics stem from the exam-oriented education system. Because in the university entrance exam, probability calculations are at the forefront. It is thought that probability and statistics courses given in mathematics teaching undergraduate programs are one of the courses that teacher candidates generally have difficulty with, and this situation has a negative effect on teachers' beliefs and attitudes towards statistics.

The findings of the teachers' views on what (how) statisticians do their job are given in Table 7.

Table 7. Results of the answers to the question "What do statisticians do (How do they do)?".

	Frequency	Participant Code
Examines data	6	O2, O4, L1, L2, L3, L4
Analyzes data	8	O2, O3, O4, O6, O7, L1, L2, L3
Supports institutions	3	L1, L2, L3
Collects data	6	O1, O2, O3, O4, O5, L3
Interprets data	5	O1, O2, O3, O6, O7
Helps shape the future	7	O1, O2, O4, O5, O7, L1, L2
I don't know	1	L4

Accordingly, we can think that teachers generally consider statisticians to be field experts who attempt to predict future events by using data collection, analysis, and interpretation processes, making sense of the results, and contributing to decision-making processes. From this point of view, we can say that teachers have a belief that statisticians shape the future. For example, O2 coded teacher answered this question;

This collects the data I just mentioned and displays that data in different fields with different display methods. He establishes relationships between them, analyzes them, makes predictions, and makes inferences for the future. We can say that he is the executor of all of them. It actually does the process of executing all of them.

In addition, the L2-coded teacher answered this question;

Statisticians give us an idea of how often this might happen in the future by recording the transcripts of certain events, past and present, and the frequency with which they occur. Or states or institutions, holdings, and companies. If anyone is interested now, it's about the future. to possible situations. I can also say employees who give ideas to them.

replied as..

Afterwards, the teachers were asked whether they considered themselves competent in statistics.

Table 8. "Do you consider yourself sufficient in statistics education?" answers the question.

	Frequency	Participant Code
I see enough	3	O7, L2, L3
I see enough at the level I teach	3	O4, O6, L1,
I don't see enough	2	O5, L4
I am not sure	2	O1, O3"
i need education	1	O2,

When the answers were examined, it was seen that there were various approaches to beliefs and attitudes towards statistics courses. Some of the participants emphasized that they needed more learning and development in the field of statistics. Some participants emphasized that they were sufficient in teaching only the statistical gains given at the school levels they worked at (middle school, high school), but that they could have difficulties when it came to higher levels. L4-coded teacher on this subject:

I don't see it enough.

gave the answer. In addition, the L1-coded teacher answered this question;

Since it is the subject of probability, there are only variance probability, statistics and certain subjects at the high school level. The most basic subjects are more than that for our teachers at the university level only, we do not give them in high school. It's more advanced in that regard in its current state. Of course, I consider myself sufficient.

In addition, the O2-coded teacher answered this question;

Do I see it as enough, that is, since we have always focused on formulas and calculations since the years we started teaching, I think there should be more as a requirement of the curriculum. In other words, we can be trained in the prediction interpretation part to make these inferences, I think teachers, so I can get extra training on this for myself.

replied as.

4.3. Findings Related to Statistics Content Knowledge of Mathematics Teachers

In the interview form, some questions about basic concepts, which were thought to be very important in statistics education, were included in order to assess the teachers' knowledge of the field of statistics. First, the participants were asked what the universe and sample were, and after their answers were given, they were asked to provide information about how the sample would be selected. According to the answers given, the teachers' knowledge of the subject is shown in Table 9.

Table 9. "What is the Universe and Sample?" answers to the question.

	Frequency	Participant Code
True	9	O1, O4, O3, O7, O2, O5, L1, O6, L2
False	2	L4, L3

As a result of the evaluation of the answers given in Table 9, it was determined that the participant's knowledge of the concepts of universe and sample was incomplete. The participants' answers generally only went as far as the fact that the universe is large and the sample is a smaller subgroup. In general, the participants stated that the sample should have the power to represent the universe. Two participants misunderstood these concepts. When asked how the sample should be selected, only a few of the participants stated that they did not know; the rest stated that they were not sure and only knew that random selection could be made. O4 coded teacher about the universe and sample;

The universe is the largest set we are curious about, and the sample is a part of the universe. The homogeneous piece we try to take from the universe.

Teacher coded L3;

> *The universe, of course. The universe is where we live. When we look at it as communities, it is not just the world. So it existed in an eternity. Within systems. I think this should be appreciated. We shouldn't just look at the world. There is a system. We actually call this system a universe. The sample is small dots in this universe. Actually, think of it this way. Imagine an ocean, for a grain of sand in an ocean, if the ocean is the universe, a grain of sand is a sample. It is a part of it, it is born out of it.*

Teacher coded O2;

> *The universe is the largest set that contains all of the possible situations and everything that can happen, and a smaller group that we will choose from the sample universe that we think can best represent the universe in their samples. And how? We can choose, we choose. So we need to choose it in a way that represents it in the best way possible. Different methods can be used for this.*

Afterwards, teachers were asked about their knowledge of central tendency and distribution measures.

Table 10. "What are the measures of Central Tendency and Distribution? Can you give a brief description?" answers to the question.

Measures of Central Tendency			Measures of Central Distribution		
	Frequency	Participant Code		Frequency	Participant Code
True	10	L4, O1, O4, O3, O7, O2, O5, O6, L1, L2	True	7	L4, O4, O3, O7, O5, L1, L2
False	1	L3	False	4	L3, O1, O2, O6,

When the answers are examined, it is evident that there is a general understanding of central tendency and distribution measures, but there are differences in the details. Among the answers, there are similar thoughts regarding what the measures of central tendency are. Responses containing measures such as the arithmetic mean, median, and mode were expressed as measures of central tendency, which are commonly encountered. The geometric mean was also suggested by some participants. There is a similar framework for measures of dispersion. Responses containing measures such as the standard deviation and variance were seen. Additionally, dispersion measures such as openness, quarterly gap, and coefficient of variation were also specified. Although the level of remembering these measures and conceptual understandings varied in the answers, the participants put forward general ideas instead of providing an explanation about the meanings of the measures.

O3 in this regard;

> *Central tendency arithmetic, mean, median, mode. Measures of distribution were standard deviation and what was it? There was also clarity.*

L1 in this regard;

Central tendency and distribution central distribution. central tendency. Arithmetic mean. Mode median. Measures of central distribution are variance, standard deviation, range, span, and quartile range.

Finally, "What comes to your mind when you say normal distribution?" question was posed.

Table 11. "What comes to mind when you say normal distribution?" answers to the question.

	Frequency	Participant Code
I don't know	6	L4, O1, O3, L1, L2, L3
Equal means	2	O2, O4
Bell curve - Gaussian	3	O7, O5, O6

When the answers given by the participants were examined, it was seen that there were similar and different understandings about some basic aspects of the concept of normal distribution. Some participants (O7, O5, O6) stated that the normal distribution is a general statistical term that refers to a certain shape or a bell-like curve and that it is also known as the Gaussian distribution. Some participants (O2, O4) emphasized a feature of the normal distribution and stated that the arithmetic mean, median, and mode are equal. Unexpectedly, not all of the high school teachers were able to provide information about the normal distribution.

O2 on this subject;

Normal distribution, that is, the arithmetic mean and standard deviation are equal to each other. Distributions. Mean mode median. Yes, yes.

He replied as L3 is on this subject;

Normal distribution is standard in my opinion. So is it normal now? When we look at the meaning of the word, it may appear socially as well. It's a normal situation. When we say a normal understanding, your standards. I think it's a situation.

5. DISCUSSION AND CONCLUSION

In teaching statistics, the beliefs and attitudes of teachers towards statistics and statistics teaching are of great importance, as beliefs influence people's behavior (Estrada et al., 2011). The aim of this study was to determine the attitudes and beliefs of mathematics teachers regarding statistics and statistics teaching.

When teachers were asked to talk about statistics, their initial reaction was negative due to their past experience. As stated in the study of Begg and Edwards (1999), this situation is caused by the continuation of teachers' beliefs from their undergraduate education. Furthermore, the belief in using statistics to direct the future and/or make accurate predictions about the future has emerged among teachers.

In the interviews with the teachers, it was agreed that statistics education can help students make better decisions in their daily lives and improve their analytical thinking skills. Additionally, it was generally accepted that statistics education will enable students to understand, interpret, and think statistically about data. Different approaches were proposed according to the teachers' views on how

statistics education should be applied. The first approach is Applied Statistics Education. This approach is proposed as a method supported by practical examples that will enable students to understand statistical concepts and skills with examples from daily life. It was also stated that students could better understand the abstract concepts of statistics if the practices were age-appropriate, supported by using technology, and supported by field studies. The second approach is the Spiral Learning Approach. In this approach, statistics education can be organized as a repetitive spiral learning starting from the basic level and progressing to more advanced levels. It was suggested to the students that more permanent learning could be achieved by repeating the same subjects in different periods, increasing the dose each time. In both approaches, teachers emphasized that statistics education should not remain solely at the theoretical level and that theoretical knowledge should be combined with practical applications.

It is possible to say that probability and statistics are subjects that appear to be different fields but are closely related. From a theoretical point of view, it is not wrong to say that probability is the basis of statistics. This view was also shared by secondary school teachers. However, high school teachers do not agree. While high school teachers included the acquisitions for probability in the mathematics program, they excluded the acquisitions for statistics in a sense. In exam-oriented education systems, teachers and learners naturally expect the subjects they teach and learn to be tested in the exam. It is thought that the fact that statistics subjects have fewer questions compared to probability and other mathematics subjects may have caused this belief. Another reason for this situation may be related to the teachers' level of statistical content knowledge.

Teachers may not be familiar with basic statistical concepts such as universe, sample, measures of central tendency, and normal distribution. These concepts form the basis of statistical analysis and may require more training and awareness for teachers to better understand this area. Pfannkuch (2008) stated that teaching statistics is different from teaching mathematics and that statistics is an independent cognitive method. He also emphasized that when teachers do not have sufficient content knowledge, the statistical thinking skills that we expect their students to develop cannot develop sufficiently. Pierce and Chick (2011) stated that teachers' thinking that statistics consist only of data collection and analysis means that they can only teach this subject to their students, and this will ignore a broader understanding of statistics. In this context, teachers also stated that they mostly lacked knowledge in the interviews. In general, teachers seem willing to learn more about statistics and receive training, which is considered a positive situation. The literature on statistics education points to concerns about teachers' readiness to teach statistics (Greer & Ritson, 1994), which is linked to their lack of statistical content knowledge. It is understood that some of the teachers do not see the lack of statistical knowledge as a problem in terms of their teaching. For example, although the teachers did not respond to the question about central tendency and distribution measures at the level expected from them, they stated that the lack of interpreting what they told was caused by the students and/or the system.

Consequently, it is essential to take into account both student and teacher needs when designing a statistics education program. Professional training on the fundamentals of statistics and their teaching

should be organized for teachers. This way, teachers will be able to enhance their student's ability to think statistically and make more informed and accurate decisions.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

MATEMATİK ÖĞRETMENLERİNİN İSTATİSTİK ÖĞRETİMİNE İLİŞKİN İNANÇ VE TUTUMLARININ İNCELENMESİ

GİRİŞ

Her bilim dalı kendi problemlerine ve bu problemlerin çözümü için kendi yöntemlerine sahiptir. Bu özellikleri bilim dallarını ayrı bir disiplin yapar. İstatistikte birçok teknikten oluşan ayrı bir disiplin ve bilimdir. İstatistiğin gelişimine önemli katkısı olan bilim insanlarından biri olan İngiliz Sir Francis Galton (1822-1911) istatistiğin önemi ile ilgili olarak düşüncelerini "Üzerinde yazacak büyük bir konum var: İstatistik; ancak, anlatımımın, titizlikten ödün vermeden, hiçbir yönünü eksik bırakmadan, kolayca anlaşılacak biçimde sunmakta yetersiz kalacağını hissediyorum" biçiminde ifade etmiştir. İstatistiğin günümüzde, verilerin toplanması, analizi ve yorumlanmasıyla geleceğe ışık tutmakta olduğu ve toplumun farklı kesimlerinden gelen verilerin analiz edilmesinde, geleceğe yönelik alınacak kararların belirlenmesinde ve mevcut durumların değerlendirilmesinde önemli ve kritik bir rol oynamakta olduğu düşünülmektedir. Ancak istatistik kolaylıkla bir aldatma aracı olarak kullanılma potansiyeline sahiptir. Huff (1993), kötüye kullanılan istatistiklerin birçok gerçeği olduğundan farklı hale getirebileceğini ve iyi makyajlanmış bir istatistiğin Hitler'in büyük yalanında daha etkili olduğunu belirtmiştir. Ayrıca bu istatistiklerin toplumu hem yanlış yöne götürdüğünü hem de bunu ortaya atanları kimsenin suçlayamayacağını vurgulamıştır.

İstatistiğin, sadece bir akademik alan olmanın ötesinde, günlük hayatta karşılaşılan durumların analizinde ve karar verme süreçlerinde vatandaşlara rehberlik edebileceği düşünüldüğünde, istatistiğin öğretimi de çok önemli bir noktaya taşınmış olur. Hebrert G. Wells'in "İstatistiksel düşünce, gün gelecek tıpkı okuryazar olmak gibi iyi yurttaş olmanın en gerekli ögelerinden olacaktır" şeklindeki ifadesi istatistik eğitiminin önemini özetleyen bir ifadedir (Huff, 1993).

Bu bağlamda, istatistik eğitiminin çocuklar için önemli yararları göz önünde bulundurulduğunda, onlara erken yaşlardan itibaren temel istatistik kavramlarını öğretilmesinin, onların bilişsel düşünme ve karar verme kabiliyetlerini geliştirmelerine yardımcı olacağı düşünülmektedir.

Tanilli (2012), yetiştirme ve öğretme işinin birbirinden farklı ve kimi zaman bağımsız etkinlikler olduğunu ve her ikisinin aynı zamanda yapılmaması ve tek bir kişiye bırakılmaması gerektiğini belirtmiştir. Ayrıca, Anne ve Baba bilgili de olsalar, çocuklarını okutup öğretmekte, onları yetiştirmekte yeterli olmadıklarını çünkü fazla sabırsız, sinirli ve tutkulu olabileceklerini vurgulamıştır. Buna karşılık, bir öğretmenin, ne bir baba ne de bir ikinci anne olmadığını, rolünün sevmek ya da kendini sevdirmek değil bir şeyleri öğretmek olduğunu belirtmiştir. Bu durumda çocukların yaşamlarına önemli katkıları olduğu düşünülen istatistiğin öğretilmesinde, öğretmenin istatistik ve öğretimine yönelik inanç ve tutumları önemlidir. İnançlar, istatistik dersleri veren öğretmenlerin davranışlarını etkiler (Estrada vd., 2011). Öğretmenin istatistik öğretimi yaparken, öğrencilerin merkezi eğilim ölçü birimlerinin

matematik becerilerinde ustalaşmalarının önemli olup olmadığı, istatistiklerin gerçek dünya durumlarıyla ilişkili olup olmadığı ve teknolojinin öğrencilerin öğrenmesine yardımcı olup olmayacağı ile ilgilenir. Öğrencilerin uygun araçları seçmelerine izin vermek önemlidir. Öğrencilerin ve öğretmenlerin matematik eğitimine ilişkin görüşlerinin incelenmesi uzun ve ayrıntılı bir geçmişe sahiptir. Ancak istatistik eğitimi söz konusu olduğunda ve özellikle öğretmenlerin inançlarına odaklanıldığında çalışma sayısı yok denecek kadar azdır (Pierce ve Chick, 2011).

Estrada ve Batanero (2008) tarafından vurgulanan sınıf dışındaki istatistiklerle ilişkiler ise, öğretmenlerin inançlarından etkilendiğini göstermektedir. Bu bağlamda, öğretmenlerin istatistik öğretimine yönelik inançlarının incelenmesinin önemli olduğu düşünülmektedir. Türkiye'de yapılmış önceki çalışmalar, bu çalışmanın aksine genellikle öğretmen adaylarının istatistiğe veya aldıkları istatistik dersine olan tutumları ile ilgidir. Bu çalışmada, matematik öğretmenlerinin istatistik ve istatistik öğretimi hakkındaki inançlarının incelenmesi amaçlanmıştır.

YÖNTEM

Bu çalışma, eğitim ortamlarında yaygın olarak kullanılan temel nitel araştırma yöntemlerini kullanmaktadır. Çalışmada nitel araştırma desenlerinden olgubilim deseni kullanılmıştır. Bu çalışmada da matematik öğretmenlerinin istatistik ve istatistik eğitimine yönelik inanç ve tutumlarının derinlemesine incelenmesi amaçlanmıştır.

Çalışma Grubu

Bu çalışma için, amaçlı örnekleme yöntemi kullanılarak milli eğitim bakanlığında çalışan 11 matematik öğretmeni seçildi. Katılımcıların çalışmada yer alması için Eğitim Fakültesi Matematik bölümlerinden mezun olmaları, İstatistik dersi almış olmaları ve çalışmaya gönüllü olmaları gerekmektedir. 7'si ortaokul ve 4'ü lise düzeyinde olmak üzere toplam 11 öğretmen gönüllü olarak çalışmaya katılmıştır. Çalışmaya katılan öğretmenler Milli Eğitim Bakanlığı bünyesinde çalışan matematik öğretmenleridir. Katılımcıların 5'i erkek, 6'sı kadın ve yaşları 30 ile 40 arasında değişmektedir.

Veri Toplama Aracı

Veri toplama aracı olarak, yarı yapılandırılmış görüşme formu kullanılmıştır. Bu form, konuyla ilgili literatür taraması yapılarak belirlenmiş ve öğretmenlerin istatistik eğitimi ile ilgili inanç ve tutumları arasındaki ilişkiler üzerine odaklanmıştır. 15 sorudan oluşan taslak form pilot çalışma ve uzman iki öğretim üyesinin görüşleri doğrultusunda bazı sorular çıkarılarak 11 sorudan oluşan matematik öğretmenlerinin istatistik ve istatistik eğitimi konusundaki inanç ve tutumlarına yönelik nihai görüşme formu elde edilmiştir. Pilot çalışma, bu çalışmanın katılımcıları olmayan ikisi ortaokul ve ikisi lise düzeyinde olan dört matematik öğretmeni ile yapılmıştır.

Veri Toplama Süreci

Çalışmanın verileri Şubat 2023 tarihinde toplanmıştır. Veri toplama sürecinde, matematik öğretmenleri araştırmanın amacı hakkında bilgilendirilmiş ve birçok öğretmen çalışmanın istatistik ile ilgisinden dolayı katılmayı reddetmiştir. Katılmaya gönüllü olanlarla görüşmeler yapılmıştır.

Görüşmelerin ses kayıtlarının kullanılması, görüşme süresini kısaltarak ve öğretmen adaylarının cevaplarını eksiksiz bir şekilde kaydetmeye yardımcı olması amacıyla tercih edilmiş ve tüm katılımcılar ses kaydı yapılmasını kabul etmiştir. Görüşmeler, katılımcıların kendilerini rahat hissedecekleri uygun ortamlarda birebir şekilde gerçekleştirilmiştir, böylece onların konforu ve güvenliği göz önünde bulundurulmuştur.

Verilerin Analizi

Öncelikle kaydedilen görüşmelerin çözümlemesi yapılmıştır. Çalışmanın güvenirliğini sağlamak amacıyla, veriler iki ayrı kişi tarafından, biri araştırmacı diğeri ise nitel veri analizi konusunda deneyimli bir öğretim üyesi olmak üzere, analizler yapılmıştır. Veri analizi için "kesme ve sınıflandırma (cutting and sorting)" tekniği kullanılmıştır (Lincoln ve Guba, 1985).

BULGULAR

Araştırmaya katılmaya gönüllü olan öğretmenlerin istatistik ile ilgili inançlarının ve tutumlarının yapılan görüşmelerin başlangıcında ilk ifade ve tepkilerine göre olumsuz olduğu gözlemlenmiştir.

Öğretmenlerin istatistik eğitimi hakkındaki görüşleriyle ilgili bulgular

Öğretmenlerin istatistik eğitimi hakkındaki görüşlerini özetleyecek olursak şu şekilde sunabiliriz:

İstatistik eğitimi gerekliliği konusunda öğretmenlerin genel bir mutabakatı vardır. İstatistik eğitiminin, sorgulayan bireyler yetiştirmek ve verileri yorumlamak için gerekliliği vurgulanmıştır. İstatistik eğitiminin hangi düzeyde olması gerektiği konusunda öğretmenler, temel düzeyden başlayarak ilerlemesi gerektiği ve seviyeye uygun bir şekilde sunulması gerektiğini savunmaktadır. Temel kavramların öğrencilere anlatılması ve istatistiksel düşünme becerilerinin kazandırılması önerilmiştir. İstatistik eğitiminde kullanılması gereken yöntem konusunda öğretmenler arasında farklı görüşler bulunmaktadır. Genel olarak uygulamalı ve örnek olaylara dayalı bir yaklaşım önerilmiştir, ancak bazı katılımcılar geleneksel yöntemleri ve teorik bilgiyi vurgulamıştır.

Olasılık ve istatistik arasındaki ilişki konusunda öğretmenler arasında farklı görüşler vardır. Bazıları bu iki disiplinin ayrı ayrı ele alınması gerektiğini savunurken, diğerleri bu iki disiplinin birbirini tamamladığını düşünmektedir.

İstatistik ve olasılık derslerinin hangi öğrenim düzeylerinde verilmesi gerektiği konusunda farklı bakış açıları bulunmaktadır. Bir grup öğretmen, bu konuların ilkokul veya okul öncesi seviyelerde tanıtılması gerektiğini savunurken, diğerleri bu derslerin ortaokul veya lise düzeylerinde daha kapsamlı bir şekilde işlenmesini önermektedir.

Genel olarak, öğretmenler arasında istatistik eğitimi ile ilgili farklı perspektifler ve görüşler bulunmaktadır. Bu farklılıklar, öğrenci düzeyi, öğrenim düzeyi, öğretim yaklaşımı ve deneyim gibi faktörlere dayanmaktadır.

Öğretmenlerin istatistik eğitimi konusunda inanç ve tutumlarıyla ilgili bulgular

Öğretmenlerin istatistik eğitimi, inançları ve tutumları hakkında elde edilen bilgileri özetleyecek olursak şu şekilde sunabiliriz:

İstatistik hakkında;

İstatistik, verilerin toplanması ve yorumlanması yoluyla anlam çıkarma süreci olarak görülüyor.

Genellikle geleceğe yönelik tahminler yapmak veya geçmişteki olayları anlamak için kullanılıyor.

İstatistik, matematiksel metotlarla çalışan bir bilim dalı olarak kabul ediliyor.

İstatistikçiler hakkında;

Günlük hayatın bir parçası olarak kabul ediliyor ve karar verme süreçlerinde yardımcı oluyor.

İstatistikçiler, veri toplama, analiz etme ve yorumlama süreçlerini kullanarak gelecekteki olayları tahmin etmeye çalışan uzmanlar olarak görülüyor.

İstatistikçiler sonuçları anlamlandırma ve karar verme süreçlerine katkı sağlıyorlar.

Kendi yeterlilikleri hakkında;

Bazı öğretmenler, istatistik alanında daha fazla öğrenmeye ihtiyaç duyduklarını ve gelişmeleri gerektiğini vurguluyorlar.

Bazıları, çalıştıkları okul seviyelerinde (ortaokul, lise) verilen istatistik derslerini öğretmekte yeterli olduklarını, ancak daha üst seviyelerde zorlanabileceklerini ifade ediyorlar.

Genel olarak, öğretmenler istatistiği veri analizi ve tahmin yapma yeteneği olarak görüyorlar. Ancak bazıları, istatistik eğitimlerinin yetersiz olduğunu düşünerek daha fazla öğrenme ve gelişme ihtiyacı olduğunu belirtiyorlar. Ayrıca, özellikle üst düzey istatistik konularında öğretmenlerin kendilerini yetersiz hissettiği görülüyor. Bu durum, öğretmenlerin istatistik öğretimi konusundaki inanç ve tutumlarını etkileyebilir.

Matematik Öğretmenlerinin İstatistik Alan Bilgisi ile İlgili Bulgular

Öğretmenlerin temel istatistik kavramlarına yönelik bilgi düzeylerinin eksik olduğu görülmektedir. Evren ve örneklemin tanımı konusunda genel bir anlayışın olduğu, ancak detaylar konusunda eksiklikler bulunduğu görülmüştür. Ayrıca, örneklemin nasıl seçileceği konusunda da katılımcıların yetersiz bilgi sahibi olduğu anlaşılmaktadır.

Merkezi eğilim ve dağılım ölçüleri konusunda ise katılımcıların genel bir anlayışa sahip oldukları ancak ayrıntılarda farklılıklar olduğu gözlemlenmiştir. Merkezi eğilim ölçüleri olarak aritmetik ortalama, medyan ve mod gibi ölçüleri içeren cevaplar sıkça karşılaşılan yanıtlar arasındadır. Dağılım ölçüleri konusunda da benzer bir durum söz konusudur. Standart sapma ve varyans gibi ölçüleri içeren yanıtlar yaygın olarak verilmiştir.

Normal dağılım konusunda ise katılımcılar arasında farklı anlayışlar bulunmaktadır. Bu dağılımın genel bir istatistiksel terim olduğu, belirli bir şekil veya çana benzeyen bir eğriyi ifade ettiği ve Gauss dağılımı olarak da bilindiği gibi farklı açıklamalar yapılmıştır. Bazı katılımcılar ise normal dağılımın, aritmetik ortalama, medyan ve mod'un eşit olduğu bir özellik olduğunu vurgulamışlardır. Sonuç olarak, öğretmenlerin istatistik alanındaki temel kavramlara ve terimlere yönelik bilgi düzeyleri eksik olduğu için bu konularda daha fazla eğitim ve bilgiye ihtiyaçları olduğu görülmektedir. Bu

eksiklikler öğrencilere doğru ve etkili bir istatistik eğitimi verme konusunda zorluklara neden olabilir. Bu nedenle öğretmenlerin istatistik eğitimlerinin güçlendirilmesi ve bu konuda daha fazla destek almaları önemlidir.

SONUÇLAR

İstatistiğin öğretilmesinde, öğretmenin istatistik ve istatistik öğretimine yönelik inanç ve tutumları önemli bir yere sahiptir çünkü inançlar, insanların davranışlarını etkiler (Estrada, Batanero ve Lancaster, 2011). Bu çalışmada da, matematik öğretmenlerinin istatistik ve istatistik öğretimi ile ilgili tutum ve inançlarını belirlemek amaçlanmıştır.

Öğretmenlere istatistik hakkında konuşmak istendiği söylendiğinde verdikleri ilk tepki geçmiş tecrübelerinden kaynaklı olumsuzdu. Bu durumun Begg ve Edwards (1999)'ın çalışmasında belirtildiği gibi öğretmenlerin lisans eğitimi aldıkları dönemdeki inançlarının devam etmesinden kaynaklanmaktadır. Ayrıca öğretmenlerin genelinde istatistik hakkında geleceğe yön verme ve/veya geleceğe yönelik doğru tahminler yapabilme inanışı kendini göstermiştir.

Öğretmenlerle yapılan görüşmelerde istatistik eğitiminin, öğrencilerin günlük yaşamlarında daha iyi kararlar vermelerine yardımcı olabileceği ve analitik düşünme becerilerini geliştirebileceği konusunda fikir birliğine varıldığı görülmüştür. Ayrıca, istatistik eğitiminin, öğrencilerin verileri anlamalarını, yorumlamalarını ve istatistiksel olarak düşünmelerini sağlayacağı genel bir görüş olarak ortaya çıkmıştır. Öğretmenlerin istatistik eğitiminin hangi yöntemlerle uygulanması gerektiği konusundaki görüşlerine göre ortaya çıkan farklı yaklaşımlar görülmüştür. Bunlardan ilki Uygulamalı istatistik eğitimidir. Bu yaklaşım, Öğrencilerin istatistiksel kavramları ve becerileri günlük hayattan örneklerle anlamalarını sağlayacak uygulamalı örneklerle desteklenen bir yöntem önerilmiştir. Bu sayede öğrencilerin, istatistiğin soyut kavramlarını daha iyi anlayabileceği belirtilmiştir. Burada, uygulamaların yaşa uygun olması, teknoloji kullanarak desteklenmesi ve saha çalışmalarıyla desteklenmesi özellikle vurgulanmaktadır. İkinci yaklaşım sarmal öğrenme yaklaşımıdır. Bu yaklaşımda da, istatistik eğitimi, temel düzeyden başlayarak daha ileri seviyelere doğru giderek tekrarlayan bir sarmal öğrenme şeklinde düzenlenebilir. Öğrencilere farklı zaman dilimlerinde aynı konuların dozu arttırılarak tekrarlanması yoluyla daha kalıcı öğrenmenin sağlanabileceği belirtilmiştir. Öğretmenler her iki yaklaşımda da İstatistik eğitiminin teorik seviyede kalmaması gerektiğini, teorik bilginin mutlaka pratik uygulamalarla birleştirilmesinin gerektiğini vurgulanmıştır.

Olasılık ve istatistik, farklı alanları temsil ediyor gibi görülen ancak birbirleriyle sıkı bir ilişki içinde olan konular olduklarını söylemek mümkündür. Kuramsal olarak bakıldığında olasılığın, istatistiğin temeli olduğunu söylemek yanlış olmaz. Ortaokul öğretmenlerinde de bu görüş ön plana çıkmıştır. Ancak lise öğretmenleri aynı düşüncede değillerdir. Lise öğretmenleri, matematik programında olasılığa yönelik kazanımları sahiplenirken, istatistiğe yönelik kazanımları bir anlamda dışlamışlardır. Sınav odaklı eğitim sistemlerinde doğal olarak öğretenler ve öğrenenler, öğrettikleri ve öğrendikleri konuların sınavda bir karşılığı olmasını beklerler. İstatistik konularının sınava olasılığa ve diğer matematik konularına göre daha az soru malzemesi olmasının böyle bir inanışa neden olmuş

olabileceği düşünülmektedir. Ortaya çıkan bu durumun bir diğer nedeni de öğretmenlerin istatistik alan bilgisi düzeyleriyle de ilgili olabilir.

Öğretmenler, evren, örneklem, merkezi eğilim ölçüleri ve normal dağılım gibi temel istatistik kavramları yeterince hatırlayamamaktadırlar (veya bilinmemektedirler). Bu kavramlar, istatistiksel analizlerin temelini oluşturmaktadır ve bu alanın daha iyi anlaşılması için öncelikle öğretmenlere yönelik daha fazla eğitim ve farkındalık gerektirebilir. Pfannkuch ve Wild (2008), istatistik öğretmenin matematik öğretmekten farklı olduğunu ve istatistiğin bağımsız bir bilişsel yöntemi olduğunu belirtmiştir. Ayrıca öğretmenlerin yeterli alan bilgisine sahip olmadıklarında, öğrencilerinde oluşmasını beklediğimiz istatistiksel düşünme becerisinin yeterince gelişemeyeceğini vurgulamıştır. Pierce ve Chick (2011) öğretmenlerin istatistiği sadece veri toplama ve analizinden ibaret olduğunu düşünmelerinin, öğrencilerine sadece bu konuyu öğretebilecekleri anlamına geldiğini ve bunun da daha geniş bir istatistik anlayışını göz ardı edeceğini belirtmişlerdir. Bu bağlamda, öğretmenler de yapılan görüşmelerde çoğunlukla bilgi eksikliğine sahip olduklarını dile getirmişlerdir. Genel olarak öğretmenlerin istatistikle ilgili daha fazla bilgi edinmeye ve eğitim almaya istekli görünmektedir ve olumlu bir durum olarak değerlendirilmektedir. İstatistik eğitimi ile ilgili literatür, öğretmenlerin istatistik öğretmeye hazır olmalarına ilişkin endişelere işaret etmektedir (Greer & Ritson, 1994) ve bu da onların istatistik alan bilgisi eksikliğiyle bağlantılıdır. Öğretmenlerin bazıları istatistik bilgisinin eksikliğini öğretimleri açısından bir sorun olarak görmedikleri anlaşılmaktadır. Örneğin merkezi eğilim ve dağılım ölçüleri ile ilgili soruya öğretmenler kendilerinden beklenen düzeyde geri dönüş yapmamış olsalar da bunları anlattıklarını yorumlama konusunda eksikliğin öğrencilerden ve/veya sistemden kaynaklandığını belirtmişlerdir.

Sonuç olarak, istatistik eğitimini geliştirirken öğrenci gereksinimlerini ve öğretmenlerin ihtiyaçlarını göz önünde bulundurmak kritik bir öneme sahiptir. Öğretmenlere yönelik istatistikle ilgili temel kavramlar ve bunların öğretimleri konusunda profesyonel eğitimler düzenlenmelidir. Bu sayede öğretmenler, öğrencilerinin istatistiksel düşünme, daha akılcı ve doğru kararlar alabilme becerilerini artırabilecektir.

INVESTIGATION OF SPORTS-THEMED PICTURE BOOKS FOR PRESCHOOL CHILDREN IN TERMS OF GENDER ROLES[1]

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ABSTRACT

The main purpose of this research is to examine sports-themed picture books for preschool children in terms of gender. In this study, a qualitative research design based on the document analysis method was preferred. The data of the research were collected from 65 children's picture books. As a result of the examinations on the cover pages of children's picture books, it was determined that 25 different sports branches were presented to children through books. In the analysis of the content of the book, the gender of the main characters and the sport with which this character is identified were examined. As a result of this examination, it was determined that the main characters were female in 34 books and male in 21 books; both male and female characters were included in 6 books. After this stage, which sports the main characters do were examined. It was determined that sports branches such as ice skating and yoga were transferred to children more intensely through female characters. It was determined that some sports branches, such as football and cycling, were transferred more intensely through male characters.

Keywords: Preschool period; children's picture book; sports; gender

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OKUL ÖNCESİ DÖNEM ÇOCUKLARINA YÖNELİK SPOR TEMALI RESİMLİ ÇOCUK KİTAPLARININ TOPLUMSAL CİNSİYET AÇISINDAN İNCELENMESİ

ÖZET

Bu araştırmanın temel amacı, okul öncesi dönemdeki çocuklara yönelik spor temalı resimli kitapların toplumsal cinsiyet açısından incelenmesidir. Araştırmanın yönteminde doküman analizi yöntemine dayalı nitel bir araştırma tasarımı tercih edilmiştir. Araştırmanın verileri 65 resimli çocuk kitabından toplanmıştır. Resimli çocuk kitaplarının kapak sayfalarında yapılan incelemeler sonucunda 25 farklı spor dalının kitaplar aracılığıyla çocuklara sunulduğu belirlenmiştir. Kitabın içerik analizinde başkahramanların cinsiyetleri ve başkahramanın özdeşleştiği spor dalı incelenmiştir. Bu inceleme sonucunda 34 kitapta başkahramanın kadın, 21 kitapta ise erkek olduğu, 6 kitapta ise hem erkek hem de kadın başkahramanların yer aldığı tespit edilmiştir. Bu aşamadan sonra başkahramanın hangi sporları yaptığı incelenmiştir. Buz pateni, yoga gibi spor dallarının kadın başkahramanlar aracılığıyla çocuklara daha yoğun aktarıldığı belirlenmiştir. Futbol, bisiklet sürme gibi bazı spor dallarının ise erkek başkahramanlar üzerinden daha yoğun aktarıldığı belirlenmiştir.

Anahtar Kelimeler: Okul öncesi dönem; resimli çocuk kitabı; spor; toplumsal cinsiyet

1. INTRODUCTION

Children's literature; a part of literature as a whole, written for children by adults (Alkan-Ersoy & Bayraktar, 2018), it encompasses literature and publications that can support children's cognitive, social, emotional, and language development, contribute to the enhancement of imagination, fulfill aesthetic and diversity needs, and possess the characteristic of educating while entertaining (Şirin, 1998; Zengin & Zengin, 2007).

Children's literature works written by adults in accordance with children's developmental levels and interests positively support all developmental areas of children. In addition to this, these works enhance children's visual perception, support their social and cultural learning, enable them to acquire knowledge about different characters, settings, and situations, and raise awareness related to the book's subject matter (Alkan-Ersoy & Bayraktar, 2018; Özdemir-Beceren & Arı-Arat, 2021). In this context, it is possible to say that children's literature works play an important role in helping children adapt to the society they live in, think, and behave in accordance with social norms.

Children's literature works are divided into different genres. Oral literature types include nursery rhymes, poems, riddles, and fingerplays. Among the types of written children's literature, there are picture books, science fiction works, children's magazines, science, and reference books (Tüfekçi-Can, 2014; Veziroğlu-Çelik, 2021). Picture books which are most used in early childhood, have certain characteristics they should possess. These features are divided into two as internal structure and external structure features. External structure features include aspects such as the book's size, materials used in book production, book weight, book cover and binding, lettering characteristics of the book, and page layout. Internal structure features, on the other hand, refer to the theme, plot, characters, language, and narrative style of the story (Alkan-Ersoy & Bayraktar, 2018).

In picture books, the mentioned theme, subject, main character, and the qualities of the main character are elements that shape children's thoughts. The theme is the author's purpose of writing the

book (Karatay, 2011). In other words, the theme explicitly defines the behaviors and thought structures to be developed in children (Sever, 1995), expressing the fundamental emotions and thoughts intended to be conveyed in the work (Seven, 2011). The subject is a narrower internal structural characteristic than the theme and is determined based on children's interests and needs (Karatay, 2011). It is the subject matter discussed in the story (Gönen et al., 2011; TLA [The Turkish Language Association-Turkish], 2023). The internal element that lives the story, namely the plot created within the theme and subject of the children's picture book, is the main character. The main characters and characters in children's picture books are of utmost importance because they are the individuals with whom children identify and takes as an example (Bulut & Kuşdemir, 2013; Karakuş, 2011; Karakuş, 2013). Gender roles attributed to the characters, the way in which characters are presented and constructed, shape the models with which children identify. In this regard, gender roles in children's literature should be exemplified in accordance with modern life, and there should be no difference in the values and meanings assigned to female and male (Sever, 2004).

Children's literature works are one of the most effective tools for conveying gender roles to children through the characters created, the plotlines developed, and the messages they convey (Diekman & Murnen, 2004; Oskamp, Kaufman & Wolterbeek, 1996; Pekşen, 2012). The symbolization principle, on which social learning theory is based, states that children store symbols they use through images and words in their memory for future use (Bayrakçı, 2007). When considered in the context of this theory, children's picture books become children's social learning tools as children's literature works with a main character and characters with a story pattern that carries messages specific to the subject they are written (Erbaş, 2019). In other words, children's picture books can be highly educational for social learning when they feature well-constructed models, but they can also lead to negative learning outcomes when incorrect messages and characters are portrayed (Gürşimşek & Günay, 2005; as cited in Bencik-Kangal, Karaaslan & Arslan, 2018). These educational and instructive works, with their capacity to influence, also play a significant role in transmitting gender roles to children.

The concept of gender refers to the societal and psychological aspects of gender. Gender is formed by the influence of the society in which an individual resides and their own psychology. Societies assign distinctive roles to women and men that are in line with their cultures. These roles are expressed as gender roles (Bee & Boyd, 2009; Kaynak & Aktaş, 2017). Environments that create learning opportunities for gender roles start preparing even before a baby is born. For male children, blue clothing and room designs are chosen, while for female children, pink clothing and designs are preferred. As they grow, male children are encouraged to select toys like cars and balls, whereas dolls and domestic play items are preferred for female children (Spears-Brown, 2014). Over the years, children may develop certain stereotypes depending on the cultural characteristics of the society they live in in the context of gender. An example of this is the stereotypes that women are more delicate, fragile and emotional, and men are stronger, tougher and more cold-blooded (Cüceloğlu, 2006; Dökmen, 2015). It is possible to say that every element surrounding the child has a role in the formation

of stereotypes regarding these gender roles. From color choices based on gender to toy selections, from the advertisements children watch to animated cartoons and the children's picture books they read, everything conveys certain messages to children about gender roles (Çınar, 2015; Erbaş, 2019; Kaynak & Aktaş, 2017; Sezen, 2012). Implicit messages about gender roles are not limited to these but can also be conveyed through stereotypes related to professions, clothing preferences, or sports branches.

Sports branches are one of the most common areas where gender stereotypes are observed. For example, violent, strength-based sports are considered suitable for men, while sports that can be performed with a calmer demeanor and without intense competition are seen as more suitable for women. Considering the power of these stereotypes and children's picture books in conveying messages to children and shaping their mentality, this research aims to examine sports-themed children's picture books for preschool children in terms of gender roles. In line with this general aim, the books within the scope of the research were examined in two main dimensions. The first dimension of analysis is the book covers, and the second dimension of analysis is the book contents. The book covers were examined in terms of the book title and cover image, while the book contents were analyzed regarding gender-related emphases in sub-dimensions such as the main character, the flow of the story, and the illustration of the story.

2. METHOD

2.1. Research Model

In this research, a qualitative research design based on document analysis method was preferred because the examination of gender bias in sports-themed children's picture books was planned. Qualitative research is a type of research that aims to provide a realistic and comprehensive understanding of perceptions and events in their natural context using qualitative data collection methods (document analysis, interviews, observations, etc.) (Merriam, 2002). Document analysis, on the other hand, includes the examination of written materials containing information about the subject under investigation (Silverman, 2004).

2.2. The Study Group

To determine the books to be included in the research, picture books for preschool children available on the websites of three major online book retailers (IDEFIX, D&R, and İstanbul Bookstore) were examined. All books in the category targeting preschool children were examined for visual cues related to sports or physical skills on the book covers, book titles, and, if available, book summaries. This process was used to identify the books to be included in the study. The determination of the books to be examined was carried out in August 2021.

As the second stage, access was obtained to 78 of the books that met the established criteria through purchase. After receiving the purchased books, they underwent a second examination. At this point, although there is an emphasis on sports in the cover image or in the title, which does not include

these topics and it is stated that it is suitable for preschool children, the books that are suitable for primary school literate children have been eliminated.

After the second examination stage, it was determined that 65 out of the 78 books met the criteria for inclusion in the research. The research was subsequently conducted using these 65 books. The table below provides information for the books:

Table 1. Information for Sports-Themed Children's Picture Books

		f
Author	Turkish	13
	Foreign	52
Age Recommendation	Yes	8
	No	57
Publishing Company	Türkiye İş Bankasi Cultural Publications	12
	1001 Çiçek Publishing	9
	Yapi Kredi Publications	8
	TÜBİTAK (The Scientific and Technological Research Council of Türkiye)	3
	ABM Publishing Children and Youth	3
	Martı Publishing	3
	Other	27
Publication Year	2008-2010	1
	2011-2013	1
	2014-2017	14
	2018-2021	48
	Uncertain	1
Edition	1st - 5th Edition	53
	6th - 10th Edition	9
	11th – 13th Edition	1

2.3. Data Collection Tools

The Book Analysis Form developed by the researchers was used as a data collection tool. It consists of two sections: the first section contains general information about the books, referred to as the "Book Information" while the second section includes examination headings related to the research, known as the "Content Analysis Form."

Before proceeding with the data collection process, the Book Analysis Form was prepared and sent to three experts in the field of preschool education to obtain their expert opinions. In line with the expert opinions received, no changes were made in Book Information section, but it was decided to combine some evaluation criteria in the Content Analysis Form section. After these adjustments, the Content Analysis Form includes a total of 9 evaluation criteria, with 4 related to the book cover and 5 related to the book's content.

The Book Analysis Form was prepared and used to obtain information about the book's title, target age range, author details, illustrator, publisher information, publication year, edition number, and the number of pages in the Book Information section.

In the first subsection of the Content Analysis Section, the book cover was evaluated. When assessing the book cover, the following aspects were examined: whether a specific sport is depicted on the cover, the presence or absence of visuals that could be considered as emphasizing a particular sport if there is no specific depiction of a sport, and finally, whether there is a gender emphasis on the cover image. In the second subsection, the content of the book was examined. Within the book's content, the following aspects were investigated: whether the main character of the story is a human or an animal, the gender attributed to the main character, whether the sport portrayed in the book is represented as associated with only one gender in the internal illustrations, and whether the sport depicted in the story is narrated as associated with only one gender in the storyline.

```
                                    - The book's title
                                    - Target age range
                                    - The author and illustrator
                 Book               - Publisher
              Information           - Publication year and edition
                                    number
                                    - Page number


The Book Analysis
     Form                                        Book Cover
                                              - Cover illustration
                                              - Gender emphasis
              Content Analysis

                                                Book Content
                                              - Main character
                                              - Story text
                                              - Storv  illustration
```
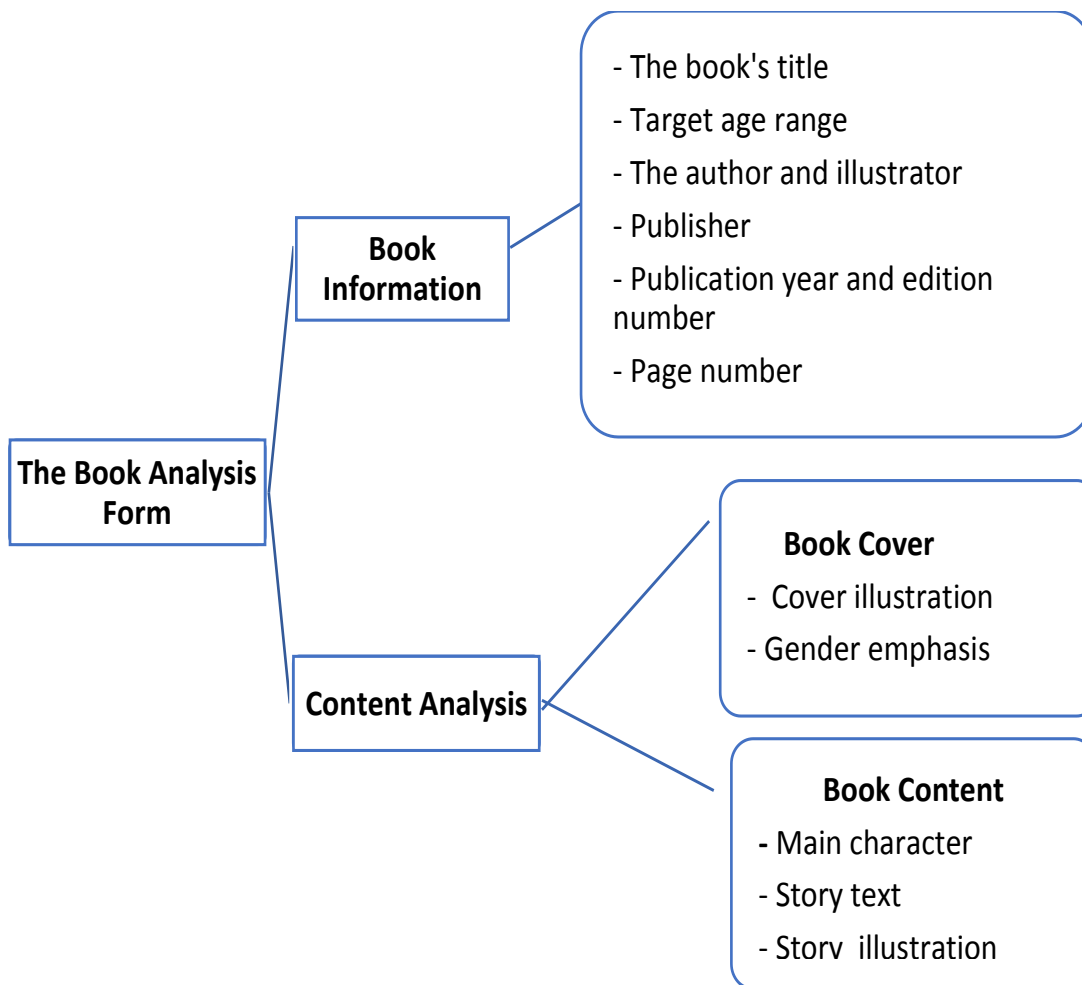
2.4. Data Collection

In order to determine the books to be included in the research during August 2021, children's books available on online shopping platforms were examined. While book reviews were ongoing, books identified to be within the scope of the research were also procured. All these processes for the identification and procurement of the books continued until September.

As part of the research, expert opinions were obtained for the data collection tool developed for the research, simultaneously with the processes related to the books to be included in the research, and the final version of the data collection tool was established. Starting from September 2021, the Book Analysis Form was filled one by one for the children's picture books supplied, and after this process was completed, the analysis process was started on the information obtained through the forms.

2.5. Data Analysis

Before starting the analysis of the data, both researchers evaluated 5 books independently of each other. By comparing these evaluations, the researchers' coding consistency was determined. In content analysis, the data available is systematically and objectively described, aiming to make inferences. This method is frequently used especially in the analysis of data obtained from observations

and interviews (Mayring, 2005). The consistency between coders regarding the categories was determined to be 93%. It is stated that interrater reliability is achieved when the result calculated with the reliability formula is at a level of 70% (Miles and Huberman, 1994).

3. FINDINGS

The findings related to the book's cover page and the content of the book are discussed under two separate headings in the findings section.

3.1. Findings regarding the cover page

While examining the cover page, the title, cover illustration and gender emphasis of the book were evaluated separately. The findings of these examinations made on the cover page are given in order below.

When the book titles were examined, it was determined that there were words and emphasis on sports branches in the titles of 38 books, while such an emphasis was not determined in the titles of 27 books.

The sports branches and emphases related to sports found in book titles are as follows: 8 books on football, 5 books each on swimming, yoga, dance, 4 books on ballet, 2 books each on cycling, exercise, and 1 book each on skiing, sledging, ice skating, water ballet, gymnastics, sailing, and skating.

When examining the cover illustrations, it was found that 56 books included an illustration related to a sports branch that reflected the content of the book, while 9 books did not include an illustration or image related to the sports branch covered in the book.

The final examination regarding the book cover was whether there was an emphasized gender in the character illustrations on the cover page. According to this analysis, 21 books featured women, 13 books featured men, 19 books featured both women and men, while 12 books did not have any gender emphasis. In cover illustrations that included both women and men, it was observed that characters other than the main character of the story were also depicted in the illustrations.

3.2. Findings regarding the book content

In the examinations conducted on the book's content, the main character of the story was initially considered, followed by the storyline, and finally, the internal illustrations were examined. Findings related to the book's content are presented in the specified order.

The first analysis of the book's content focused on the main character and the gender of this character. The following table was created based on this examination.

Table 1. Findings on The Representation Type and Gender of The Main Character

Main character	Gender Attributed to the Main Character				Total
	Female	Male	Female and Male	Not Stated	
Human	28	11	3	0	42
Animal	5	10	2	3	20
Other	1	0	1	0	2
Total	34	21	6	3	64

When Table 1 was examined, it was determined that the main characters in the books are presented in three different types of characters. Accordingly, the main character appeared as a human in 42 books, as an animal in 20 books, and as a geometric shape and a water fairy in 2 books in children's picture books. There is no data on the main character and the attributed gender of the main character in one book within the scope of the research.

When the main characters were examined in terms of gender, it was determined that there was a total of 34 female main characters, with 28 of them being human characters, 5 being animal characters, and 1 being from other characters. Among human characters, 21 main characters were male, with 11 being human characters and 10 being animal characters. In a total of 6 books, both male and female main characters appeared together. In addition, the gender of 3 animal characters was not specified.

After the examination of the genders of the protagonists, the sports branch emphasized in the book title and cover illustration was analyzed in conjunction with the genders of the main characters. As a result of this stage, it was determined how sports branches in all children's picture books in the research were conveyed to children through different genders. The following table was obtained from this analysis. Since some books featured multiple sports branches, the total numerical values in this table may not directly correspond to the total numerical values in the examinations related to main characters.

Table 2. Findings on The Emphasis on Sports Branches and Gender In The Main Character Dimension

Sports Branch	Gender Emphasis				Total
	Female	Male	Female and Male	Not Stated	
Football	4	7	0	1	12
Swimming	5	5	0	2	12
Ballet	5	0	1	1	7
Yoga	3	0	1	1	5
Ice skating	3	1	1	0	5
Dance	3	2	0	0	5
Cycling	1	2	0	0	3
Gymnastics	1	1	0	1	3
Tennis	1	2	0	0	3
Basketball	1	1	0	0	2
Exercise	0	2	0	0	2
Skiing	1	0	0	1	2
Skipping rope	1	1	0	0	2
Sledging	0	0	1	0	1
Water ballet	1	0	0	0	1
Sailing	1	0	0	0	1
Skating	1	0	0	0	1
Fencing	0	1	0	0	1
Rowing	0	1	0	0	1
Golf	0	1	0	0	1
Parachuting	0	1	0	0	1
Badminton	0	0	1	0	1
Running	0	1	0	0	1
Weightlifting	1	0	0	0	1
American Football	1	0	0	0	1

When Table 2 was examined, it was determined that in certain sports branches, female main characters were more prominently featured than male main characters. These sports branches include ballet, yoga, ice skating, dance, skiing, water ballet, sailing, skating, weightlifting, and American football. In some sports branches, there were no male main characters at all, and only female main characters were used to emphasize the sports branches. Water ballet, sailing, skating, weightlifting, and American football are sports where only female main characters exist.

The sports branches where male main characters are more prominently featured include football, cycling, tennis, exercise, fencing, rowing, golf, parachuting, and running. Similar to female main characters, in some sports branches, only male main characters were observed. The sports branches with only male main characters are exercise, fencing, rowing, golf, parachuting, and running.

The sports branches that featured both female and male main characters were only sledging and badminton.

After examining the sports branches and gender matches through the main characters, the storylines of the books in the study group were discussed one by one. In this context, it was investigated whether the emphasis on the featured sports branches in the determined books was only through the main characters and whether both genders were included in the storyline.

Table 3. Findings on Sports Branches and Gender Emphasis In The Storyline

Sports Branch	Identified with a Single Gender		Not Stated Gender	Included Both Genders
	Female	Male		
Football	0	4	1	7
Swimming	2	2	1	7
Ballet	5	0	1	0
Yoga	3	0	0	2
Ice skating	0	1	0	4
Dance	2	0	0	3
Cycling	1	0	0	1
Gymnastics	1	0	1	1
Tennis	0	1	0	2
Basketball	0	2	0	1
Exercise	0	1	0	1
Skiing	0	0	0	2
Skipping rope	0	1	0	1
Sledging	0	0	0	1
Water ballet	1	0	0	0
Sailing	0	0	0	1
Skating	1	0	0	0
Fencing	0	2	0	0
Rowing	0	2	0	0
Golf	0	2	0	0
Parachuting	0	2	0	0
Badminton	0	0	0	1
Running	0	0	0	1
Weightlifting	0	0	0	1
American Football	0	0	0	1

When Table 3 was examined, it was determined that out of a total of 25 different sports disciplines, 18 of them were not limited to just the main character in the storyline, and both genders were included in the story.

On the other hand, it was observed that in some books, certain sports branches were represented in the storyline with only one gender. In this case, ballet, water ballet, and skating were narrated

exclusively for females, while fencing, rowing, golf, and parachuting were narrated exclusively for males.

After examining the storylines of the books, another aspect of the analysis, the internal illustrations of the books, was considered. It was investigated whether sports branches were specifically emphasized through any gender in the internal illustrations and whether both genders were included in the characters seen while engaging in sports.

Table 4. Findings on Sports Branches and Gender Emphasis in İnternal İllustrations

Sports Branch	Identified with a Single Gender		Not Stated	Included Both
	Female	Male	Gender	Genders
Football	0	3	0	7
Yoga	2	0	1	2
Swimming	0	1	0	11
Ballet	3	0	0	4
Dance	1	0	0	4
Cycling	0	0	0	2
Exercise	0	1	0	1
Skiing	0	0	0	2
Sledging	0	0	0	1
Ice skating	0	1	0	4
Water ballet	1	0	0	0
Gymnastics	1	0	0	2
Sailing	0	0	0	1
Skating	1	0	0	0
Tennis	0	1	0	2
Fencing	0	1	0	0
Rowing	0	1	0	0
Golf	0	1	0	0
Parachuting	0	1	0	0
Basketball	0	2	0	1
Badminton	0	0	0	1
Running	0	0	0	1
Weightlifting	0	0	0	1
Skipping rope	0	1	0	1
American Football	0	0	0	1

When Table 4 was examined, it was observed that in the illustrations of 19 out of 25 different sports branches, both genders are depicted.

Among the sports branches where only female characters are illustrated in the internal illustrations are water ballet and skating, while among the sports branches where only male characters are illustrated, there are fencing, rowing, golf, and parachuting.

When looking at Tables 2, 3, and 4 collectively, it was concluded that the sports branches where only females are represented in the main characters, storyline, and internal illustrations are water ballet and skating, while the sports branches where only males are represented are fencing, rowing, golf, and parachuting.

4. DISCUSSION

Book covers of children's picture books are the first element through which children gain insight into the book and gather information about it. In this context, for sports-themed children's picture books, the visual representation of the sports branches featured in the content on the cover serves as the initial source of information for children about that sport and its characteristics. As a result of the research conducted by Yilmaz and Pala (2019), in which they examined sports-themed children's picture books, it was stated that these books introduced children to various sports branches, provided information about these sports, helped children learn specific sports terminology, and could have a positive effect on sports habits. In this context, a positive feature for children's picture books to introduce sports branches to children starting from the cover page can be expressed. However, the gender of the main character who plays the sport, which is depicted on the cover page and is the subject of the book, can influence whether a child selects the book for themselves. As Spears-Brown (2014) pointed out, children tend to identify more strongly with individuals of their own gender. This may lead children to form opinions about sports and develop perceptions of which sports are more suitable for a particular gender.

As a result of the examination of the main characters in children's picture books, it was determined that in more than half of the books, human characters were the main characters. It is thought that this situation can allow children to establish a deeper identification with the human character they see and their characteristics. This is because children, while trying to adapt to social life, can take characters presented to them as examples, thus learning gender-specific behavior patterns and stereotypes (Kortenhaus & Demarest, 1993). In other words, children are open to social learning when acquiring information about gender roles, so they are likely to be influenced by characters in cartoons, toys, and children's picture books (Baker & Raney, 2007; Erbaş, 2019; Oruç, Tecim & Özyürek, 2018; Sezen, 2012). In addition, Yiğit-Açıkgöz and Yalman (2018) stated that children normalize and accept gender roles, as well as other transmissions such as racism and violence, in digital games (Yiğit-Açıkgöz & Yalman, 2018). Basically, sports branches represent games with specific rules. In this context, it is possible to say that children can internalize gender roles related to sports presented to them in children's picture books.

In sports-themed children's picture books, female characters have been highlighted in more calm and less competitive sports branches such as ballet, yoga, and ice skating. On the other hand, male characters have been presented in relation to more competitive or adrenaline-filled sports branches such as football, tennis, golf, or parachuting. In this context, this result has enabled us to state that gender roles are supported by children's books about sports branches and contribute to the formation of gender stereotypes. Therefore, it is possible to say that the examined books convey the preconception that women are interested in calm and non-exciting sports branches, while men are interested in sports that require strength, competition, and adrenaline. This conclusion is supported by evidence obtained in previous research. As Dökmen (2006) pointed out that there are certain expectations for behavior from women and men in society. These behaviors form gender stereotypes. According to these stereotypes, men are believed to be more active, adventurous, and independent. Various studies also support this perspective; it is mentioned that gender stereotypes associated with more intense physical activity are used for men (Barner, 1999; Powell & Abels, 2002), while for women, performance arts such as dance are used (Lemish, 2010, cited in; Walsh & Leaper, 2019). It is thought that the transmission of these stereotypes to children can lead to limiting children's thoughts from an early age. When looking at the results of this study on sports-themed children's books, it can be said that children may think in terms of gender stereotypes, associating specific genders with certain sports disciplines, especially due to the implicit messages conveyed about sports branches. This situation can lead to a child developing an interest in certain sports branches based on stereotypes rather than their own temperament and physical suitability in the long run. For all these reasons, sports-themed children's books should not contain gender stereotypes in terms of the main characters, illustrations, and storyline dimensions. To achieve this, children's book authors should have a detailed understanding of gender stereotypes and avoid incorporating these stereotypes into their works. In another dimension, publishing companies should also exercise caution when it comes to printing books that contain gender stereotypes. They should carefully review works and identify inappropriate elements in the storyline or illustrations and collaborate with subject matter experts who can provide feedback to the authors.

5. CONCLUSION

In this research, which examined a total of 65 sports-themed children's picture books, the following results were obtained:

When considering the book covers,

• More than half of the books had titles that emphasized a specific sport,

• Almost all of the book covers included illustrations related to the featured sport,

• The gender of the main characters associated with the particular sport could be discerned in nearly all of the cover illustrations.

When considering the book contents,

- When the main characters were examined in terms of gender, it was found that female characters outnumbered male characters.

- In sports that were presented by associating the gender of the main character, women were associated with more calm and less physically demanding sports, while men were associated with more physically demanding and challenging sports.

- In the storylines, it was observed that some sports were exclusively associated with one gender, and in this context, women were associated with more delicate and less physically demanding sports, while men were associated with more challenging and physically demanding sports.

- When the illustrations in children's books were examined, it was determined that many sports were portrayed in a way that allowed children to see both genders participating.

- In very few books, it was found that some sports were portrayed exclusively through one gender.

6. RECOMMENDATIONS

As a result of this research, it was determined that when introducing sports to children, except for 6 sports, all other sports emphasized that individuals of both genders can participate. Apart from this general result, it is necessary to conduct numerous studies on how sports and gender are presented to children. Therefore, in future research, the following issues can be examined:

- Whether children are influenced by the gender of the main character depicted on the cover when choosing sports-themed picture books.

- Whether children associate specific sports with specific genders when reading sports-themed books.

- Whether parents or teachers pay attention to gender cues when selecting these books.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

OKUL ÖNCESİ DÖNEM ÇOCUKLARINA YÖNELİK SPOR TEMALI RESİMLİ ÇOCUK KİTAPLARININ TOPLUMSAL CİNSİYET AÇISINDAN İNCELENMESİ

GİRİŞ

Bu araştırmanın temel amacı, okul öncesi dönem çocuklarına yönelik spor temalı resimli çocuk kitaplarını toplumsal cinsiyet açısından incelemektir. Bu genel amaç doğrultusunda araştırma kapsamındaki kitaplar iki temel boyutta incelenmiştir. İlk inceleme boyutu kitapların kapak sayfaları, ikinci inceleme boyutu ise kitap içeriğidir. Kitapların kapak sayfaları kitap başlığı ve kapak resmi; kitap içerikleri ise ana karakter, hikaye akışı ve hikayenin resimlenmesi alt boyutlarında toplumsal cinsiyet vurguları açısından incelenmiştir.

YÖNTEM

Bu bölümde araştırmanın modeline, evren ve örneklemine, ölçme aracının geliştirilmesine, verilerin toplanması ve çözümlenmesine ilişkin bilgilere yer verilmiştir.

Araştırmanın Modeli

Bu araştırmada, spor temalı resimli çocuk kitaplarında cinsiyetçiliğin incelenmesi planlandığı için, doküman analizi yöntemine dayalı nitel bir araştırma tasarımı tercih edilmiştir. Nitel araştırma, nitel veri toplama yöntemlerinin kullanıldığı (doküman analizi, görüşme, gözlem vb.) algıların ve olayların doğal ortamında gerçekçi ve bütüncül bir şekilde ortaya koyulmasını amaçlayan bir araştırma türüdür (Merriam, 2002). Doküman analizi ise araştırılması planlanan konu hakkında bilgi içeren yazılı materyallerin incelenmesini kapsamaktadır (Silverman, 2004).

Çalışma Grubu

Araştırmaya dahil olacak kitapların belirlenebilmesi için çevrimiçi kitap satışı yapan üç büyük web sitesinin (IDEFIX, D&R ve İstanbul Kitapçısı) okul öncesi dönem çocuklarına yönelik resimli çocuk kitapları incelenmiştir. Okul öncesi dönem çocuklarına yönelik kategoride yer alan tüm kitapların kapak görselinde, kitap başlığında ve varsa kitap özetinde spora ya da hareket becerisine ilişkin vurgu olup olmadığı incelenerek çalışma kapsamında yer alacak olan kitaplar belirlenmiştir. İncelenecek kitapların belirlenmesi 2021 yılı Ağustos ayı içerisinde gerçekleştirilmiştir.

İkinci aşama olarak belirlenen kriterlere uygun bu kitaplardan satışta olan 78'ine satın alma yoluyla erişim sağlanmıştır. Satın alınan kitapların teslim alınmasının ardından kitaplar ikinci bir incelemeye tabi tutulmuştur. Bu noktada ise kapak görselinde ya da başlığında spora ilişkin vurgu olup içeriğinde bu konulara yer vermeyen ve okul öncesi dönem çocukların uygun olduğu belirtilmesine karşın ilkokul seviyesindeki okuma yazma bilen çocuklara uygun olan kitaplar elenmiştir. İkinci inceleme aşamasının ardından 78 kitaptan 65'inin araştırma kapsamında yer alabilecek şartları sağladığı belirlenmiştir ve araştırma bu 65 kitap üzerinden gerçekleştirilmiştir.

Veri Toplama Aracı

Araştırmanın analizinde araştırmacılar tarafından geliştirilen ve uzman görüşleriyle son halini alan "Kitap Analiz Formu" kullanılmıştır.

Kitap Analiz Formunun, Kitap Künyesi bölümü kitabın adı, hitap ettiği yaş aralığı, yazar bilgileri, resimleyeni, yayınevi bilgisi, yayın yılı, baskı sayısı ve kitabın sayfa sayısı bilgilerini elde edebilmek için hazırlanmış ve kullanılmıştır.

İçerik Analizi Bölümünün ilk alt bölümünde kitap kapağı değerlendirilmiştir. Kitap kapağı değerlendirilirken kapak görselinde özel olarak bir spor dalının resmedilmesi durumu, kapak görselinde bir spor dalına dönük özel çizim yoksa bir spor dalına vurgu sayılabilecek görsellerin yer alıp almama durumu ve son olarak da kapak görselinde cinsiyet vurgusu olma durumu incelenmiştir. İkinci bölümde ise kitap içeriği incelenmiştir. Kitap içeriğinde ise hikâyenin başkahramanının insan ya da hayvan olma durumu, başkahramana atfedilen cinsiyetin ne olduğu, kitapta anlatılan spor dalının kitap içi görsellerinde bu spor dalının tek bir cinsiyetle özdeşleştirilerek anlatılma durumunun olup olmadığı ve hikâye akışında ele alınan spor dalının tek bir cinsiyetle özdeşleştirilerek anlatılma durumunun olup olmadığı araştırılmıştır.

Verilerin toplanması

2021 yılı Ağustos ayı boyunca araştırmaya dahil edilecek kitapların belirlenebilmesi için online satış yapan platformlardaki çocuk kitapları incelenmiştir. Kitap incelemeleri devam ederken eş zamanlı olarak araştırma kapsamına gireceği belirlenen kitaplar tedarik edilmeye başlanmıştır. Kitapların belirlenmesi ve tedarik edilmesine yönelik tüm bu süreçler Eylül ayına kadar sürmüştür.

Araştırma kapsamında yer alacak kitaplara yönelik işlemlerle eş zamanlı olarak araştırma için geliştirilen veri toplama aracı için uzman görüşleri alınmıştır ve veri toplama aracına son hali verilmiştir. 2021 Eylül ayı itibariyle de tedarik edilen resimli çocuk kitapları için tek tek Kitap Analiz Formu doldurulmuş ve bu işlem bittikten sonra formlar aracılığıyla elde edilen bilgiler üzerinden analiz süreci başlanmıştır.

Verilerin analizi

Verilerin analizine başlanmadan önce her iki araştırmacı da 5 kitabın değerlendirmesini birbirlerinden bağımsız olarak yapmıştır. Yapılan bu değerlendirmeler karşılaştırarak araştırmacıların kodlama tutarlılıkları belirlenmiştir. İçerik analizinde eldeki veriler objektif ve sistematik bir şekilde tanımlanarak çıkarımlarda bulunulmaya çalışılır. Bu yöntem özellikle gözlem ve görüşmelerden elde edilen verilerin analizinde sıklıkla kullanılır (Mayring, 2005). Oluşturulan kategoriler hakkında, kodlayıcılar arasındaki tutarlılık %93 olarak belirlenmiştir. Güvenirlik formülüyle hesaplanan sonucun %70 düzeyinde olması durumunda (Miles ve Huberman, 1994) değerlendiriciler arası güvenirliğin sağlanmış olacağı belirtilmektedir.

BULGULAR ve SONUÇ

Resimli çocuk kitaplarının kapak sayfalarına yönelik yapılan incelemeler doğrultusunda 25 farklı spor dalının çocuklara kitaplar aracılığı ile sunulduğu belirlenmiştir. Bazı resimli çocuk

kitaplarında bu spor dalları tek bir cinsiyetle bağdaştırılmış bir şekilde resmedilirken bazı kitaplarda her iki cinsiyetten de karaktere kapak sayfasında yer verilmiştir. Bazı kitapların kapak sayfasında ise resmedilen ana karakterin cinsiyeti anlaşılamamaktadır. Kitap içeriğine ilişkin analizlerde ise öncelikli olarak hikayenin ana karakterleri incelenmiştir. Bu inceleme sonucunda ana karakterler, insan, hayvan ve diğer olmak üzere üç kategoride toplanmıştır. Bu incelemenin ardından ana karakterlerin cinsiyeti ve bu karakterin özdeşleştirildiği spor dalı incelenmiştir. Bu inceleme sonucunda ise 34 kitapta ana karakterin kadın, 21 kitapta erkek olduğu, 6 kitapta hem kadın hem erkek karakterlerin birlikte yer aldığı ve 3 kitapta ise ana karakterin cinsiyetine dair vurgu olmadığı belirlenmiştir. Bu aşamanın ardından ise ana karakterlerin hangi sporları yaptığı incelenmiştir. Bu incelemede ise futbol ve bisiklet sürme gibi bazı spor dallarının erkek karakterler üzerinden daha yoğun bir şekilde aktarıldığı; buz pateni ve yoga gibi spor dallarının ise kadın karakterler üzerinden daha yoğun bir şekilde çocuklara aktarıldığı belirlenmiştir. Hikaye akışında ve resimlemede kitapta ele alınan spor dalının her iki cinsiyet üzerinden de vurgulanıp vurgulanmadığı incelendiğinde ise bazı hikaye akışlarında ve resimlemelerde spor dalı tek bir cinsiyet üzerinden aktarılırken bazı kitaplarda ise iki cinsiyete de yer verildiği belirlenmiştir.

Bu araştırmanın sonucunda:

Kitap kapağı ele alındığında,

- Kitapların yarıdan fazlasının başlığında spor dalına yönelik vurguların yer aldığı,

- Kapak çizimlerinde kitapların tamamına yakınında spor dalına ilişkin çizimlerin olduğu,

- Spor dalıyla bağlantısı kurulan baş kahramanların neredeyse tamamına yakınının cinsiyetinin kapak çizimlerinde anlaşılabildiği,

Kitap içerikleri incelendiğinde,

- Baş kahramanlar cinsiyetleri açısından incelendiğinde kadın karakterlerin erkek karakterlerden daha fazla sayıda olduğu,

- Baş kahramanın cinsiyetiyle özdeşleştirilerek sunulan spor dallarında kadınların daha sakin ve güç gerektirmeyen, erkeklerinse daha güç gerektiren ve zorlu spor dallarıyla bağdaştırıldığı,

- Hikayelerin akışında da yine bazı spor dallarının sadece tek bir cinsiyetle bağdaştırıldığı ve bu kapsamda kadınların daha narin ve güç gerektirmeyen erkeklerinse daha zorlu ve güç gerektiren spor dallarıyla özdeşleştirildiği,

- Çocuk kitaplarının çizimleri incelendiğinde ise pek çok spor dalı aktarılırken her iki cinsiyeti de çocukların görmesini sağlayacak resimlemelerin olduğu belirlenmiştir.

- Çok az sayıda kitapta ise bazı spor dallarının sadece tek bir cinsiyet üzerinden aktarıldığı tespit edilmiştir.

EXAMINATION OF MATHEMATICAL PROBLEM SOLVING STUDIES WITH SECONDARY SCHOOL STUDENTS

Şevket AYDIN[1]

ABSTRACT

The aim of this study is to make a descriptive content analysis of the articles related to mathematical problem solving from the theses in the National Thesis Centre and the journals of the faculties of education published in Tr-dizin and to determine the general trend. A total of 159 theses were included in the study. The studies were examined within the framework of the "Study Review Form on Mathematical Problem Solving Published in National Thesis Centre and Tr-dizin" prepared within the scope of the research. The related studies were analysed within the categories determined within the framework of sub-problems. Frequency and percentage distributions of the categories were calculated with the help of an Excel programme and the data obtained were presented in detail with the help of tables. According to the results of the study, it was concluded that studies on mathematical problem solving were mostly conducted with 7th grade students, quantitative research methods were selected, quantitative analyses were performed and questionnaires and scales were preferred as data collection tools. It is thought that it will be useful in terms of seeing the strengths and deficiencies of the studies carried out in this field and it can be a guide for future studies in terms of seeing the trend of the studies from a holistic perspective.

Keywords: Problem Solving; Mathematical Problem Solving; Descriptive Content Analysis; TR-Dizin; National Thesis Centre

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ORTAOKUL ÖĞRENCİLERİYLE YAPILAN MATEMATİKSEL PROBLEM ÇÖZME İLE İLGİLİ ÇALIŞMALARININ İNCELENMESİ

ÖZET

Bu çalışmanın amacı; Ulusal Tez merkezinde tezlerden ve Tr-dizin'de yayınlanan Eğitim fakülteleri dergilerine ait matematiksel problem çözme ile ilgili makalelerin betimsel içerik analizinin yapılıp genel eğiliminin belirlenmesidir. Toplan 159 çalışmaya dâhil edilmiştir. Araştırma kapsamında hazırlanan "Ulusal Tez Merkezi ile Tr-dizin'de Yayımlanan Matematiksel Problem Çözme Temalı Çalışma İnceleme Formu" çerçevesinde çalışmalar incelenmiştir. İlgili çalışmalar alt problemler çerçevesinde belirlenen kategoriler kapsamında analiz edilmiştir. Oluşturulan kategorilere ait frekans ve yüzde dağılımları Excel programı yardımıyla hesaplanmış ve ulaşılan veriler ise tablolar yardımı ile detaylı bir şekilde sunulmuştur. Araştırmanın sonuçlarına göre; matematiksel problem çözmeyle ilgili en çok 7. sınıf öğrencileriyle çalışmalar yapıldığı, nicel araştırma yöntemlerinin seçildiği, nicel analizlerin yapıldığı ve veri toplama aracı olarak anket ve ölçeklerin daha çok tercih edildiği sonuçlarına ulaşılmıştır. Bu alanında gerçekleştirilen çalışmaların güçlü ve eksik yönlerini görme açısından yararlı olacağı ve çalışmaların eğiliminin bütüncül bir bakış açısıyla görülebilmesi açısından gelecek çalışmalara rehber olabileceği düşünülmektedir.

Anahtar Kelimeler: Problem Çözme; Matematiksel Problem Çözme; Betimsel İçerik Analizi; TR-Dizin; Ulusal Tez Merkezi

1. INTRODUCTION

We have encountered many problems in our daily lives and have tried to overcome these problems by making sense of and solving them. Solving the problems encountered has become an important subject in the mathematics course when it is considered as a process of processing information, thinking, making sense and creating a strategy. This has given problem solving an important place in mathematics education research. Altun (2016) used the definition of problem solving as finding what to do when faced with a situation and not knowing what to do. Therefore, when faced with a problem, it enters into a process such as understanding this problem, creating new solutions through previous experiences and travelling a path until reaching the result.

Various objectives have been set in our education system in order to improve the quality of the mathematics course and increase success. Some of these objectives are that students should have the necessary mathematical concepts, have self-confidence and courage in mathematics, gain problem solving skills, have self-efficacy and positive attitude towards mathematics. In order to achieve these aims, we should consider some factors. Because the way to teach mathematics well depends on understanding human nature and discovering how mathematics is comprehended by human beings (Underhill, 1988; Frank, 1990; Carte, 1997). These factors are categorized as cognitive factors, affective factors and external factors (Charles & Lester, 1982).

Mathematics has always been used when making the smallest calculations in daily life or when making great discoveries for humanity. In order for other sciences to develop and progress in their own way, mathematics must be used, guide and be a tool. The development of a mechanics software is

impossible without mathematics. Let's think of a logo or an advertisement that is pleasing to the eye, when we think about why it looks more beautiful to people, we can actually say that designers know the golden ratio and use appropriate measurements when designing, that is, they use mathematics. When we hear a melody that sounds good, when we examine its notes, we see that a certain number rule may appear, and from here we will come across mathematics. Based on these points, mathematics is a guide in many places that come to mind and surrounds us. Learning mathematics and transferring these learnings to life are important due to the necessity of using them in daily life (Kırnap-Dönmez, 2014).

Since problem solving is so much in our lives and is of great importance in mathematics, it has an important place in the studies on problem solving in mathematics. In order to be able to solve problems, it is necessary to have a good command of the subject and to be able to acquire and apply mathematical thinking. According to Polya (1957), problem solving is a process of searching for the solution of obtaining what is clearly thought. These situations have increased the focus of most of the studies in the field of mathematics on problem solving.

The secondary school mathematics curriculum was revised in 2018 in order to raise individuals who enable students to see the connection between concepts, make use of technology, model and solve problems with the help of technology, and perform functions such as communication and reasoning. The emphasis and importance of problem solving was reiterated and it was emphasized that problem solving is one of the basic elements in mathematics teaching (Ministry of National Education [MoNe], 2018).

Since problem solving is the focal point of mathematics education, mathematics research has also focused on this subject. Therefore, it has become one of the main topics of academic research and many studies have been conducted. This situation has made the literature review a bit difficult. In order to facilitate the organisation and follow-up of this research, it has become important to use the content analysis method. The main purpose of the content analysis method is to reach the concepts and relationships that explain the data (Yıldırım & Şimşek, 2008).

Coşkun & Soylu (2021) examined 255 studies on mathematical problem solving published in the field of mathematics education in Turkey between 2000 and 2020 by content analysis method, Kurt & Yeşilyurt (2020) analysed 9 articles by content analysis method to examine the relationship between problem solving and academic achievement. Baş & Katrancı (2021) analysed 103 graduate theses on problem solving under different sub-problems by content analysis method. Rahmatiya & Miatun (2020) aimed to define and analyse mathematical problem solving skills of secondary school students in terms of mathematical resilience.

When the different studies conducted in Turkey and abroad were examined, different studies in many fields were found. It was seen that there were studies examining theses or studies examining articles published in different journals. A study was carried out to bring together the articles related to mathematical problem solving in the journals of faculties of education in TR-Dizin and the studies on problem solving in mathematics for secondary school students published in the National Thesis Centre.

The aim of this study is to determine the general tendency of secondary school students by making a content analysis of the articles related to mathematical problem solving in the journals of faculties of education in Turkey published in TR-Dizin and the theses published in the National Thesis Centre. The sub-problems of the research are;

1.   How is the distribution of studies according to sample groups?
2.   How is the distribution of the studies according to the size of the sample groups?
3.   How is the distribution of studies according to research models?
4.   How is the distribution of studies according to data collection tools?
5.   How is the distribution of studies according to data analysis methods?
6.   How is the distribution of studies according to their aims?
7.   How is the distribution of the studies according to the results obtained?

2. METHOD

This section provides information regarding the research model, population and sample, development of the measurement tool, and data collection and analysis.

2.1. Research Model

Qualitative data collection techniques such as observation, interview and document analysis are used in the natural environment in which the phenomena are handled in their own context are called qualitative research (Yıldırım & Şimşek, 2008).

Descriptive content analysis is a method in which qualitative and quantitative studies on a certain subject are examined separately and independently from each other, and then the general trends and results of these studies are determined, synthesized and interpreted in a systematic way by creating themes and main templates (Çalık & Sözbilir, 2014). In this way, researchers who do and want to do research on the relevant subject can see in detail what the general trend is.

2.2. Universe and Sample

The population of the research consists of the articles published by the faculties of education and theses published in the National Thesis Centre and the studies prepared on secondary school students.

The sample group of the study consists of 58 articles on mathematical problem solving published in TR-Dizin between 2004 and the end of 2022 and 101 theses published between 2000 and 2022. As a result, it consists of 159 studies.

2.3. Data Collection

In the process of data collection, the journals belonging to the faculties of education in our country were identified, the articles of these journals published in TR-Dizin were accessed, the articles with the theme of mathematical problem solving were identified among the articles, and then the theses were searched by searching with certain keywords from the National Thesis Centre. The theses were reviewed by paying attention to the fact that they were conducted on secondary school students, that

the problem solving topic was related to mathematics, and that they were not conducted in a social or other field. The data obtained were transferred to the Excel programme and saved for analysis in line with the sub-problems.

2.4. Data Analysis

For the studies obtained, the data were recorded regularly according to the sub-problems. Then, a title was opened in the Excel programme according to each of the sub-problems and the data were brought together. In other words, for the first sub-problem, all thesis studies were examined and the data were combined one by one, and this process was completed by continuing for all sub-headings. Afterwards, frequency distributions were made by looking at how many of each item there were. After the frequencies were determined, the total number of items was examined and percentage calculations were made to determine the tendency in each sub-problem. Content analysis is a technique in which categorisation or coding is performed by systematically arranging certain words of a text (Cohen et al., 2000; Büyüköztürk et al., 2018).

Descriptive content analysis process steps followed throughout the study:

1. Determination of the journals belonging to the Faculties of Education in TR-Dizin
2. Identification of articles in journals containing the keyword "problem solving"
3. Selection of articles on "Mathematical problem solving"
4. Identification of theses by using keywords in the National Thesis Centre
5. Recording the identified theses in order to prevent data loss
6. Examination of articles and theses and creation of bibliographies
7. Analysing and processing the articles and theses identified in the review form one by one
8. Analysing the selected works and creating common and different themes
9. Creating and synthesising the graphs of the findings obtained within the framework of the themes and making inferences.

3. FINDINGS

In this section, the data obtained by analysing 159 studies included in the research are presented in tables.

3.1. Findings related to the first sub-problem of the research

Table 1. Distribution of Mathematical Problem Solving Themed Studies According to Sample Type

Sample type	Frequency (f)	Percentage (%)
7. class students	53	33,39
6. class students	38	17,64
8. class students	25	15,75
Mixed Classes	22	13,86
5. class students	21	13,23
Total	159	100

When the frequency and percentage values of the distribution of the mathematical problem solving theme according to the study groups are examined, it is seen that the most studied study group is 7th grade students with 53 (33,39%). The least number of studies was 21 (13,23%) 5th grade students.

3.2. Findings related to the second sub-problem of the research

Table 2. Distribution of Mathematical Problem Solving Themed Studies According to Sample Size

Sample size	Frequency (f)	Percentage (%)
0-100	95	59,85
101-300	44	27,72
301-1000	20	12,60
Total	159	100

When the frequency and percentage values of the distribution of mathematical problem solving themed studies according to the sample size are analysed, it is seen that 95 (59,85%) studies were mostly conducted on sample groups with a sample size between 0-100. At least 20 (12,60%) studies were conducted with a sample size of 301-1000.

3.3. Findings related to the third sub-problem of the research

Table 3. Distribution of Mathematical Problem Solving Themed Studies According to Research Approaches

Research approach	Frequency (f)	Percentage (%)
Quantitative	80	50,40
Qualitative	55	34,65
Mixed	24	15,12
Total	159	100

When the frequency and percentage values of the distribution of mathematical problem solving themed studies according to research models are examined, it is seen that 80 (50,40%) studies were conducted with quantitative methods, 55 (34,65%) studies were conducted with qualitative methods and 24 (15,12%) studies were conducted with mixed research model

3.4. Findings related to the fourth sub-problem of the research

Tablo 4. Distribution of Mathematical Problem Solving Themed Studies According to Data Collection Tools

Data Collection Tools	Frequency (f)	Percentage (%)
Questionnaire/Scale	87	26,10
Interview	54	16,20
Problem Solving Test	53	15,90
Attitude / Perception / Personality Tests	41	12,30
Forms	39	11,70
Achievement Test	26	7,80
Observation	11	3,30
Problem Formation Test	7	2,10
Activity	7	2,10
Video	5	1,50
Document Review	3	0,90
Other	2	0,60
Total	335*	100

*The reason why the total frequency is higher than the number of studies analysed is that some studies reached more than one result.

Looking at the table of the distribution of problem solving themed studies according to data collection tools, it is seen that the most commonly used data collection tool is the use of questionnaire/scale in 87 (26,10%) studies. Afterwards, it is seen that interview methods are preferred in 54 (16,20%) studies.

3.5. Findings related to the fifth sub-problem of the research

Table 5. Distribution of Mathematical Problem Solving Themed Studies According to Data Analysis Methods

Data Analysis Methods	Frequency (f)	Percentage (%)
Predictive Analysis (t-test, correlation, anova, ancova, manova, mancova, factor analysis, regression, non parametric tests)	96	40,32
Qualitative Data Analysis (content analysis, qualitative descriptive analysis, document analysis)	93	39,06
Quantitative Data Analysis	28	11,76
Descriptive Analysis (frequency, percentage tables, mean, standard deviation, graphical representation)	22	9,24
Total	239*	100

*The reason why the total frequency is higher than the number of studies analysed is that some studies reached more than one result.

When the table of the distribution according to the data analysis methods used in mathematical problem solving themed studies is examined, it is seen that predictive analysis is

used in 96 (40,32%) studies. Then, it is seen that qualitative data analysis was preferred in 93 (39,06%) studies. The least used method was descriptive analysis.

3.6. Findings related to the sixth sub-problem of the research

Tablo 6. Distribution of Mathematical Problem Solving Themed Studies According to Their Purposes

Code	Subcode	Articles	f	%
Methods in Problem Solving	Different solving methods; Problem solving methods of gifted students; Mathematical thinking	Akçakın (2010), Aktaş (2019), Altıntaş (2009), Altuntaş (2019), Arıkan (2014), Arslan (2013), Ayaz (2009), Balır (2019), Bayazıt (2021), Baysal (2020), Ceylan (2018), Çakır Balta (2008), Çelebi (2013), Gökkurt (2015), Kablan (2019), Kaplan (2017), Kara (2013), Kara Çalışkan (2019), Karataş (2002), Kaş (2010), Kaya (2020), Keklik (2018), Koç Deniz (2019), Koç Koca (2021), Küpçü (2012), Özkubat (2021), Sarıtaş (2015), Sezgin (2019), Sipahi (2021), Süzer Uğur (2018), Şanlıdağ (2020), Tanrıseven (2000), Tat (2015), Terzi (2021), Tuncel (2019), Yıldırım (2018)	36	23,08
Problem Solving Skills	Problem solving in process; Metacognitive skills; Responses of metacognitive skills according to demographic characteristics; Contribution of realistic mathematics education to skills	Akkaş (2014), Akkurt (2020), Alan (2009), Altun (2006), Atasoy (2021), Atay (2017), Ateş (2020), Aydın (2016), Aydın (2017), Aydın (2020), Bal Sezerel (2012), Baş (2013), Ceylan (2008), Demir (2019), Derin (2006), Ericek (2020), Erkan (2013), Genç (2020), Gürefe (2018), Kablan (2016), Karaoğlan (2009), Kılıç (2011), Kirişçi (2019), Kozikoğlu (2020), Özgen (2017), Öztuncay (2005), Sevgi (2020), Sezgin Memnun (2015), Soylu (2007), Şakar (2018), Takır (2020), Taşpınar (2011), Töre (2007), Ulu (2008), Umurbek (2020), Usta (2013), Yeşilova (2013), Yıldız (2008)	36	23,08
Relationships in problem solving	Mathematics subjects; Metacognitive and other subjects; Reading habits and success; Chess knowledge and problem solving	Altındağ Kumaş (2019), Aşık (2009), Atlıhan (2021), Bağdat (2020), Bakırcı (2014), Balcı (2007), Büyükaşık (2017), Çavuşoğlu (2010), Deryal (2021), Gören (2020), Gür (2015), Gürtaş (2021), Hut	25	16,03

		(2019), Kadırhan (2018), Karakoca (2011), Karakuş Aktan (2019), Karatağ (2017), Karslıgil Ergin (2015), Kavuncu (2019), Kazak (2012), Polat (2012), Sevgi (2021), Yıldız Üstündağ (2021), Yılmaz (2017), Zorbozan (2021)		
Effects on Problem Solving	The effect of mathematical modeling on achievement; The effect of visual representations on solving problems correctly; Misconceptions in verbal problems; The effect of creative problem solving activities; The effect of metacognitive skills of activities in the process	Altuntaş (2019), Arsuk (2019), Aycan Kavlak (2019), Aydurmuş (2013), Bakır (2019), Bal İncebacak (2018), Başol (2015), Beydili (2019), Cankoy (2011), Çelik (2012), Çora (2018), Genç (2017), Gündoğdu (2020), İnan Tutkun (2018), Mayan (2019), Özkök (2005), Özkubat (2019), Özyıldırım Gümüş (2020), Pehlivan (2012), Tat (2015), Tuncel (2019), Uysal (2007), Ülger (2004), Yıldırım (2012)	24	15,38
Strategies in Problem Solving	Strategies of gifted students; Strategies in verbal problems; Success and retention in cooperative learning; Strategies used by special students and normal students; Strategies used in solving non-routine problems; Effects of gamified educational robot activities on strategies	Bayazit (2017), Gök (2017), Gündoğdu (2020), Kaplan (2017), Katrancı (2014), Kaya (2020), Koç Koca (2021), Mayan (2019), Özenoğlu (2021), Özkubat (2021), Sipahi (2021), Uysal (2007), Yazlık (2016), Yıldız (2012)	14	8,97
Processes in Problem Solving	Determination of students' learning and misconceptions; Problems with more than one solution containing excessive, incomplete or contradictory information; Differentiation of demonstration tools or special software compared to traditional methods; Effects on students' problem solving process from 5th to 8th grade	Akkan (2012), Bozkurt (2010), Çelik Arslan (2007), Karabacak (2013), Keşan (2018), Özdemir (2018), Taş (2017), Taşpınar (2015), Topcu (2022), Yılmaz (2007)	10	6,41
Problem posing	The effects of mathematics teaching on achievement and attitude	Erdoğan (2019), Fidan (2008), Salman (2012), Şimşek (2012), Turhan (2011), Turhan (2014)	6	3,85

Scales in Problem Solving	Scale development and interrater reliability	Baran Bulut (2018), Büyükkıdık (2012), Çanakçı (2011)	3	1,92
Attitudes and Concepts in Problem Solving	Attitude towards problem solving; Definitions of problem concept	Turhan Türkkan (2016), Uğurluoğlu (2008),	2	1,28
	Total		156	100

When the frequency and percentage values of the distribution of the mathematical problem solving themed studies according to their aims are analysed, it is seen that the most studies are "Methods in Problem Solving" and "Problem Solving Skills" with 36 (23,08%) studies. The least was "Attitudes and Concepts in Problem Solving" with 2 (1,28%) studies.

3.7. Findings related to the seventh sub-problem of the research

Table 7. Findings Related to the Distribution of Mathematical Problem Solving Themed Studies According to the Results Obtained

Code	Subcode	Articles	f	%
Skills in Problem Solving	There is a positive relationship between students' metacognitive skills; The effect of gender variable; There is a positive relationship between metacognitive skills; Polya's problem solving steps are not sufficient; There is a significant difference in socio-economic level; There is a significant increase in Polya's problem solving methods; There is a significant relationship between mother and father's education levels; There is a significant relationship with multiple representation skills; There is a positive effect in preschool education; Intelligence games improve reflective thinking skills; Problem-based learning is more successful than traditional method; Gifted students exhibited metacognitive skills; Increase as a result of creating effective learning spaces; Positive relationship between number perception and non-routine; Problem posing skill level increases as it increases; There is a negative relationship between learned helplessness;	Adagideli (2017), Akçakın (2010), Akkaş (2014), Alan (2009), Altıntaş (2009), Altun (2006), Aşık (2009), Ateş (2020), Atlıhan (2021), Aycan Kavlak (2019), Aydın (2016), Aydın (2020), Balcı (2007), Ceylan (2018), Çavuşoğlu (2010), Derin (2006), Deryal (2021), Durmaz (2014), Erdoğan (2019), Ericek (2020), Gökkurt (2015), Gündoğdu (2020), Gürtaş (2021), Hut (2019), Işık (2011), Kaplan (2016), Kara (2013), Karakoca (2011), Kaş (2010), Kaya (2020), Koç Deniz (2019), Özgen (2017), Özkubat (2021), Pehlivan (2012), Salman (2012), Sevgi (2020), Sezgin (2019), Sezgin Memnun (2015), Şanlıdağ (2020), Takır (2020),	51	25,63

	Significant increase with activity supported flipped classroom model; Significant increase with realistic mathematics education; Levels increase as grade levels increase; Male students have higher levels than female students; Mother and father's occupation does not affect; There is no difference between students studying in public and private schools; There is a significant difference between parents being together or apart; There is a positive relationship between number sense and representation in decimal notation; There is an increase within the framework of active learning; Teaching through dramatization improves compared to traditional teaching; Purdue model is effective; Worksheets increase skills; Learning with inquiry problem solving approaches is more effective than traditional learning approach; Abacus mental arithmetic training has a positive effect on skills; Feedback increases collaborative performance.	Tanrıseven (2000), Taş (2017), Taşpınar (2015), Tat (2015), Terzi (2021), Topcu (2022), Uğurluoğlu (2008), Usta (2013), Uysal (2007), Ülger (2004), Yıldız (2008)	
Success in Problem Solving	Gender difference does not affect; Relationship between metacognitive self-regulation; Relationship between mathematical self-efficacy; Reflective thinking skills have a positive effect; mother and father's education levels do not affect; Reading comprehension and interpretation are effective; Positive relationship between problem solving factors and mathematics achievement; There is a significant difference in problem solving steps; Those who do problem solving steps are more successful; Gifted students are more successful than normal students; Misconceptions are in the positive direction compared to achievement; Operational is less successful in solving concept problems in probability; Mathematics	Akkurt (2020), Altundağ Kumaş (2019), Altuntaş (2019), Arslan (2013), Arsuk (2019), Aşık (2009), Ateş (2020), Ayaz (2009), Aydurmuş (2013), Bakırcı (2014), Balcı (2007), Baş (2013), Başol (2015), Bayazit (2017), Beydili (2019), Ceylan (2008), Çakır Balta (2008), Çelebi (2013), Çelik (2012), Çelik Arslan (2007), Erkan (2013), Gür (2015), Kadırhan (2018), Kaplan (2017), Karakoca (2011), Karakuş Aktan (2019), Karaoğlan (2009), Kaş (2010), Kaya (2020), Kılıç (2011),	46	23,12

achievement is high; There is a significant increase when solved by paying attention to the contexts of the problem; There is a significant difference between Pirie-Kieren levels; There is a significant success among those who are trained with the selective problem solving model; There is an increase in levels by integrating daily life situations into mathematics; Public school students are more successful than private school students; High achieving students exhibit more metacognitive behaviors than unsuccessful students; Low achieving students exhibit behaviors in the awareness dimension and other students in the evaluation dimension; Personalized verbal problems increase academic achievement.

Kirişçi (2019), Koç Koca (2021), Koçoğlu (2019), Kozikoğlu (2020), Öztuncay (2005), Polat (2012), Salman (2012), Sevgi (2021), Tat (2015), Tuncel (2019), Uğurluoğlu (2008), Umurbek (2020), Uysal (2007), Yeşilova (2013), Yılmaz (2007), Zorbozan (2021)

Category	Findings	References	N	%
Strategies in Problem Solving	Different solutions used by students; Gifted students use more than one different strategy compared to normal students; The least table was used; Equation construction strategy; It was seen that they had misconceptions; Positive in computer assisted mathematics teaching; They made necessary drawings while solving; Positive effect of quantum learning model; Estimation and control are used the most; Extraordinary problem solving training increases flexibility scores; The highest performance shows at the comprehension stage; Students develop different solution strategies to the questions; There is a significant difference between the strategies used by students, pre-service teachers and teachers in solving questions.	Altun (2006), Aşık (2009), Atay (2017), Aycan Kavlak (2019), Aydın (2016), Bakır (2019), Balcı (2007), Bayazit (2017), Ceylan (2018), Demir (2019), Durmaz (2014), Genç (2020), Gören (2020), Gürefe (2018), Kal (2013), Koç Koca (2021), Özenoğlu (2021), Özkubat (2021), Özyıldırım Gümüş (2020), Sevgi (2020), Sipahi (2021), Taş (2017), Taşpınar (2011), Ulu (2008), Uyar (2019), Yıldız (2012)	26	13,07
Positives in Problem Solving	To be able to make necessary modeling; Students show positive development as the level increases from Grade 5 to Grade 8; Creative problem solving curriculum has a positive contribution; There is a significant relationship between mathematical thinking	Akkan (2012), Aktaş (2019), Altuntaş (2019), Aydın (2020), Bal İncebacak (2018), Bal Sezerel (2012), Baran Bulut (2018), Baysal (2020), Beydili (2019), Çelebi (2013), Çelikkol	24	12,06

skills and achievement; Generalization has an effect on improving problem understanding; Self-evaluation Grade; Creative problem solving curriculum has a positive contribution; There is a significant relationship between mathematical thinking skills and achievement; Generalization has an effect on improving problem understanding; Self-evaluation is higher than teacher evaluation; Peer evaluation is higher than teacher evaluation; Out-of-order problem solving education significantly increases the scores in the high school transition exam; It is more effective when parents are together; Reflective thinking is usually carried out; There is a high level of relationship between metacognitive in students with learning disabilities; Students with high academic achievement use multiple representations more; Education in accordance with the standards is more effective than the traditional method; Selective problem solving technique is a technique with high social validity; Feedback increases collaborative performance; Mathematics teaching based on the theory of didactic situations has positive behaviors; The factor structure of the original version of the creative problem solving inventory and the adapted version of the inventory to Turkish overlapped.

(2016), Çora (2018), Derin (2006), Genç (2020), Gök (2017), İnan Tutkun (2018), Kal (2013), Karakoca (2011), Kavuncu (2019), Özgen (2017), Özkök (2005), Özkubat (2019), Öztuncay (2005), Sarıtaş (2015)

Negatives in Problem Solving

Not being able to interpret mathematical expressions verbally; Inadequate use of Geogebra by teachers; They could not make the necessary modeling; They had difficulty in solving problems; They had problems in understanding, modeling and solving daily life problems; They had the most difficulty in mathematical modeling at the point of understanding the problem; Students with learning difficulties have lower performance

Aktaş (2019), Aycan Kavlak (2019), Aydın (2016), Bayazit (2021), Bozkurt (2010), Çoksöyler (2020), Demir (2019), Genç (2017), Hıdıroğlu (2014), Karatağ (2017), Kazak (2012), Özdemir (2018), Özkubat (2019), Soylu (2007), Töre (2007), Turhan Türkkan (2016)

16   8,04

than students with low and medium levels; Student success in problems related to the sum of two fractions remains low; Students defined it as difficult, boring, requiring effort and not easily solved.

Attitude in Problem Solving	Gender difference does not affect; There is a significant difference in the problem, socio-economic level; Develop a scale; Positive relationship with chess knowledge; Mathematics achievement is high.	Arslan (2013), Aşık (2009), Balcı (2007), Büyükaşık (2017), Çanakçı (2011), Çavuşoğlu (2010), Çelik Arslan (2007), Karakoca (2011), Kaş (2010), Öztuncay (2005), Salman (2012), Tuncel (2019), Uğurluoğlu (2008), Yılmaz (2017), Zorbozan (2021)	15	7,54
Problem Formulation	Students' positive attitudes and achievement in mathematics teaching have improved; it increases mathematics achievement; success in problem solving activities is higher; it increases as the grade level increases.	Arıkan (2014), Atlıhan (2021), Bağdat (2020), Erdoğan (2019), Gündoğdu (2020), Karslıgil Ergin (2015), Katrancı (2014), Mayan (2019), Salman (2012), Şakar (2018), Şimşek (2012), Turhan (2011), Yıldız Üstündağ (2021)	13	6,53
Routine Problems	Solved more easily than non-routine problems; Positive increase in problems solved with creative drama; They were more successful with the assimilating learning style than with the modifying learning style.	Gündoğdu (2020), Kara Çalışkan (2019), Keklik (2018), Süzer Uğur (2018), Süzer Uğur (2018),	5	2,51
Non Routine Problems	There is a positive relationship between number perception and problem solving skills; The success of students with the accommodating learning style is higher than that of students with the modifying style; Students use creative reasoning skills.	Işık (2011), Kara Çalışkan (2019), Süzer Uğur (2018)	3	1,51
Total			199[*]	100

*The reason why the total frequency is higher than the number of studies analysed is that some studies reached more than one result.

When the frequency and percentage values of the distribution of the mathematical problem solving themed studies according to the results are analysed, "Skills in Problem Solving" with 51 (25,63%) studies and "Success in Problem Solving" with 46 (23,12%) studies are seen the most. The least is "Non-Routine Problems" with 3 (1,51%) studies.

4. DISCUSSION, CONCLUSION AND SUGGESTIONS

In this study, it was aimed to descriptively examine the theses on mathematical problem solving for secondary school students and the articles on mathematical problem solving published in TR-Dizin between 2000 and 2022 in Turkey. Within the scope of this purpose, the studies were analyzed by content analysis according to sample size, sample type, research approach, data collection methods, data analysis methods, aims, and results. By analyzing the findings of the study, the following conclusions were reached and some suggestions were made according to the results.

When the study was examined, it was seen that the studies were applied to seventh grade students at most, followed by applications to sixth grades. Özturan-Sağırlı & Baş (2020) stated that studies were carried out mostly in the sixth and seventh grades among secondary school students, that is, the intermediate grades were emphasised. When we look at the sample sizes, it is seen that most of the applications were made to the group of 0-100 people. Özdemir-Fincan (2021), in his study, found studies with a sample size between 0-100 at most. Albayrak & Çiltaş (2017) stated in their research that the most used sample size in the theses they examined was in the range of 31-100.

When the distribution of theses and articles according to research models is examined, it is seen that the most preferred research model is quantitative method. Due to the quantitative structure of problem solving and the fact that it contains quantitative variables, the desire to measure and calculate these variables can be shown as a reason for the selection of quantitative methods. In this study and in the literature, the reason why quantitative method is more common in this way can be explained by the reasons of collecting and interpreting data more easily and quickly with quantitative research. When the findings obtained within the scope of this research were analysed, it was seen that the mixed approach was used less in terms of research method. This result coincides with the results of Özdemir-Fincan (2021), Baş & Katrancı (2021), Aykaç, Köğce & Aslandağ (2020), Toptaş & Kılıçkaya (2017), Şenyurt & Özer Özkan (2017), Yaşar & Papatğa (2015), Ozan & Köse (2014) and Ulutaş & Ubuz (2008).

When the distribution of the studies according to data collection tools is analysed, it is seen that the most commonly used data collection tools are questionnaires/scales. The fact that the costs of scales and questionnaires are more economical, that more people can be reached with scales and questionnaires, and that they are more advantageous in terms of labour and time compared to other data collection tools has led to more studies based on scales and questionnaires (Baş, 2005). Again, problem solving tests, open-ended question forms and achievement tests, which are data collection tools within the scope of quantitative approach, have been the most preferred data collection tools in total. Ergül,

Alp & Doğan (2022), Yeşil & Kablan (2019) and Ozan & Köse (2014) also reached results supporting this situation in their studies. Considering the distribution according to data analysis methods, it was concluded that predictive and descriptive quantitative data analyses were preferred more than qualitative data analysis methods. In addition, it was observed that predictive statistics was preferred more than descriptive statistics among quantitative data analysis methods. Coşkun & Soylu (2021) and Ertane-Baş (2019) reached similar results in their studies.

When the distribution of theses and articles according to their aims was analysed, it was seen that the main topic was to determine problem solving and its components under the aims such as "Examining its relationship with problem solving using different methods", "Determining problem solving skills in the problem solving process" and "Determining problem solving strategies and metacognitive skills used in the problem solving process". Ergül et al. (2022) analysed the postgraduate studies on mathematical problem solving and its components and concluded that studies on problem solving and its components were more common.

When the distribution of the results of the studies is analysed, it is seen that "Gender difference does not affect the attitude towards problem solving and success", while it is said that gender difference does not affect problem solving skills, in some studies it is found that girls are more successful. It was also seen that there is a positive relationship between problem solving skills and strategy selection and teacher competence. Teachers' pedagogical content knowledge and professional experiences are important factors in the problem solving process for teachers to gain the strategies necessary for the problem solving process and to be an effective guide in the problem solving process. Eroğlu & Tanışlı (2015) investigated how teachers interpret student errors in the problem solving process and which strategies they recommend through clinical interviews. In the results of the study, it was observed that experienced and inexperienced teachers were inadequate in interpreting students' errors and suggested similar strategies as strategies. Gürbüz & Güder (2016) concluded in their study that teachers were not sufficient in using different strategies while solving problems. Özpınar & Arslan (2017) concluded that since teachers' effective and correct use of mathematical language is an important factor in teaching problem solving skills to students, teachers should be developed and trained in this regard. Hartman (2010) also stated that teachers' pedagogical content knowledge is shaped in classroom practices.

Based on the findings and the results obtained, the following recommendations are presented;

- Studies on eighth grade and fifth grade students were conducted less than other groups. It can be suggested to contribute more to the literature by increasing the studies on these groups.
- While quantitative studies were carried out in large numbers, others remained fewer in number. It can be suggested that mixed and qualitative studies should be emphasized in order to make more in-depth analyses and to consider the points where quantitative studies may be incomplete.
- It was observed that the data collection tools were mainly test-based, which is due to the predominance of quantitative research. Since the use of more and different data collection

tools while collecting data will prevent the data obtained from being overlooked, it can be suggested that many data tools should be utilised by using mixed research methods. Thus, it can be said that data analysis methods will be used more diversely.

- In order to determine the developments in the field of problem solving, articles and theses published at certain intervals can be analysed. In this way, it is important to identify and analyse the trends of new studies in order to examine and follow the development and change of the problem solving process.

- In future studies on mathematical problem solving, different dimensions can be examined within the scope of content analysis for published studies.

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GENİŞLETİLMİŞ TÜRKÇE ÖZET

ORTAOKUL ÖĞRENCİLERİYLE YAPILAN MATEMATİKSEL PROBLEM ÇÖZME İLE İLGİLİ ÇALIŞMALARININ İNCELENMESİ

GİRİŞ

Günlük hayatımızda birçok problemle karşılaşmış ve karşılaştığı bu problemleri ise anlamlandırma ve çözme yoluyla üstesinden gelmeye çalışmıştır. Karşılaşılan problemleri çözme; bilgiyi işleme, düşünme, anlamlandırma ve bir strateji oluşturma süreci olarak düşünüldüğünde matematik dersinde önemli bir konu haline gelmiştir. Bu ise problem çözmenin matematik eğitimi araştırmalarında önemli bir yer edinmesini sağlamıştır. Altun (2016) problem çözme için bir durum ile karşı karşıya kalınıp ne yapılacağının bilinmediği anlarda ne yapması gerektiğini bulmaktır tanımını kullanmıştır. Bu yüzden bir problem ile karşılaştığında bu problemi anlamak, önceki deneyimleri aracılığıyla yeni çözüm yolları oluşturmak ve sonuca ulaşana kadar bir yol kat etmek gibi bir süreç içerisine girer.

Ortaokul matematik dersi öğretim programı; öğrencilerin kavramlar arasındaki bağı görmelerini sağlayan, teknolojilerden yararlanıp, teknoloji yardımıyla modelleme yapıp problem çözebilen ve iletişim kurma, akıl yürütme gibi işlevleri yerine getirebilen bireyleri yetiştirebilmek için 2018 yılında revize edilmiştir. Problem çözme vurgusu ve önemi yinelenerek matematik öğretiminde Problem çözmenin temel elamanlardan olduğu vurgulanmıştır (Millî Eğitim Bakanlığı [MEB], 2018).

Yurt içinde ve yurt dışında yapılmış olan farlı çalışmalar incelendiğinde birçok alanda yapılmış farklı çalışmalara rastlanılmıştır. Tez inceleyen çalışmalar veya farklı dergilerde yayınlanmış makaleleri inceleyen çalışmalar olduğu görülmüştür. TR-Dizin'de Eğitim Fakülteleri Dergilerinde Yer Alan Matematiksel Problem Çözme ile İlgili Makalelerin ve Ulusal Tez Merkezi'nde yayınlanmış olan ortaokul öğrencilerine yapılmış matematikte problem çözme temalı çalışmaların bir arada olduğu çalışmanın literatüre kazandırılması için çalışma yapılmıştır.

Bu çalışmanın amacı ortaokul öğrencilerin TR-Dizin'de yayımlanan Türkiye'deki eğitim fakülteleri dergilerine ait matematiksel problem çözme ile ilgili makalelerin ve Ulusal Tez Merkezi'nde yayımlanmış olan tezlerin içerik analizinin yapılıp genel eğiliminin belirlenmesidir. Araştırmanın alt problemleri ise;

1. Çalışmaların örneklem gruplarına göre dağılımı nasıldır?
2. Çalışmaların örneklem grupları büyüklüğüne göre dağılımı nasıldır?
3. Çalışmaların araştırma modellerine göre dağılımı nasıldır?
4. Çalışmaların veri toplama araçlarına göre dağılımı nasıldır?
5. Çalışmaların veri analiz yöntemlerine göre dağılımı nasıldır?
6. Çalışmaların amaçlarına göre dağılımı nasıldır?
7. Çalışmaların ulaşılan sonuçlara göre dağılımı nasıldır?

YÖNTEM

Bu bölümde araştırmanın modeline, evren ve örneklemine, ölçme aracının geliştirilmesine, verilerin toplanması ve çözümlenmesine ilişkin bilgilere yer verilmiştir.

Araştırmanın Modeli

Nitel veri toplama teknikleri olan gözlem, görüşme ve doküman analizinin kullanıldığı olguların doğal ortamda kendi bağlamında ele alındığı araştırmalara nitel araştırma denir (Yıldırım & Şimşek, 2008).

Evren ve Örneklem

Araştırmanının evrenini, TR-Dizin ortamında ulaşılan eğitim fakültelerine ait yayımlanmış olan makaleler ve Ulusal Tez Merkezi'nde yayınlanmış tezlerden ortaokul öğrencileri üzerinde hazırlanmış çalışmalardan oluşmaktadır.

Verilerin Toplaması

Verilerin toplanması sürecinde, ülkemizdeki eğitim fakültelerine ait dergilerin belirlenmesi, bu dergilerin TR-Dizin' de yayımlanan makalelerine ulaşılması, ulaşılan makaleler içinden matematiksel problem çözme temalı makalelerin belirlenmesi daha sonra Ulusal Tez Merkezinden belli anahtar kelimeleri ile taranarak araştırılmış ve tezlere ulaşılmıştır. Ortaokul öğrencileri üzerinde yapılmış olmasına, problem çözme konusunun matematikle alakalı olmasına ve sosyal ya da başka bir alanda yapılmış olmamasına dikkat edilerek tekrar gözden geçirilmiştir. Elde edilen veriler Excel programına aktarılmış ve alt problemler doğrultusunda analiz için kaydedilmiştir.

Verilerin analizi

Elde edilen çalışmalar için alt problemlere göre veriler düzenli bir şekilde kayıt altına alınmıştı. Daha sonra alt problemlerin her birine göre Excel programında bir başlık açılıp veriler bir araya getirilmiştir.

TARTIŞMA VE SONUÇ

Çalışmayı incelendiğinde en fazla yedinci sınıf öğrencilerine çalışmaların uygulandığı, sonrasında altıncı sınıflara uygulamalar yapıldığı görülmüştür. Özturan-Sağırlı & Baş (2020) ortaokul öğrencilerinden en fazla altıncı ve yedinci sınıf öğrencilerinde çalışmaların yapıldığını yani ara sınıflara ağırlık verildiğini söylemişlerdir. Örneklem büyüklüklerine baktığımızda ise en çok 0-100 arası kişi grubuna uygulama yapıldığı görülmektedir.

Tezlerin ve makalelerinin araştırma modellerine göre dağılımına bakıldığında, en çok tercih edilen araştırma modelinin nicel yöntem olduğu görülmüştür. Problem çözmenin nicel yapısından ve nicel değişkenleri barındırmasından dolayı bu değişkenlerin ölçülmek ve hesaplanmak istenmesi nicel yöntemlerin seçilmesine neden olarak gösterilebilir. Yapılan bu çalışmada ve alan yazında bu şekilde nicel yöntemin daha fazla olmasının bir sebebi olarak nicel araştırma ile daha kolay ve hızlı verileri toplama ve yorumlayabilme nedenleri ile açıklanabilir. Bu

araştırma kapsamında ulaşılan bulgular incelendiğinde araştırma yöntemi bakımından karma yaklaşımın daha az kullanıldığı görülmüştür.

Çalışmaların veri toplama araçlarına göre dağılımına bakıldığında, en çok kullanılan veri toplama araçlarının anketler/ölçekler olduğu görülmüştür. Yine nicel yaklaşım kapsamındaki veri toplama araçları olan problem çözme testleri, açık uçlu soru formları ve başarı testleri toplamda en çok tercih edilen veri toplama araçları olmuştur.

Tezler ve makale çalışmalarının amaçlarına göre dağılımına bakıldığında, "Farklı yöntemler kullanılarak problem çözmeyle ilişkisinin incelenmesi", "Problem çözme sürecindeki problem çözme becerilerini belirlemek" ve "Problem çözme sürecinde kullanılan problem çözme stratejilerini ve üst bilişsel becerilerini belirlemek" gibi amaçlar altında temel konunun problem çözme ve unsurlarını belirlemek olduğu görülmüştür.

Çalışmaların sonuçlarına göre dağılımına bakıldığında, "Cinsiyet farklılığı problem çözmeye olan tutumu ve başarıyı etkilememektedir" cinsiyet farklılığının problem çözme becerisini etkilemediği söylenirken, bazı çalışmalarda kızların daha başarılı olduğu sonucu bulunmuştur. Baz sonuçlardanda "Problem çözme becerisi ve strateji seçimi ile öğretmen yeterliliği arasında olumlu yönde ilişki vardır" sonucuna ulaşıldığıda görülmüştür. Öğretmenlerin problem çözme süreci için gerekli olan stratejileri kazandırmaları ve problem çözme sürecinde etkili bir rehber olmaları için pedagojik alan bilgisi ve mesleki deneyimleri problem çözme sürecinde önemli bir etkendir.

THE EFFECT OF TEACHING MATHEMATICS WITH DIGITAL STORIES ON ACADEMIC SUCCESS AND MATHEMATICS ANXIETY

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Ruhşen Aldemir ENGIN[2]

ABSTRACT

Digital Storytelling, which is formed by adding technological elements to traditional storytelling, has been frequently used in education recently. This method, also used in mathematics education, contributes to students in both cognitive and affective dimensions. For this reason, the aim of this study is to examine the effects of digital storytelling supported education on the academic achievement of sixth grade students in Integers and Absolute Value and their mathematics anxiety levels. Pre-test and post-test experimental design was used. The study group consists of 20 middle school students. An achievement test prepared by the researchers was used to measure success, and a scale to determine the level of math anxiety was used to measure anxiety. The test and scale were applied twice, at the beginning and the end of the process. In the process, teaching was carried out using digital stories prepared by the researchers. SPSS package program was used in the analysis of the data and the dependent sample t-test was used. At the end of the research, it was seen that digital story-supported education positively affected the academic success of the students, but did not affect the anxiety level.

Keywords: Digital storytelling; achievement; math anxiety; integers and absolute value

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DİJİTAL HİKÂYELERLE MATEMATİK ÖĞRETİMİNİN AKADEMİK BAŞARIYA VE MATEMATİK KAYGISINA ETKİSİ

ÖZET

Geleneksel hikâye anlatımına teknolojik öğelerin de eklenmesiyle oluşan Dijital Hikâye Anlatımı son dönemde eğitimde sıklıkla kullanılmaktadır. Matematik eğitiminde de kullanılan bu yöntem öğrencilere hem bilişsel hem de duyuşsal boyutta katkı sağlamaktadır. Bu sebeple bu çalışmanın amacı dijital hikâye destekli eğitimin altıncı sınıfta öğrenim gören öğrencilerin Tamsayılar ve Mutlak Değer konusunda akademik başarılarına ve matematik kaygı düzeylerine etkisinin incelenmesidir. Konu olarak birçok matematik konusuna temel teşkil eden tamsayılar ve mutlak değer konusu seçilmiştir. Araştırmada ön test son test deneysel desen kullanılmıştır. Araştırmanın örneklemi devlet okulunda öğrenimine devam eden 20 öğrencidir. Başarıyı ölçmede araştırmacıların hazırladığı başarı testi, kaygıyı ölçmede ise matematik kaygı düzeyini belirlemeye yarayan bir ölçek kullanılmıştır. Test ve ölçek sürecin başında ve sonunda olmak üzere iki kez uygulanmıştır. Araştırmanın uygulama kısmında ise araştırmacıların hazırladığı dijital hikâyeler kullanılarak öğretim yapılmıştır. Verilerin analizinde SPSS paket programı kullanılmıştır. Verilerin normal dağılım gösterip göstermediği tespit edildikten sonra bağımlı örneklem t testi uygulanmıştır. Araştırma sonunda dijital hikâye destekli eğitimin öğrencilerin akademik başarılarını olumlu yönde etkilediği fakat kaygı düzeyini etkilemediği görülmüştür.

Anahtar Kelimeler: Dijital hikâye anlatımı; başarı; matematik kaygısı; tamsayılar ve mutlak değer

1. INTRODUCTION

Mathematics is a science that interacts with almost every field in our daily lives. The reasons such as abstract concepts, formulas, students' inability to associate mathematics with everyday life, not using different methods and techniques, and students seeing this course as memorisation bring various difficulties in learning and teaching mathematics. Occasionally, it leads to reluctance, fear, anxiety and lack of motivation in students. If these negative situations are not eliminated, the quality of education is not at the desired level.

One of these negative situations is Mathematics Anxiety (MA). MA has become an important subject of study with the emergence of the concept of Number Anxiety. It has received increasing attention in recent years (Dowker et al., 2016). In its shortest definition, MA has negative feelings towards mathematics (Choe et al., 2019). The consequences of MA not only reduce performance in mathematics-related situations (Zhang et al., 2019) but also hinder mathematical skills (Skagerlund et al., 2019). It can also have long-term effects (Luttenberger et al., 2018), including efficient (or not so-efficient) learning, as well as course and even occupational choices (Huang et al., 2019). For this reason, people with high MA tend to avoid mathematics, mathematics-related university courses, and career goals involving mathematics (Ashcraft & Krause, 2007). In order to support students' mathematics achievement, it is necessary to control MA (İlhan & Öner- Sünkür, 2012).

MA has cognitive (being good at maths) and affective (nervousness, unpleasantness, tension, etc.) factors. These factors play an important role in anxiety (Süren, 2019). MA shows itself throughout the process. Truttschel (2002) explained the MA process with a model and stated that previous experiences, negative self-talk, physical symptoms, anxiety and possible consequences (feeling small,

failure, avoidance, etc.) are involved in the MA process. MA can also have several different causes. These include factors such as the abstractness of the course, inadequate teaching methods and techniques, classroom climate, and teachers' attitudes towards students and the course. Students' most frequently reported reasons for MA were associated with the risk of failure, task difficulty, time pressure and fear of getting a bad grade (Szczygieł & Pieronkiewicz, 2022). There are also strong correlations between authoritarian parenting style and MA (Macmull & Ashkenazi, 2019). It has also been observed that sometimes, doing maths in the presence of teachers and peers causes anxiety (Newstead, 1998). MA, learning motivation and self-confidence contribute to the ability to solve mathematical problems simultaneously (Irhamna et al., 2020).

MA, or the negative physiological, emotional and cognitive states that mathematics activities often evoke, is recognised as a significant threat to human development and well-being. There is a growing interest in applying new technologies to relieve and reduce MA (Haase, Guimarães & Wood, 2019). Öztop & Toptaş (2022) suggested using attention-grabbing methods and techniques that students will have fun reducing MA. They also stated that contemporary teaching approaches and digital materials can be used. For example, Chen (2019) stated in his study that students with high anxiety had higher confidence and lower anxiety in mathematics thanks to technology (Mobile Augmented Reality). Hanifah, Afidah, Soraya, and Ardiansyah (2023) similarly concluded that using technology-based learning environments can help reduce students' MA while learning mathematics. Sade (2020) found that students who received computerised coding education had lower MAs than the traditional method.

Different approaches and teaching methods have emerged in mathematics and geometry with the developing technologies. These include virtual manipulatives, dynamic geometry software and video-based applications (Altıkardeş & Yiğit-Koyunkaya, 2021). The importance of these approaches has increased in order to increase the efficiency and quality of education. One of these approaches is the Digital Storytelling (DST) method, which is based on storytelling and emerged by deepening and enriching the stories with visual and audio elements.

When the literature is analysed, it is seen that many studies have been conducted with DST. Studies such as examining the effects on students, examining opinions and experiences regarding digital story activity, rubric development, compilation and literature research have been conducted. When the usage areas of the studies are examined, it is seen that there is a wide distribution. In addition to these studies, DST studies have been conducted in mathematics education, and studies have been conducted with preservice mathematics teachers and secondary school students in order to investigate the effectiveness of digital stories. However, increasing these studies will enable us to see the place and importance of digital stories in mathematics education. At the same time, it is essential to investigate the effectiveness of these technologies by using them in teaching environments. In this context, it is thought that it is necessary to benefit from DST while teaching mathematics.

DST is a dynamic combination of story (narrative) and technology (Rossiter & Garcia, 2010). DST starts with the selection of a topic, research on the topic, creating a scenario based on these and

writing the story. Then, this story is transferred to digital media and digital stories are obtained by combining multimedia types such as audio, video, visuals and photographs (Robin, 2008). In other words, it is an audio-visual clip that combines photos, audio and images, usually 2 to 5 minutes long (Lambert, 2009). DST uses computer-based tools that can be shared online (Robin & McNeik, 2019). It has been determined that it is used continuously in the USA, where it first emerged, and its use in Asian and European countries is gradually increasing. It is often used as a stand-alone method or in combination with other methods in humanities and social sciences (Wu & Chen, 2020). DST, which supports learning (Kim, Coenraad & Park, 2021) and teaching (Robin, 2016) and is a powerful tool for students and educators, increases students' motivation and helps students understand the subject matter (Robin, 2006). One of the benefits for students is that it helps to gain 21st-century skills (Çetin, 2021; Kaeophaunek, Na-Songkhla & Nilsook, 2019; Stork, 2020), which are shown as a critical need today (Robin & McNeik, 2019). In addition, it also contributes to communication, problem-solving, and media literacy skills (Chen & Chuang, 2021). It also helps students to communicate more effectively by improving their speaking skills (Nair & Yunus, 2021) and encourages social interactions (Katifori et al., 2020). It has also been stated that it increases students' motivation and performance (Parsazadeh, Cheng, Wu & Huang, 2021).

It has been observed that using DST in mathematics positively affects information-gathering skills, problem-solving and attitude towards cooperation (Çetin, 2021). Another result is that it is effective in students' learning of mathematical concepts, and they have favourable impressions of it (Dinçer & Yılmaz, 2019). It positively affects motivation, confidence and independence (Çakıcı, 2018). It is also used in daily life problems and in associating mathematics with daily life (Küçükoğlu & İncikabı, 2020). It is used to make incomprehensible concepts in mathematics understandable, to eliminate errors and misconceptions, and is described as fun and instructive by students (Karaoğlan - Yılmaz, Gökkurt - Özdemir & Yaşar, 2017). Teachers also find them useful as applications supporting active participation, concretising and contributing to technological developments (Kocaman-Karoğlu, 2016). Preservice teachers also find it positive for mathematics education and point out its benefits in terms of active participation, achievement, motivation and creativity (Özpınar, 2017).

The subject of integers and absolute value in mathematics is the basis for many other mathematics subjects at many levels. Students generally have problems giving meaning to the minus (-) sign in integers, sorting and making associations. Teachers also have problems making sense of negative integers (Erdem, Başıbüyük, Gökkurt, Şahin & Soylu, 2015). It was observed that the concept of absolute value, also taught in secondary education, was perceived as complex by students. It was stated that this difficulty started to occur in the primary education period when the students saw the concept for the first time. Incomplete information and misconceptions in the primary school years, when the foundation of the subject is laid, negatively affect the success status and student prejudices about the subject in the following educational periods (Yenilmez & Avcu, 2009). Şandır, Ubuz, and Argün (2002) also mentioned difficulties arising from past knowledge, order and classification of numbers,

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incomplete understanding of the concept or misuse of the concept. It has been determined that technology-supported orientations are effective in eliminating difficulties (Demetgül, 2018) and increasing success (Körükçü, 2008). For this reason, the topic of Integer Numbers and Absolute Value at the 6th-grade level was selected in the study. When the mathematics curriculum is examined, the 6th-grade integers and absolute value subject achievements start with the concepts of integers (negative and positive), absolute value and signs. In addition, it continues on the axis of showing on the number line, comparing and sorting, and knowing and understanding absolute value (Ministry of National Education, 2018).

This study aimed to determine the effect of DST on student achievement and mathematics anxiety levels in the subject of Integer numbers and absolute value, which will also affect other grade levels. One of the reasons for conducting this research is that technology-supported applications are effective in both increasing achievement and decreasing MA has encouraged researchers to work on this issue.

Research Questions and Sub-Research Questions:

For this reason, the question "How does digital story-supported mathematics teaching affect sixth-grade students' academic achievement and anxiety levels towards mathematics in the subject of Integer Numbers and Absolute Value?" will be answered.

Sub-research questions:

1. How does digital story-supported mathematics teaching affect the academic achievement of sixth-grade students in the subject of Integer Numbers and Absolute Value?

2. How does digital story-supported mathematics teaching affect the mathematics anxiety levels of sixth-grade students towards mathematics in the subject of Integer Numbers and Absolute Value?

2. METHOD

This section provides information regarding the research model, population and sample, development of the measurement tool, and data collection and analysis.

2.1. Research Model

Quantitative (pretest-posttest experimental design) was used in the study. In experimental designs, the effect of a specific intervention on a group is measured by pretest and posttest and the significance of the difference is investigated by looking at the relationship between the measurements (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2013). This design was preferred in the study since it aimed to examine the change in students' academic achievement and MA with the help of pre-tests and post-tests on a single group.

2.2. Participants

The participants of this study consists of 20 sixth-grade students studying in a public school in Kars. Purposive sampling (easily accessible) was used to determine the sample. The ease of

communication and working with the students in the school where the first researcher is located enabled the selection of this sample type. A single group was used in the study because the researcher wanted to carry out the study herself, and she had a branch in her school. Nine of the participants were male and 11 were female.

2.3. Data Collection Tools

Two different tools were used to collect data in the study. These are the "Mathematics Anxiety Scale for Primary School Students" (Şentürk, 2010) and the "Integer Numbers and Absolute Value Achievement Test" prepared for the subject of Integer Numbers and Absolute Value.

1.2.1. Integer Numbers and Absolute Value Achievement Test

This achievement test measures and evaluates students' achievements in Integer Numbers and Absolute Value. The test was formed by combining the questions obtained from three different exams. These exams are the Ministry of National Education Boarding Without Pay and Scholarship, Primary and Secondary Education Institutions Scholarship and Level Determination Exams. The achievement test consists of 20 multiple-choice (four-choice) questions to measure students' knowledge and skills in Integer Numbers and Absolute Value. These questions are designed to measure students' mathematical thinking skills, problem-solving skills and mastery of the subject. For each question, correct answers were evaluated as 1 point and other cases were evaluated as 0 points. The maximum possible score range in the test is 0-20. One lesson hour was used for answering the test.

1.2.2. Mathematics Anxiety Scale

This scale is a scale used to measure students' mathematics anxiety levels about mathematics courses (Şentürk, 2010). The scale consists of 22 questions; five options expressing students' anxiety levels were presented for each question. The students responded by choosing the most appropriate one among the options. In this five-point Likert-type scale, there are options such as "I always get anxious (1)", "I often get anxious (2)", "I sometimes get anxious (3)", "I rarely get anxious (4)" and "I never get anxious (5)". During the process, students were given 30 minutes to answer this scale. Necessary permissions were obtained from the researcher for the use of the scale.

2.4. Organisation and Implementation of Learning Activities

The researchers analysed the gains of the subject of Integer Numbers and Absolute Value, and in order to achieve the determined objectives, the lesson was planned in accordance with the group to be studied by taking into account the school lesson hours. The process class has five weekly lesson hours; one hour is 40 minutes. The implementation study lasted four weeks in total, covering the topic of Integer Numbers and Absolute Value.

There are three acquisitions in the subject to be studied. For this study, eight digital stories were designed by the researchers in accordance with the objectives of the Animaker programme. Animaker is a Web 2.0 tool that allows both paid and free access and is used in animation and video preparation. It was preferred to be used in the research with animated objects, characters, icons and various background options. There are also options to add external audio and visuals. Expert opinion was used

while preparing the digital stories, and necessary arrangements were made. In addition, care was taken to associate the stories with daily life and mathematics. Figure 1 and 2 show examples of the digital stories used in the study:
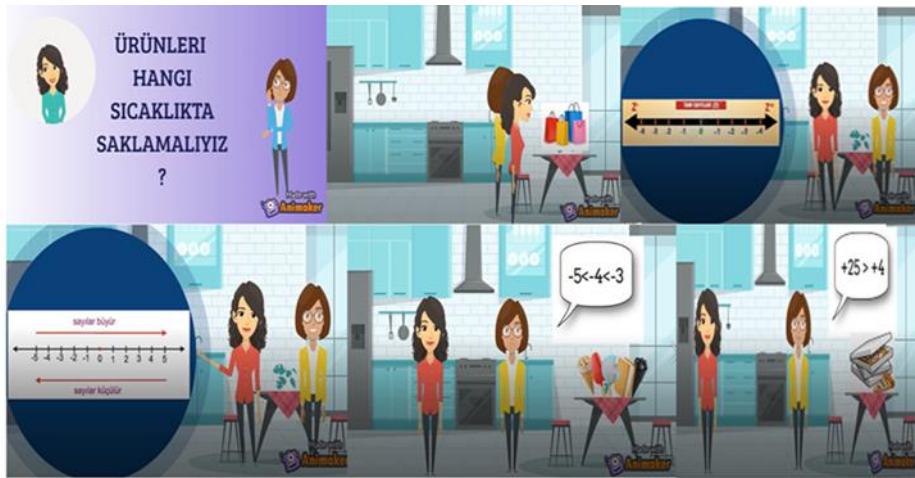
Figure 1. Sample Images from Digital Story 5

In this digital story, the deterioration (melting) of the products was based on the deterioration (melting) that occurred in the products because two brothers shopping for food in the supermarket did not place the foods that should be stored at different temperatures in their places. Negative integers and the ordering of numbers were emphasised through the storage conditions of the food.

Figure 2. Sample Images from Digital Story 4

In this story, the account history was analysed from online banking. Here, the meaning of the + and - signs were explained.

Before starting the process, test and the scale were applied to learn the status of the students (pre-test). During the implementation process, digital story-supported teaching was provided to the students. In addition to teaching the subject, the prepared digital stories were used in the attention-grabbing, motivation, transition to the lesson, measurement and evaluation sections of the lesson according to the teaching of the subject and the suitability of the acquisition. While the gains were being taught, questions were asked to the students during the lesson with appropriate stories and feedback was received from the students when necessary. Occasionally, the stories were watched section by section and reinforcements were made. Dramatic questions and scenes were stopped, questions were asked to the students, and feedback was received. In the process, digital stories were re-watched, and reminders

and reinforcements were made in the parts where students had difficulty. The test and scale were reapplied at the end of the process.

2.5. Data Analysis

The data were analysed with SPSS software. The analyses were carried out by statistical analyses. During these analyses, a 0.05 significance level was taken as a basis. For each item of the achievement test, correct answers were evaluated as one and the others as 0. Since the research group was less than 50 people, considering the sample size, the Shapiro-Wilk test was applied for the normality of the data before starting the analyses. According to the results of this test, the appropriate analysis technique was used for each problem. Descriptive statistics (standard deviation, mean) were used to analyse the data. It was determined that the data obtained from the achievement test and Mathematics anxiety scale showed normal distribution. Dependent sample T-test was used for the difference between pre-test and post-test.

2.6. Validity and reliability

Firstly, the reliability of the data collection tools used in the study was examined. The mathematics achievement test was selected from the exams held at different times with expert opinions. Cronbach alpha coefficient was analysed for reliability. Cronbach alpha coefficient was calculated as 0.739 and used for the study. For another scale used in the study, "Mathematics Anxiety Scale for Primary School Students", the researcher calculated Cronbach's alpha coefficient as 0.931 (Şentürk, 2010). In addition, no reliability calculation was made. Expert opinions were taken for validity. Care was taken to represent the gains with digital stories. In addition, expert opinions were taken for digital stories and achievement tests.

2.7. Ethics Committee Approval

The ethical approval of this study was approved by Kafkas University Social and Human Sciences Scientific Research and Publication Ethics Committee with the decision dated 20.10.2021 and numbered 12.

3. FINDINGS

The study's findings are presented under two sub-headings in line with the sub-problems.

3.1. The effect of digital story-supported mathematics teaching on the academic achievement of sixth-grade students in the subject of integer numbers and absolute value

Firstly, it was tried to determine whether the data showed normal distribution. When checking whether the distribution is normal in a research group, when the number of participants is less than 50, it can be checked with the Shapiro-Wilks test. If the obtained $p > 0.05$, it can be said to show normal distribution and parametric tests can be used in data with normal distribution (Büyüköztürk, 2016). The normality test data of the Achievement Test pre-test and post-tests are presented in Table 1:

Table 1. Achievement Pre-Test - Post-Test Results of Shapiro-Wilks Normality Test

	Shapiro-Wilk		
	Statistic	df	p
Pre-Test	,944	20	,282
Post Test	,929	20	,150

Since the Sharipo-Wilks test p > 0.05, it was concluded that the data were normally distributed. As a result, the dependent sample t-test, one of the parametric tests, was used to analyse the normally distributed data. Dependent sample t-test analysis results are presented in Table 2:

Table 2. Dependent Sample T-Test Analysis Results of Achievement Test Data

Tests	Descriptive Values			**t-Test**		
	N	x̄	ss	sd	t	p
Pre Test	20	7,40	2,835			
				19	-3,268	,004
Post Test	20	10,65	4,760			

When Table 2 was analysed, it was seen that the difference was significant [t(19)= -3,268, p<0.05]. The mean score of the students in the pre-test was 7,40, and the mean score in the post-test was 10,65. Since the mean achievement scores increased from 7.40 to 10.65, it can be said that teaching the subject of Integer numbers and absolute value with digital story support effectively increases the students' academic achievement.

3.2. The effect of digital story-supported mathematics teaching on sixth-grade students' anxiety levels towards mathematics in the subject of ınteger numbers and absolute value

The normality results of the data are presented in Table 3:

Table 3. Maths Anxiety Scale PreTest-PostTest

	Shapiro-Wilk		
	Statistic	df	p
Pre Test	,907	20	,055
Post Test	,931	20	,159

As seen in Table 3, since p>0.05, it was concluded that there was a normal distribution in the data. Therefore, a dependent sample t-test was used to analyse the pre-test and post-test anxiety scores. The results are presented in Table 4:

Table 4. Dependent Sample T-Test Analysis Results of Mathematics Anxiety Scale Data

Tests	Descriptive Values			t-Test		
	N	x̄	ss	sd	t	p
Pre Test	20	82,25	16,726			
				19	1,589	,129
Post Test	20	76,80	18,947			

When Table 4 was analysed, it was seen that the difference in the anxiety scores of the students in the treatment group was not statistically significant [t(19)= 1,589, p>0.05]. According to this

statistical result, teaching Integer numbers and absolute value with digital stories did not affect students' anxiety levels towards mathematics.

4. DISCUSSION AND CONCLUSION

Technological approaches increase students' achievement and help to eliminate MA. Therefore, this study investigated the effect of digital story-supported instruction on sixth-grade students' academic achievement in Integer numbers and absolute value and their anxiety levels towards mathematics. DST is a storytelling practice intertwined with digital media, including pictures, texts, sounds, and other elements (Chan, 2019). It contributes to developing teachers' content, pedagogy, and technology knowledge and developing students' content and multiple intelligences (Choo, Abdullah & Nawi, 2020). In addition, DST increases students' self-confidence and self-efficacy in mathematics (Niemi & Niu, 2021). In this study, it was observed that DST was effective in increasing students' academic achievement. In this respect, similar results were obtained with the literature (Çokyaman & Çelebi, 2021; Gömleksiz & Pullu, 2017; Hung, Hwang & Huang, 2012; Karataş, 2020; Korucu, 2020; Özerbaş & Öztürk, 2017; Pala, 2021; Ulum & Yalman, 2018; Büyükcengiz, 2017; Yang & Wu, 2012). Başaran (2019) found that DST did not affect achievement in his research. However, he also stated that students felt more fear, panic and inadequacy in traditional methods. Similarly, Çakıcı (2018) stated that it did not affect achievement but positively affected motivation and attitude.

MA causes a decrease in mathematics achievement (Sherman & Wither, 2003). In addition, MA predicts achievement more than many other factors (Suren & Kandemir, 2020; Munggaran, Rachmawati & Sholihah, 2022). It also affects children's arithmetic fluency and problem-solving development. Therefore, it is essential to reduce anxiety in mathematical development (Kaskens, Segers, Goei, van Luit & Verhoeven, 2020). For this reason, in this study, the effect of DST on MA level was also examined along with success. As a result of the study, it was concluded that digital story-supported education did not affect the MA. In the literature, it is seen that DST is effective in eliminating different types of anxiety. For example, it reduces listening anxiety (Rahimi & Soleimany, 2015) and writing anxiety (Çapan, 2020).

5. RECOMMENDATIONS

Based on the research findings, the following recommendations could be made:

The research was conducted on a single group. This is interpreted as a limitation of the research. It is thought that working with more students may provide an advantage. In addition, using more stories and even having students design can be presented as a suggestion. In this way, it is thought that more contributions can be made to reduce anxiety.

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DİJİTAL HİKÂYELERLE MATEMATİK ÖĞRETİMİNİN AKADEMİK BAŞARIYA VE MATEMATİK KAYGISINA ETKİSİ

GİRİŞ

Matematik günlük yaşamımızda hemen hemen her alanla etkileşime sahip bir bilim dalıdır. Soyut kavramlar, formüller içermesi, öğrencilerin matematiği günlük yaşamla yeterince bağdaştıramaması, farklı yöntem ve tekniklerin kullanılmaması, öğrencilerin bu dersi ezber olarak görmesi gibi nedenler matematiği öğrenme ve öğretmede çeşitli zorlukları da beraberinde getirmektedir. Öğrencilerde zaman zaman isteksizlik, korku, kaygı, motivasyon yetersizliği gibi durumlara yol açmaktadır. Bu durumlardan biri de Matematik Kaygısı (MK)'dır. MK en kısa tanımıyla matematiğe karşı olumsuz duygular beslemektir (Choe, v.d., 2019). MK'nın sonuçları yalnızca matematikle ilgili durumlardaki performansı düşürmez (Zhang, Zhao & Kong, 2019), matematik becerilerini de engeller (Skagerlund, v.d., 2019). Aynı zamanda verimli (ya da çok verimli olmayan) öğrenmenin yanı sıra ders ve hatta mesleki seçimleri (Huang, Zhang & Hudson, 2019) içeren uzun vadeli etkilere de sahip olabilir (Luttenberger, Wimmer & Paechter, 2018).

MK veya matematik etkinliklerinin sıklıkla uyandırdığı olumsuz fizyolojik, duygusal ve bilişsel durumlar, insan gelişimi ve esenliği için önemli bir tehdit olarak kabul edilmektedir. MK'yı rahatlatmak ve azaltmak için yeni teknolojilerin uygulanmasına artan bir ilgi vardır (Haase, Guimarães & Wood, 2019). Öztop & Toptaş (2022) MK'yı azaltmada öğrencilerin eğleneceği, dikkat çekici yöntem ve tekniklerin kullanılmasını önermiştir. Ayrıca çağdaş öğretim yaklaşımlarının ve dijital materyallerin de kullanılabileceğini belirtmiştir. Hikâye anlatıcılığını temel alan, hikâyelerin görsel ve işitsel unsurlarla derinleştirilmesi ve zenginleştirilmesiyle ortaya çıkan Dijital Hikâye Anlatımı (DHA) bu yöntemlerden biridir (Robin, 2008).

Matematikte Tam sayılar ve Mutlak değer konusu diğer birçok düzeyde birçok matematik konusuna temel teşkil etmektedir. Tamsayılar konusunda öğrenciler genellikle eksi (-) işaretine anlam vermede, sıralama yapmada ve ilişkilendirmede problem yaşamaktadır. Ayrıca öğretmenler de negatif tamsayıyı anlamlandırırken sorun yaşamaktadır (Erdem, Başıbüyük, Gökkurt, Şahin & Soylu, 2015). Konunun temelinin atıldığı ilköğretim yıllarında eksik bilgiler ve kavram yanılgıları sonraki eğitim dönemlerinde konuya dair başarı durumunu ve öğrenci önyargılarını olumsuz etkilemektedir (Yenilmez & Avcu, 2009). Teknoloji destekli yönelimlerin güçlükleri ortadan kaldırmada etkili olduğu (Demetgül, 2018) ve başarıyı artırdığı (Körükçü, 2008) tespit edilmiştir. Bu araştırmada diğer sınıf düzeylerini de etkileyecek olan Tam sayılar ve mutlak değer konusunda DHA' nın öğrenci başarısına ve Matematik Kaygı düzeyine etkisinin belirlenmesi amaçlanmıştır. Teknoloji destekli uygulamaların hem başarıyı artırmada hem de MK'yı düşürmede etkili olması araştırmacıları bu konuda çalışmaya teşvik etmiştir.

Bu doğrultuda araştırmanın problem cümlesi şu şekildedir:

"Dijital hikâye destekli matematik öğretiminin Tam Sayılar ve Mutlak Değer konusunda altıncı sınıf öğrencilerinin akademik başarılarını ve matematiğe yönelik kaygı düzeylerini nasıl etkilemektedir"

Alt problemler

1. Dijital hikâye destekli matematik öğretimi Tam Sayılar ve Mutlak Değer konusunda altıncı sınıf öğrencilerinin akademik başarılarını nasıl etkilemektedir?

2. Dijital hikâye destekli matematik öğretimi Tam Sayılar ve Mutlak Değer konusunda altıncı sınıf öğrencilerinin matematiğe yönelik kaygı düzeylerini nasıl etkilemektedir?

YÖNTEM

Araştırmanın Modeli

Çalışmada nicel (ön test-son test deneysel desen) kullanılmıştır. Deneysel desenlerde belirli bir müdahalenin bir grup üzerindeki etkisi ön test ve son test ile ölçülür ve ölçümler arasındaki ilişkiye bakılarak farkın anlamlılığı araştırılır (Büyüköztürk, v.d., 2013). Araştırmada tek bir grup üzerinde ön test- son testler yardımıyla öğrencilerin akademik başarı düzeyleri ve MK düzeylerindeki değişimin incelenmesi hedeflendiğinden bu desen tercih edilmiştir.

Çalışma Grubu

Araştırmanın çalışma grubu Kars'ta bir devlet okulunda öğrenim gören 20 altıncı sınıf öğrencisidir.

Veri Toplama Aracı

Veriler araştırmacılar tarafından geliştirilen "Tam Sayılar ve Mutlak Değer Başarı Testi" ve Şentürk (2010) tarafından geliştirilen "İlköğretim Öğrencilerine Yönelik Matematik Kaygı Ölçeği" ile toplanmıştır. Başarı testi ulusal sınavlarda çıkmış 20 adet çoktan seçmeli (dört seçenekli) sorudan oluşmaktadır. Kaygı ölçeği ise toplam 22 sorudan oluşmakta olup, her soru için beş seçenek sunulmaktadır.

Araştırma Süreci

Araştırmacılar tarafından Tam Sayılar ve Mutlak Değer konusu kazanımları incelenmiş ve belirlenen hedeflere ulaşmak için okul ders saati dikkate alınarak dersin işlenişi çalışma yapılacak gruba uygun olarak planlanmıştır. Uygulama sınıfında bir ders saati 40 dakika olmak üzere haftalık beş ders saati vardır. Uygulama çalışması Tam Sayılar ve Mutlak Değer konusunu kapsayacak şekilde toplamda dört hafta sürmüştür. Çalışma yapılacak konuda üç kazanım yer almaktadır. Bu çalışma için kazanımlara uygun olacak şekilde araştırmacılar tarafından sekiz adet dijital hikâye bir Web 2.0 aracı olan Animaker programı ile tasarlanmıştır. Dijital hikâyeler hazırlanırken uzman görüşünden yararlanılıp gerekli düzenlemeler yapılmıştır.

Veri toplama araçları uygulama öncesinde öğrencilere ön test olarak uygulanmıştır. Uygulama sürecinde öğrencilere dijital hikâye destekli öğretim verilmiştir. Hazırlanan dijital hikayeler konunun ilerlemesine ve öğrencilerin durumuna göre dersin dikkat çekme, motivasyon, derse geçiş, uygulama, ölçme ve değerlendirme bölümlerinde kullanılmıştır. Öğrencilerin hikâyeleri günlük hayatla

ilişkilendirmeleri ve konu ile bağlantı kurmaları sağlanmıştır. Uygulama sonrasında veri toplama araçları son test olarak uygulanmıştır.

Verilerin analizi

Veriler SPSS programı ile analiz edilmiştir. Analizlerde 0.05 anlamlılık düzeyi baz alınmıştır. Normallik testleri yapılarak verilerin normal dağıldığı tespit edilmiştir. Ön test ve son testler arasındaki fark için bağımlı örneklem t-testi kullanılmıştır.

BULGULAR

1. **Dijital hikâye destekli matematik öğretiminin Tam Sayılar ve Mutlak Değer konusunda altıncı sınıf öğrencilerinin akademik başarılarına etkisi bulguları**

Ön test ve son test başarı puanları incelendiğinde farkın anlamlı olduğu görülmüştür [$t(19)= -3,268$, $p<0.05$]. Öğrencilerin ön testte dair puan ortalamaları 7,40 ve son teste dair puan ortalamaları 10,65'tir.

2. **Dijital hikâye destekli matematik öğretiminin Tam Sayılar ve Mutlak Değer konusunda altıncı sınıf öğrencilerinin matematiğe yönelik kaygı düzeylerine etkisi bulguları**

Öğrencilerin ön test son test kaygı puanları incelendiğinde farkın istatistiksel olarak anlamlı olmadığı görülmüştür [$t(19)= 1,589$, $p>0.05$]. Bulunan bu istatistiksel sonuca göre Tam sayılar ve mutlak değer konusunun dijital hikâyelerle öğretilmesi öğrencilerin matematiğe yönelik kaygı düzeyleri üzerinde bir etki göstermemiştir.

TARTIŞMA VE SONUÇ

Teknolojik yaklaşımlar öğrencilerin başarılarını artırmakta ve MK'yı gidermeye de yardımcı olmaktadır. Bu çalışmada DHA'nın öğrencilerin akademik başarılarını artırmada etkili olduğu görülmüştür. Bu açıdan literatürle benzeşik sonuçlar elde edilmiştir (Çokyaman & Çelebi, 2021; Gömleksiz & Pullu, 2017; Hung, Hwang & Huang, 2012; Karataş, 2020; Korucu, 2020; Özerbaş & Öztürk, 2017; Pala, 2021; Ulum & Yalman, 2018; Büyükcengiz, 2017; Yang & Wu, 2012). Başaran (2019) araştırmasında DHA nın başarıyı etkilemediğini tespit etmiştir. Fakat geleneksel yöntemlerde öğrencilerin daha korku, panik ve yetersiz hissettiklerini de belirtmiştir. Benzer şekilde Çakıcı (2018) de başarı üzerinde bir etkisinin olmadığını fakat motivasyon ve tutumu olumlu etkilediğini söylemiştir. Araştırmanın sonucunda Dijital hikâye destekli eğitimin MK üzerinde bir etkisi olmadığı sonucuna ulaşılmıştır. Literatürde DHA'nın farklı kaygı türlerini gidermede etkili olduğu görülmektedir. Örneğin dinleme kaygısını (Rahimi & Soleimany, 2015) ve yazma kaygısını azaltmaktadır (Çapan, 2020).

Anahtar kelimeler: Dijital hikâye anlatımı, başarı, matematik kaygısı, tamsayılar ve mutlak değer

BEING A DOCTORAL STUDENT IN MEASUREMENT AND EVALUATION IN EDUCATION: A PHENOMENOLOGICAL STUDY FROM THE PERSPECTIVES OF DOCTORAL STUDENTS

Seda Demir[1]

ABSTRACT

The study aims to examine the views of doctorate students and graduate doctoral students who have received or are receiving doctoral education in the field of Measurement and Evaluation in Education. Phenomenological design, one of the qualitative research methods, was used in the study. The participants of the study consisted of 24 participants who had completed their doctoral education in the field of Measurement and Evaluation in Education (n=11) or were continuing their doctoral education (n=13) at three different state universities. The data were gathered during the fall semester of 2022-2023 academic year via a semi-structured interview form prepared by the researcher and consisting of five open-ended items. Content analysis was used for analysis of the data gathered. The results showed that students' views about the factors leading them to pursue an academic career were grouped under three themes "having interest in the field", "desire for academic achievement", and "career goals". Two themes, "guidance and mentorship" and "academic support" were identified for students' views on their learning relationships with their supervisors. It was seen that students' views about their academic experiences were grouped under three themes "research activities", "teaching experiences", and "academic development". In addition, students' views on the skills provided by their supervisors were grouped under the themes of "research skills", "higher-order thinking skills", and "pedagogical and teaching skills". Lastly, three themes, "technical competencies", "theoretical knowledge", and "practical skills" were identified for the participants' views on the requirements they needed during their doctoral education.

Keywords: Doctorate students; graduate doctoral students; measurement and evaluation in education doctorate program.

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EĞİTİMDE ÖLÇME VE DEĞERLENDİRME ALANINDA DOKTORA ÖĞRENCİSİ OLMAK: DOKTORA ÖĞRENCİLERİNİN PERSPEKTİFİNDEN FENOMENOLOJİK BİR ÇALIŞMA

ÖZET

Çalışmanın amacı, Eğitimde Ölçme ve Değerlendirme alanında doktora eğitimi almış ya da almakta olan doktora öğrencilerinin görüşlerini incelemektir. Çalışmada nitel araştırma yöntemlerinden fenomenolojik desen kullanılmıştır. Araştırmanın katılımcıları, üç farklı devlet üniversitesinde Eğitimde Ölçme ve Değerlendirme alanında doktora eğitimini tamamlamış (n=11) ya da doktora eğitimine devam eden (n=13) 24 katılımcıdan oluşmaktadır. Veriler, 2022-2023 akademik yılı güz döneminde araştırmacı tarafından hazırlanan ve beş açık uçlu maddeden oluşan yarı yapılandırılmış görüşme formu aracılığıyla toplanmıştır. Toplanan verilerin analizi için içerik analizi kullanılmıştır. Sonuçlar, öğrencilerin kendilerini akademik kariyer yapmaya yönlendiren faktörlere ilişkin görüşlerinin "alana ilgi duyma", "akademik başarı arzusu" ve "kariyer hedefleri" olmak üzere üç tema altında toplandığını göstermiştir. Öğrencilerin danışmanlarıyla aralarındaki öğrenme ilişkilerine yönelik görüşleri için "rehberlik ve danışmanlık" ve "akademik destek" olmak üzere iki tema belirlenmiştir. Öğrencilerin akademik deneyimlerine ilişkin görüşlerinin "araştırma faaliyetleri", "öğretim deneyimleri" ve "akademik gelişim" olmak üzere üç tema altında toplandığı görülmüştür. Bunanla birlikte, öğrencilerin danışmanları tarafından sağlanan becerilere ilişkin görüşleri "araştırma becerileri", "üst düzey düşünme becerileri" ve "pedagojik ve öğretim becerileri" temaları altında toplanmıştır. Son olarak, katılımcıların doktora eğitimi sırasında ihtiyaç duydukları gereksinimlere ilişkin görüşleri için "teknik yetkinlikler", "teorik bilgi", "pratik beceriler" olmak üzere üç tema belirlenmiştir.

Anahtar Kelimeler: Doktora öğrencileri; mezun doktora öğrencileri; eğitimde ölçme ve değerlendirme doktora programı.

1. INTRODUCTION

Graduate education is critical for the development of an academic career. Particularly at the doctoral level, this education does not only provide theoretical knowledge but also enables individuals to be trained as independent researchers. Different disciplines and subfields offer students the opportunity to gain in-depth knowledge and skills in line with their interests. Within this general framework, Measurement and Evaluation in Education is a particularly noteworthy field. Doctoral programs in this field focus not only on basic measurement and evaluation methodologies, but also on complex statistical analyses, pedagogical approaches, and educational policies to make educational systems more effective and efficient. It can be said that these programs aim to provide students with the skills necessary to translate theoretical knowledge into practice, which improves the quality of education.

When doctoral students embark on an emotionally and intellectually intense process during their academic studies, they encounter a wide range of positive and negative experiences. For some students, this process can be an inspiring experience, while for others, it can be a process full of difficulties such as personal sacrifices, fragmented life experiences, academic problems, lack of social support, and financial difficulties (Protivnak & Foss, 2009; Spaulding & Rockinson-Szapkiw, 2012). In some cases, doctoral students may not have sufficient and accurate information about the content and importance of

academic life. They may also have mixed ideas about the relative importance of teaching and research activities, and experience ambiguities in making sense of their personal values and the values of the academic world (Bieber & Worley, 2006). Furthermore, students dropping out or taking long periods of time to complete their program can have negative effects on the productivity and prestige of a program (Nettles & Millet, 2006). At this point, supervisor support has been emphasized as an essential factor that supports the process of earning a doctoral degree and doctoral satisfaction (Bair & Haworth, 2004; Barnes & Randall, 2012). In addition, the factors that are important for students to complete a doctoral program successfully can be listed as achievement motivation, academic integration, personal sacrifice, autonomy and choice, patience and perseverance, and the ability to overcome difficulties (Maher et al., 2004; Rockinson-Szapkiw et al., 2014). Moreover, Johnson and Johnson (1998) argue that students who work collaboratively generally show higher achievement than students who work alone, and Mullen (2005) argues that the interaction of doctoral students has positive effects such as building positive relationships, developing critical skills, and ultimately achieving academic success.

When the literature is examined, it is seen that the studies mostly deal with issues such as attrition in the doctoral process, leaving the doctorate (Lovitts, 2001; Stallone, 2004), the importance and problems of graduate education (Akbulut et al., 2013; Karadağ & Özdemir, 2017; Karakütük et al., 2010) and student views on graduate education (Bair & Haworth, 2004; Golde & Dore, 2001). McAlpine and Amundsen (2007) reported various difficulties in the integration of doctoral students into the program. Akbulut et al. (2013) emphasized that many doctoral students have difficulties in completing the thesis writing process even if they successfully complete the course period. In addition, according to Golde and Dore (2001), the efforts of universities in solving the problems encountered in the process are not comprehensive and sufficient by doctoral students. On the other hand, relatively fewer studies have been conducted on the experiences and opinions of doctoral students (Arastaman et al., 2020; Melián et al., 2023; Whitelock et al., 2008). In the study conducted by Arastaman et al. (2020), the experiences of doctoral students in the field of Educational Administration, the problems they faced, the methods of coping with these problems, and the motivating factors in the process were examined. Melián et al. (2023) conducted a systematic review summarizing the experiences of online doctoral students. Whitelock et al. (2008) stated that collaborative creativity processes are as important in the sociocultural context of doctoral advising as in other educational settings.

The current study is considered important in terms of providing important information to increase the effectiveness of doctoral programs in the field of Measurement and Evaluation in Education and to improve student-supervisor relationships. In addition, the results of the study may contribute to the development of strategies for more effective and comprehensive doctoral programs in the field of Measurement and Evaluation in Education. In this context, the current study aims to examine the views of doctorate and graduate doctoral students who have received or are receiving doctoral education in the field of Measurement and Evaluation in Education from a holistic perspective. In line with this purpose, the following questions were sought to be answered.

1. What are the factors leading doctoral students to pursue an academic career?
2. How are the learning relationships of doctoral students with their supervisors?
3. What kind of academic experiences do doctoral students have during doctoral education?
4. What sort of skills do supervisors provide for doctoral students?
5. What requirements do students need during doctoral education?

2. METHOD

The current study was carried out using the phenomenological design, one of the qualitative research methods. Phenomenological research focuses on examining the phenomena that individuals are aware of in daily life but do not have an in-depth understanding within the framework of the meanings they create (Creswell, 2016; Yıldırım & Şimşek, 2018). As the current study aimed to determine the views of doctoral students and graduate doctoral students who have received or are receiving doctoral education in the field of Measurement and Evaluation in Education towards doctoral education, phenomenological design was used.

2.1. Study Group

The study group consisted of 24 participants who had completed their doctoral education in the field of Measurement and Evaluation in Education (n=11) or were continuing their doctoral education (n=13) at three different state universities. 58.3% of the participants were females (n=14), 41.7% were males (n=10). 79.2 % of the participants worked in universities as academicians (n=19), 20.8% worked in schools as teachers (n=5). Three state universities that train the highest number of doctoral students in the field of Measurement and Evaluation in Education were selected. In addition, individuals who had completed their doctoral education were selected based on the criterion that a maximum of three years had passed since their graduation, and individuals who were continuing their doctoral education were selected based on the criterion that the course phase was completed and the thesis phase started.

2.2. Data Collection Tool

The data of the study were collected with the help of a semi-structured interview form prepared by the researcher and basically consisting of five open-ended items. In the development phase of the form, firstly, a conceptual framework was created by conducting a comprehensive literature review. Then, a draft interview form was created and submitted to three experts who were academicians in the field of Measurement and Evaluation in Education. Afterward, a preliminary test was conducted with two doctoral students using the draft interview form, which was revised in line with the opinions of the experts, and the semi-structured interview form, which was completed in an average of 30-35 minutes, was finalized. During the interviews, additional (probing) questions were asked in order to get as in-depth answers as possible.

2.3. Data Collection Process

The interviews were conducted online in a Zoom environment and recorded. The questions in the interview form focused on how the students decided to pursue doctoral education, the learning

relationship between them and their supervisors, the academic experiences they had during their doctoral education, the skills provided by their supervisors, and their views on the requirements they should have for the doctoral field. The data were gathered during the fall semester of 2022-2023 academic year.

2.4. Data Analysis

In the analysis of the research data, a four-stage content analysis was conducted on the responses of 24 participants to the questions, aiming to determine their views on the doctoral education they received/are receiving (Yıldırım & Şimşek, 2018). First, the data were carefully reviewed, codes were determined, and themes were created. Then, the findings were defined and interpreted with the help of codes and themes. The views of the participants were given as direct quotations. In direct quotations, codes were used instead of participants' names. The abbreviation PhD-G and person number (such as PhD-G1) were used for quotations from doctoral graduates, and the abbreviation PhD-S and person number (such as PhD-S1) were used for quotations from participants continuing their doctoral education.

2.5. Validity and Reliability

For the reliability of the study, the transcripts obtained from the interview recordings in the Zoom environment were first transcribed by the researcher and then listened to again by an expert in the field of Measurement and Evaluation in Education, and the missing or omitted statements were corrected. After the researcher completed the process of coding and naming the themes, two experts, who were academicians in the Department of Education Sciences, were consulted about the codes and themes. In line with the expert opinions, one theme was changed and the codes under it were expressed in a more inclusive way. For the internal validity of the study, triangulation was performed by interviewing students who have completed their doctoral education as well as students who are continuing their doctoral education. Confirming the findings obtained from the participants (member checking) is another study conducted to increase internal validity. In addition, the fact that the findings are compatible with the literature can be considered evidence of external validity (comparability and convertibility).

3. FINDINGS

The findings related to the five sub-problems being investigated in line with the aim of the current study are presented below.

3.1. Findings Related to the Views of Students on the Experiences Leading Them to Academic Career

The first sub-problem of the study aimed to find out the views of students on the experiences leading them to academic career. It was seen that students' views were grouped into three themes: "having interest in the field", "desire for academic achievement" and "career goals". The obtained themes, codes, and frequencies are given in Table 1.

Table 1. Students' Views on Academic Career

Themes	Codes	*f*
Having interest in the field	Desire for self-improvement	12
	Having employment opportunities compared to other departments	10
	Increasing awareness for the field	9
	Sense of belonging	8
	Having intrinsic motivation	7
	Desire for developing academic skills	5
	Making academic plans	3
	Building relationships with professionals	2
Desire for academic achievement	Wish to feel successful	14
	Receiving collaboration requests from other departments	11
	Obtaining financial support for academic projects	8
	Contribution to academic seminars	6
	Getting awards for academic excellence	3
Career Goals	Having professional aspirations	8
	Having desire to contribute to academic progress	4

As observed in Table 1, some views were grouped under the theme of "having interest in the field". The most frequently mentioned codes were; "desire for self-improvement" (f=12), "having employment opportunities compared to other departments" (f=10), "increasing awareness for the field" (f=9), "sense of belonging" (f=8) and "having intrinsic motivation" (f=7). The students expressed their views about academic achievement under the theme of "desire for academic achievement" including codes such as "wish to feel successful" (f=14) and "receiving collaboration requests from other departments" (f=11). Moreover, the students stated their views under the theme of "career goals" including codes such as "having professional aspirations" (f=8) and "having desire to contribute to academic progress". (f=4)

Direct quotations from the participants regarding these themes and codes are presented below.

".... Ever since I started PhD, I felt a personal need to better myself, not just academically but holistically..." (PhD-G6)

"With the recent advancements, there has been a growing interest in this field. I wanted to be part of doctoral education..." (PhD-G9)

"…It is important for me to know that I'm making progress. Every paper published and every acknowledgment create my sense of achievement…"(PhD-S7)

"I can say that once I graduate, I aim to work in university where I can apply my academic knowledge in the measurement and evaluation field..." (PhD-S2)

3.2. Findings Related to the Views of Students on the Learning Relationship with Their Supervisors

The second sub-problem of the study aimed to find out the views of students on the learning relationship with their supervisors. It was seen that students' views were grouped into two themes: "guidance and mentorship" and "academic support". The obtained themes, codes, and frequencies are given in Table 2.

Table 2. Students' Views on Their Supervisors

Themes	Codes	f
Guidance and mentorship	Gaining different perspectives	12
	Learning responsibility	10
	Getting effective feedback	9
	Feeling a sense of autonomy.	5
	Valuing opinions	5
Academic support	Supporting academic development	14
	Providing teacher-student coordination	11
	Providing career guidance	7
	Research collaboration	3

According to Table 2, it was seen that some views were grouped under the theme of "guidance and mentorship". The most frequently mentioned codes were; "gaining different perspectives" (f=12), "learning responsibility" (f=10), and "getting effective feedback" (f=9). Besides, the students expressed their views under the theme of "academic support" including codes such as "supporting academic development" (f=14); "providing teacher-student coordination" (f=11), and "providing career guidance" (f=7).

The following quotations are associated with the themes and codes mentioned above.

"My supervisor is really great at showing me different angles to consider, especially in my research, which enriches my understanding of the subject..." (PhD-G1)

"...the feedback I receive is constructive and actionable. It helped me improve my work significantly..." (PhD-G8)

" ...my supervisor encourages me to take the lead on my projects and academic studies, which creates a sense of autonomy..." (PhD-S8)

"To me, my supervisor supports my academic growth. Her supports are highly beneficial and help me improve my work significantly." (PhD-S13)

3.3. Findings Related to the Views of Students on Academic Experiences during Doctoral Education

The third sub-problem of the study aimed to find out the views of students on academic experiences during doctoral education. It was seen that students' views were grouped into three themes:

"research activities", "teaching experiences," and "academic development". The obtained themes, codes, and frequencies are given in Table 3.

Table 3. Students' Views on Their Academic Experiences

Themes	Codes	f
Research activities	Having papers published in journals	16
	Participating in academic conferences	14
	Training in research ethics	8
	Working with fellow PhD candidates	7
Teaching experiences	Development of teaching skills	11
	Acquiring a critical viewpoint	8
	Development of pedagogical approaches	6
	Attending workshops	3
Academic development	Developing the ability to conduct independent research	18
	Having interdisciplinary collaborations	13
	Involvement in academic student groups	10
	Following innovations in the field	9
	Taking advanced courses in the field of study	7
	Learning strategies to overcome academic challenges	2

According to Table 3, it was seen that some views were grouped under the theme of "research activities". The most frequently mentioned codes were; "having papers published in journals" (f=16); "participating in academic conferences" (f=14), and "training in research ethics" (f=8). The students expressed their views under the theme of "teaching experiences" including codes such as "development of teaching skills" (f=11) and "acquiring a critical viewpoint" (f=8). Besides, the students expressed their views under the theme of "academic development" including codes such as "developing the ability to conduct independent research" (f=18), "having interdisciplinary collaborations" (f=13); "involvement in academic student groups" (f=10) and "following innovations in the field" (f=9).

The views of the participants are conveyed through the following remarks.

"...getting my research published has been a highlight of my PhD journey. It is both validating and incredibly motivating..." (PhD-G5)

"Collaborating with my peers has not only enriched my projects but also built a supportive community that I can rely on..." (PhD-G10)

"I have learned a lot about effective teaching methods during my education, which made me think about academia not just as a student but as a future educator." (PhD-S3)

"The advanced courses offered in doctoral education are rigorous but enlightening. The courses help me fill gaps in my knowledge and strengthen my expertise..." (PhD-S6)

3.4. Findings Related to the Views of Students on the Skills Provided by Their Supervisors during Doctoral Education

The fourth sub-problem of the study aimed to find out the views of students on the skills provided by their supervisors during doctoral education. It was seen that students' views were grouped into three themes: "research skills", "higher-order thinking skills, and "pedagogical and teaching skills". The obtained themes, codes, and frequencies are given in Table 4.

Table 4. Students' Views on Skills They Acquire

Themes	Codes	f
Research skills	Research designs	19
	Research methodologies	17
	Literature review	17
	Data analysis	13
	Academic writing	8
	Project management	5
Higher-order thinking skills	Critical thinking	14
	Analyzing	11
	Interpretation	9
	Problem-solving	7
	Critical evaluation	4
	Creativity	2
Pedagogical and teaching skills	Student assessment	18
	Finishing the work started	18
	Classroom management	11
	Being patient	9

According to Table 4, it was seen that the participants' views were grouped under the theme of "research skills". The most frequently mentioned codes were; "research designs" (f=19); "research methodologies" (f=17); "literature review" (f=17), and "data analysis" (f=13). The students expressed their views under the theme of "higher-order thinking skills" including codes such as "critical thinking" (f=14); "analyzing" (f=11); "interpretation" (f=9), and "problem solving" (f=7). Lastly, the students stated their views under the theme of "pedagogical and teaching skills," including codes such as "student assessment" (f=18) and "finishing the work started" (f=18).

Direct quotations from the participants pertaining to these themes and codes are presented below.

"...In the courses, we often discuss the pros and cons of different research methods, which helps me tailor my approach for maximum impact..." (PhD-G3)

"...Data analysis techniques have been a steep learning curve, but essential. My supervisor has been very supportive in this area." (PhD-G11)

"...my supervisor stresses the importance of not just collecting data, but also interpreting it correctly." (PhD-S4)

"Learning how to assess student performance fairly and effectively has been an enlightening experience during my education." (PhD-S9)

3.5. Findings Related to the Views of Students on the Requirements during Doctoral Education

The fifth sub-problem of the study aimed to find out the views of students on the requirements during doctoral education. It was seen that students' views were grouped into three themes: "technical competencies", "theoretical knowledge", and "practical skills". The obtained themes, codes, and frequencies are presented in Table 5.

Table 5. Students' Views on the Requirements during Education

Themes	Codes	f
Technical competencies	Statistical analysis	20
	Technology use	19
	Data interpretation	15
	Instrument design	9
Theoretical knowledge	Statistical knowledge	21
	Foundations of measurement	13
	Evaluation theories	7
	Test development	5
	Data analysis	19
	Foreign language proficiency	15
Practical skills	Data collection	12
	Reporting	8
	Time management	7
	Data integrity	3

According to Table 5, it was seen that some views were grouped under the theme of "technical competencies". The most frequently mentioned codes were; "statistical analysis" (f=20) and "technology use" (f=19). Besides, the students expressed their views under the theme of "theoretical knowledge" including codes such as "statistical knowledge" (f=21) and "foundations of measurement" (f=13). Lastly, the students expressed their views under the theme of "practical skills" including codes such as "data analysis" (f=19), "foreign language proficiency" (f=15), and "data collection" (f=12).

The following quotations are about the themes and codes mentioned above.

"I think the most valuable skill I need to gain in this field is statistical analysis. It allows me to look at raw data and make informed decisions..." (PhD-G2)

"...being able to interpret data accurately is just as important as collecting it. This skill has been invaluable for my research..." (PhD-G7)

"...understanding data analysis methods theoretically is crucial for the needs of my own research..." (PhD-S5)

"The field taught me not just how to collect data but also how to report it in a meaningful way." (PhD-S10)

4. DISCUSSION AND CONCLUSION

In the current study, the views of students and graduates of the Doctoral Program in the field of Measurement and Evaluation in Education were examined on how they decided to pursue doctoral education, the learning relationship between them and their supervisors, academic experiences they had during their doctoral education, the skills provided by their supervisors, and the requirements they need for doctoral education. The general findings of the study indicate that the orientation to the Doctoral Program in the field of Measurement and Evaluation in Education, which is stated to be a challenging process, is influenced by factors such as interest in the field, academic career, and development goals.

Within the scope of the first sub-problem of the study, participant views on the factors that led students to pursue an academic career were analyzed, and three themes were formed for the codes determined. Under the theme of having interest in the field, desire for self-improvement, having employment opportunities compared to other departments, increasing awareness for the field, sense of belonging, having intrinsic motivation, desire for developing academic skills, making academic plans, and building relationships with professionals were emphasized. In addition, under the theme of desire for academic achievement, wish to feel successful, receiving collaboration requests from other departments, obtaining financial support for academic projects, contribution to academic seminars, and getting awards for academic excellence were emphasized. Under the theme of career goals, having professional aspirations and having desire to contribute to academic progress were emphasized. Supporting the codes and themes obtained for the first sub-problem of the current study, Teowkul et al. (2009) stated that students consider having a doctoral degree as the highest achievement in academic life and that they think they can increase their prestige when they get this degree. Therefore, it can be said that this idea is among the factors that lead students to pursue doctoral education.

In line with the second sub-problem of the study, the participants' views on the learning relationship between student and supervisor were examined, and two themes were created for the codes identified. Under the theme of guidance and mentorship, there are codes including gaining different perspectives, learning responsibility, getting effective feedback, feeling a sense of autonomy, and valuing opinions. Under the academic support theme, there are codes including supporting academic development, providing teacher-student coordination, providing career guidance, and research collaboration. According to the data obtained from the study, it can be said that the learning relationship between the student and the supervisor is very effective on the students' ability to complete the process successfully. Similarly, in a study conducted by Stallone (2004), it was stated that factors related to the learning culture and environment of the institution rather than the factors arising from the student were

seen as a challenge to the successful completion of the doctoral process. According to Nerad and Cerny (1993), the support provided by the department and the facilities provided by the program are effective factors in ensuring that doctoral students graduate from the program on time. In addition, De Valero (2001) reported that orientation, advising, and using of research skills correctly are highly effective in the completion of doctoral education. In addition, studies generally emphasize that doctoral students who are deprived of supervisor support during the thesis phase have difficulties in completing their doctoral program (Bair & Haworth, 2004; Kluever & Green, 1998; Lovitts, 2001). In addition, according to Bowen and Rudenstine (1992), miscommunication with the supervisor and difficulties in choosing a research topic are among the most important problems experienced by doctoral students. In this regard, Fries (2005) emphasizes that it is important to provide regular and planned supervisor support to students with low motivation, especially during the thesis writing phase.

In the context of the third sub-problem of the study, students' views on their academic experiences during doctoral education were examined, and three themes were formed for the codes determined. Under the theme of research activities, there are codes including having papers published in journals, participating in academic conferences, training in research ethics, and working with fellow PhD candidates. Under the theme of teaching experiences, there are codes including development of teaching skills, acquiring a critical viewpoint, development of pedagogical approaches, and attending workshops. Under the theme of academic development, there are codes including developing the ability to conduct independent research, having interdisciplinary collaborations, involvement in academic student groups, following innovations in the field, taking advanced courses in the field of study, learning strategies to overcome academic challenges were emphasized. Academic development, and more specifically developing the ability to conduct independent research, can be considered as a natural goal of graduate education. According to a study conducted by Golde and Doré (2001), 35% of graduate students believe that the graduate courses they take provide a good foundation for the ability to conduct independent research.

Within the scope of the fourth sub-problem of the study, students' views on the skills provided by their supervisors during doctoral education were examined, and three themes were created for the codes determined. Under the research skills theme, there are codes including research designs, research methodologies, literature review, data analysis, academic writing, and project management. In the study conducted by Akbulut et al. (2013), it was found that students had difficulties in accessing resources and determining a thesis topic. The reason for this situation was explained as inadequacy in conducting a comprehensive literature review and, accordingly, not having sufficient knowledge of the literature. Under the theme of higher-order thinking skills, there are codes including critical thinking, analyzing, interpretation, problem-solving, critical evaluation, and creativity. In this regard, Cotterall (2013) stated that the doctoral process has an important contribution to the development of skills related to researcher roles, such as defining research questions, solving methodological problems, and collecting and analyzing data. Under the pedagogical and teaching skills theme, student assessment, there are codes

including finishing the work started, classroom management, and being patient codes were identified. Morrison (2014) states that resistance is significant in coping with the doctoral process. It can be said that this finding overlaps with the codes of finishing the work started and being patient obtained in the current study.

In line with the fifth sub-problem of the study, the participant views on the requirements of the students needed during the doctoral education process were analyzed, and three themes were formed for the codes determined. Under the theme of technical competencies, there are codes including statistical analysis, technology use, data interpretation, and instrument design. In addition, under the theoretical knowledge theme, there are codes including statistical knowledge, foundations of measurement, evaluation theories, and test development. Under the practical skills theme, there are codes including data analysis, foreign language proficiency, data collection, reporting, time management, and data integrity. Similarly, according to Özmen and Güç (2013), competence in foreign language is one of the requirements that doctoral students need most in the process of conducting scientific research. In addition, Haynes et al. (2012) stated that balancing school, work, and family life can be challenging for doctoral students. However, achieving this balance with good time management is critically important both in terms of maintaining the life balance of the individual and successfully completing the doctoral process. According to Malmberg (2000), an individual's ability to balance his/her responsibilities, and according to Spaulding and Rockinson-Szapkiw (2012), an individual's ability to achieve work-family balance are important factors in the completion of a doctoral program, which is a challenging process.

In line with the results obtained from the research, it can be suggested that seminars that can facilitate the adaptation, development, and progress of doctoral students should be given in departments with doctoral programs. At the end of the process, in order for the doctoral thesis to be completed successfully, it may be suggested that the learning relationship between the student and the supervisor should be as high as possible, and for this purpose, students' choices should be prioritized in determining the supervisors. At the stage of determining the thesis topic, in order for the student to work more willingly and patiently in the process, it can be suggested that the student should first focus on current issues and then determine the topic to be studied. In addition, improvements in process and time management can be achieved through close targets and feedback to be set for certain time intervals. In addition to these, for the successful completion of the doctoral program and for a successful academic life that can continue afterward, students may be advised to work on developing the essential competencies, knowledge, and skills required by the field of Measurement and Evaluation in Education at the beginning of the process, perhaps even before starting the process.

The findings of the current study are limited to doctorate students and graduate doctoral students in the field of Measurement and Evaluation in Education. Therefore the study was applied in limited sample and field. In this regard, further research should be conducted using different fields and samples to increase the generalizability of the results of this study.

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EĞİTİMDE ÖLÇME VE DEĞERLENDİRME ALANINDA DOKTORA ÖĞRENCİSİ OLMAK: DOKTORA ÖĞRENCİLERİNİN PERSPEKTİFİNDEN FENOMENOLOJİK BİR ÇALIŞMA

GİRİŞ

Akademik kariyerin gelişiminde oldukça kritik bir öneme sahip olan lisansüstü eğitim, özellikle doktora seviyesinde, yalnızca teorik bilgi sunmaktan öte, bireylerin bağımsız araştırmacılar olarak yetiştirilmesine olanak sağlamaktadır. Bu çerçevede, Eğitimde Ölçme ve Değerlendirme özellikle dikkate değer bir alandır.

Alanyazın incelendiğinde, yapılan çalışmalarda daha çok doktora sürecinde yıpranma, doktoradan ayrılma (Lovitts, 2001; Stallone, 2004), lisansüstü eğitimin önemi, sorunları (Akbulut ve diğerleri, 2013; Karadağ ve Özdemir, 2017; Karakütük ve diğerleri, 2010) ve lisansüstü eğitime yönelik öğrenci görüşleri (Bair ve Haworth, 2004; Golde ve Dore, 2001) gibi konuların ele alındığı görülmektedir. Buna karşılık doktora düzeyinde eğitim alan öğrencilerin deneyimleri ve görüşleri hakkında nispeten daha az sayıda çalışma yapılmıştır (Arastaman ve diğerleri, 2020; Melián ve diğerleri, 2023; Whitelock ve diğerleri, 2008). Arastaman ve diğerleri (2020) tarafından yapılan araştırmada eğitim yönetimi alanında doktora eğitimi alan öğrencilerin deneyimleri, karşılaştıkları problemler, bu problemlerle baş etme yöntemleri ve süreçteki motive edici faktörler incelenmiştir. Melián ve diğerleri (2023) ise çevrimiçi doktora öğrencilerinin deneyimlerini özetleyen sistematik bir inceleme gerçekleştirmiştir.

Mevcut araştırmanın Eğitimde Ölçme ve Değerlendirme alanında yürütülen doktora programlarının etkinliğini artırmaya ve öğrenci-danışman ilişkilerini iyileştirmeye yönelik bilgiler sunması bakımından önemli olduğu düşünülmektedir. Bu bağlamda mevcut araştırmada, Eğitimde Ölçme ve Değerlendirme alanında doktora eğitimi almış ya da almakta olan bireylerin sürece ilişkin görüşlerinin bütüncül bir bakış açısıyla incelenmesi amaçlanmıştır. Bu amaç doğrultusunda aşağıdaki sorulara yanıt aranmıştır.

1. Doktora öğrencilerini akademik kariyer yapmaya yönlendiren faktörler nelerdir?

2. Doktora öğrencilerinin danışmanları ile öğrenme ilişkileri nasıldır?

3. Doktora öğrencileri doktora eğitimi sırasında ne tür akademik deneyimler yaşamaktadır?

4. Danışmanlar doktora öğrencilerine ne tür beceriler kazandırmaktadır?

5. Doktora eğitimi sırasında öğrenciler ne gibi gereksinimlere ihtiyaç duymaktadır?

YÖNTEM

Eğitimde Ölçme ve Değerlendirme alanında doktora eğitimi almış veya almakta olan bireylerin doktora eğitimine yönelik görüşlerini belirlemeyi amaçlayan nitel araştırma türündeki bu çalışmada fenomenoloji deseni kullanılmıştır. Çalışma grubunu, üç farklı devlet üniversitesinde Eğitimde Ölçme

ve Değerlendirme alanında doktora eğitimini tamamlamış (11 birey) veya doktora eğitimine devam etmekte olan (13 birey) bireyler arasından tamamen gönüllülük esasına göre seçilen toplam 24 birey oluşturmaktadır. Araştırmanın verileri, araştırmacı tarafından hazırlanan ve temelde beş açık uçlu maddeden oluşan yarı yapılandırılmış görüşme formu yardımıyla toplanmıştır. Görüşmeler Zoom ortamında online olarak gerçekleştirilmiş ve kayıt altına alınmıştır. Veriler 2022-2023 eğitim-öğretim yılı güz döneminde toplanmıştır. Araştırma verilerinin analizinde, 24 katılımcının aldıkları/almakta oldukları doktora eğitimine ilişkin görüşlerini belirlemeye yönelik sorulara verdikleri yanıtlar üzerinden dört aşamalı içerik analizi gerçekleştirilmiştir (Yıldırım ve Şimşek, 2018).

Çalışmanın güvenirliği için Zoom ortamındaki görüşme kayıtlarından elde edilen transkriptler öncelikle araştırmacı tarafından yazıya dökülmüş ve sonrasında Eğitimde Ölçme ve Değerlendirme alanındaki başka bir uzman tarafından tekrar dinlenerek, eksik veya atlanan ifadeler düzeltilmiştir. Araştırmacı tarafından kodlama ve temaların isimlendirilmesi süreci tamamladıktan sonra, Eğitim Bilimleri bölümünde akademisyen olan iki uzmandan kodlar ve temalara yönelik görüş alınmıştır. Alınan uzman görüşleri doğrultusunda, bir tema değiştirilmiş ve altındaki kodları daha kapsayıcı olacak şekilde ifade edilmiştir. Çalışmanın iç geçerliği için, doktora eğitimini tamamlamış bireylerin yanı sıra doktora eğitimine devam etmekte olan bireylerle de görüşülerek veri kaynağı çeşitlemesi (triangulation) yapılmıştır. Elde edilen bulguların katılımcılarla teyit edilmesi (üye kontrolü-member checking) de iç geçerliği artırmaya yönelik yapılmış başka bir çalışmadır. Ayrıca bulguların literatürle uyumlu olması, bir dış geçerlik (karşılaştırılabilirlik ve dönüştürülebilirlik) kanıtı olarak düşünülebilir.

BULGULAR

Araştırmanın birinci alt problemi kapsamında öğrencilerin kendilerini akademik kariyer yapmaya yönlendiren deneyimlere ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Öğrencilerin görüşlerinin "alana ilgi duyma", "akademik başarı isteği" ve "kariyer hedefleri" olmak üzere üç tema altında toplandığı görülmüştür. Araştırmanın ikinci alt problemi kapsamında öğrencilerin danışmanlarıyla olan öğrenme ilişkisine dair görüşlerinin belirlenmesi amaçlanmıştır. Öğrencilerin görüşlerinin "rehberlik ve mentorluk" ve "akademik destek" olmak üzere iki tema altında toplandığı görülmüştür. Araştırmanın üçüncü alt problemi kapsamında, öğrencilerin doktora eğitimi sırasındaki akademik deneyimlerine ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Öğrencilerin görüşlerinin "araştırma faaliyetleri", "öğretim deneyimleri" ve "akademik gelişim" olmak üzere üç tema altında toplandığı görülmüştür. Araştırmanın dördüncü alt problemi kapsamında, öğrencilerin doktora eğitimi sırasında danışmanlarının kazandırdığı becerilere ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Öğrencilerin görüşlerinin "araştırma becerileri", "üst düzey düşünme becerileri" ve "pedagojik ve öğretim becerileri" olmak üzere üç tema altında toplandığı görülmüştür. Araştırmanın beşinci alt problemi kapsamında öğrencilerin doktora eğitimi sırasındaki gereksinimlere ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Öğrenci görüşlerinin "teknik yeterlilikler", "teorik bilgi" ve "uygulama becerileri" olmak üzere üç tema altında toplandığı görülmüştür.

TARTIŞMA VE SONUÇ

Araştırmanın ilk alt problemi olan öğrencileri akademik kariyer yapmaya yönlendiren faktörlere ilişkin katılımcı görüşlerini destekleyen Teowkul ve diğerleri (2009) tarafından yapılan çalışmada, öğrencilerin doktora derecesine sahip olmayı akademik yaşamdaki en üst başarı olarak gördükleri ve bu dereceyi aldıklarında saygınlıklarını artırabileceklerini düşündükleri ifade edilmiştir. Dolayısıyla bu düşüncenin öğrencileri doktora eğitimi almaya yönlendiren faktörler arasında bulunduğu söylenebilir.

Araştırmanın ikinci alt problemi doğrultusunda katılımcıların öğrenci-danışman arasındaki öğrenme ilişkisine yönelik görüşleri incelenmiştir. Buna göre öğrenci-danışman arasındaki öğrenme ilişkisinin öğrencilerin süreci başarıyla tamamlayabilmeleri üzerinde oldukça etkili olduğu söylenebilir. Bu kapsamda yapılan çalışmalarda tez aşamasında danışman desteğinden yoksun kalan doktora öğrencilerinin doktora programını tamamlama konusunda zorlandıkları vurgulanmaktadır (Bair ve Haworth, 2004; Kluever ve Green, 1998; Lovitts, 2001). Ayrıca Bowen ve Rudenstine'ye (1992) göre danışmanla iletişimsizlik ve araştırma konusu seçiminde zorluklar doktora öğrencilerinin süreçte yaşadıkları en önemli sorunlardandır.

Araştırmanın üçüncü alt probleminde öğrencilerin doktora eğitimi sırasındaki akademik deneyimlerine ilişkin görüşleri incelenştir. Bu bağlamda akademik gelişim ve daha özelde bağımsız araştırma yapma becerisinin geliştirilmesinin, lisansüstü eğitimin doğal bir hedefi olarak görülebileceği düşünülmektedir.

Araştırmanın dördüncü alt problemi kapsamında öğrencilerin doktora eğitimi sırasında danışmanları tarafından sağlanan becerilere ilişkin görüşleri incelenmiştir. Elde edilen sonuçlar bağlamında Cotterall (2013) doktora sürecinin; araştırma sorularını tanımlama, metodolojik sorunları çözme, veri toplama ve analiz etme gibi araştırmacı rollerine ilişkin becerilerin geliştirilmesinde önemli bir katkısı olduğunu belirtmiştir.

Araştırmanın beşinci alt problemi doğrultusunda öğrencilerin doktora eğitimi sürecinde ihtiyaç duydukları gereksinimlere ilişkin katılımcı görüşleri incelenmiştir. Elde edilen sonuçlar bağlamında Özmen ve Güç'e (2013) göre yabancı dil konusundaki yetkinlik, bilimsel araştırma yapma sürecinde doktora öğrencilerinin en çok ihtiyaç duyduğu gereksinimlerden biridir.

Araştırmadan elde edilen sonuçlar doğrultusunda, doktora programı bulunan bölümlerde doktora öğrencilerinin uyumu, gelişimi ve süreçteki ilerleyişini kolaylaştırabilecek seminerlerin verilmesi önerilebilir. Sürecin sonunda doktora tezinin başarılı bir şekilde tamamlanabilmesi için öğrenci-danışman arasındaki öğrenme ilişkisinin olabildiğince yüksek olması, bunun için de danışmanların belirlenmesinde öğrencilerin seçimlerine öncelik verilmesi önerilebilir.
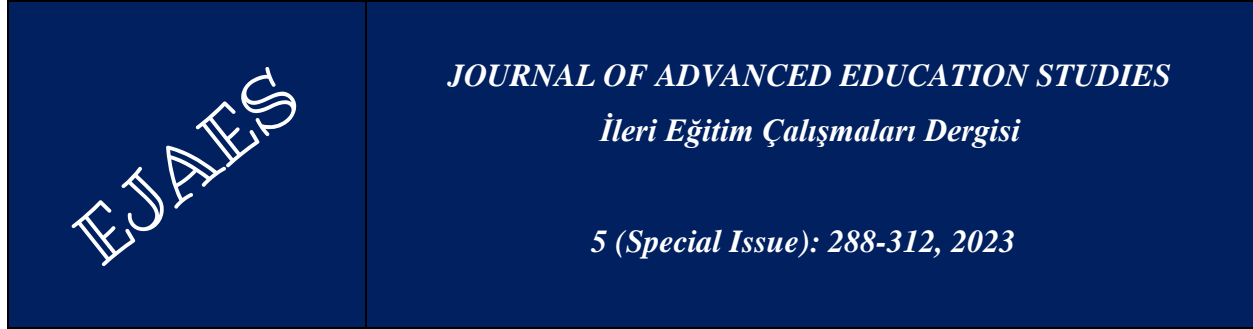
EJAES

PERFORMANCE OF FACTOR RETENTION METHODS IN SKEWED DISTRIBUTIONS

Gül GÜLER[1]

Abdullah Faruk KILIÇ[2]

ABSTRACT

This research aims to evaluate the performance of dimensionality determination methods under various simulation conditions. Therefore, dimensionality determination methods were compared, including optimal parallel analysis, MAP, HULL, EGA (TMFG) estimation, EGA (glasso) estimation, and comparison data forest method. The type of distribution, sample size, number of items per factor, number of categories, and measurement model were specified as simulation conditions in the study. For each condition, 100 replications were conducted. A fully crossed simulation design was employed in the study. The results of this study, which examined the performance of factor determination methods under skewed distributions, indicated that the HULL method had the highest average considering the average accuracy values of all conditions. Meanwhile, the HULL method had the lowest Relative bias average. However, no method demonstrated adequate performance under all conditions. This study examined one-factor and two-factor structures with interfactor correlations of 0.00 and 0.30. Considering structures with more than two factors in education and psychology, future research could focus on working with data exhibiting skewed distributions involving more factors and items to compare the performance of methods.

Keywords: Factor retention; MAP; HULL; comparison factor forest; EGA

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ÇARPIK DAĞILIMLARDA FAKTÖR SAYISI BELİRLEME YÖNTEMLERİNİN PERFORMANSLARININ İNCELENMESİ

ÖZET

Bu araştırmanın amacı faktör sayısı belirleme yöntemlerinin çeşitli simülasyon koşulları altında performanslarını değerlendirmektir. Bu amaç doğrultusunda boyutluluk belirleme yöntemlerinden optimal paralel analiz, MAP, HULL, EGA (TMFG) kestirimi, EGA (Glasso) kestirimi ve comparison data forest yöntemi karşılaştırılmıştır. Çalışmada simülasyon koşulları olarak dağılımın türü, örneklem büyüklüğü, faktör başına düşen madde sayısı, kategori sayısı ve ölçme modeli belirlenmiştir. Çalışmada her bir koşul için 100 replikasyon yapılmıştır. Çalışmada tamamen çaprazlanmış simülasyon deseni kullanılmıştır. Çarpık dağılımlarda faktör sayısı belirleme yöntemlerinin performanslarının incelendiği bu çalışma sonucunda tüm koşulların doğruluk değerlerinin ortalaması dikkate alındığında en yüksek ortalamaya HULL yönteminin sahip olduğu görülmüştür. Aynı zamanda en düşük göreli yanlılık ortalaması da HULL yöntemindedir. Ancak tüm koşullarda yeterli performansı gösteren bir yöntemin olmadığı söylenebilir. Diğer bir deyişle her koşulda doğru sonucu verecek bir yöntem bulunmamaktadır. Bu çalışmada tek faktörlü, faktörler arası korelasyonu 0.00 ve 0.30 olan iki faktörlü yapılar incelenmiştir. Eğitimde ve psikolojide ikiden fazla faktör sayısına sahip yapılar göz önünde bulundurulduğunda gelecekteki araştırmalarda çarpık dağılım gösteren verilerde daha fazla faktör ve madde sayısıyla çalışılarak yöntemlerin performansları karşılaştırılabilir.

Anahtar Kelimeler: Faktör sayısı belirleme; MAP; HULL; karşılaştırmalı faktör forest; EGA

1. INTRODUCTION

Latent traits attributed to individuals in education and psychology are considered constructs. Since these constructs cannot be directly observed, individuals' performance regarding the measured trait can be determined based on their responses to a measurement tool designed to assess the construct of interest. However, the validity of these performances should also be examined. Researchers often use Exploratory Factor Analysis (EFA) to examine the construct validity of measures (Cosemans et al., 2022; Finch, 2020; Haslbeck & Bork, 2022; Henson & Roberts, 2006; Svetina, 2011).

Deciding on the number of factors is one of the most essential steps in EFA (Cosemans et al., 2022; Finch, 2020; Reio & Shuck, 2015; Svetina, 2011; Zhang, 2007). In EFA, both overfactoring and underfactoring are problematic. When underfactoring occurs, variables are compressed into a smaller factor space, leading to loss of information, neglect of essential factors, and increased error loads (Cosemans et al., 2022). Overfactoring, on the other hand, can lead to the division of factors that are together or result in unimportant factors (Cosemans et al., 2022; Finch, 2020; Lee et al., 2023). Therefore, the criteria used in determining the number of dimensions become crucial.

In many studies that employ EFA, standard options in statistical software are more commonly preferred when determining the number of dimensions (e.g., Finch, 2020; Henson & Roberts, 2006; Montoya & Edwards, 2021; Schmitt & Sass, 2011). Goretzko et al. (2019) reported in their literature review

that 55% of the studies they reviewed employed the Kaiser criterion (K1 rule), and 46% of them employed Cattell's Scree test (Cattell, 1966). However, using these methods alone to determine the number of dimensions has been criticized. For instance, in Cattell's Scree test method, eigenvalues are arranged from highest to lowest and connected by a line. However, this method is also criticized for being subjective (Ledasma & Mora, 2007). Considering the literature in Turkey, one could state that only Cattell's Scree test and the Kaiser criterion are still used to decide on the number of dimensions in scale development studies (Koyuncu & Kılıç, 2019). Making decisions solely based on methods like the scree plot, where researchers' subjective judgments play a role in determining the number of dimensions, may not yield accurate results (Ledasma & Mora, 2007).

Deciding on the dimensionality of a measurement instrument based on more than one method can also be problematic (Ledesma et al., 2015; Lee, 2023). Each method has strengths and weaknesses. Therefore, it becomes crucial to examine which method yields better results under what conditions of the data. In this case, the question of which methods to examine may arise. The Parallel Analysis (PA) method Horn (1965) suggested is widespread considering the factor retention methods. However, in addition to this method, there are also other methods such as Minimum Average Partial Correlation (MAP), HULL (Lorenzo-Seva et al., 2011), or, more recently, the Exploratory Graph Analysis (EGA) method, which has been used more frequently. With the widespread application of machine learning methods in various fields, some researchers have suggested using machine learning techniques as dimensionality determination methods (Goretzko & Ruscio, 2023).

When reviewing the literature on dimensionality determination methods, one may come across many studies working with categorical data (Goretzko & Bühner, 2020; Li et al., 2020; Svetina, 2011; Yang & Xia, 2015). Accordingly, the focus appears to be on studying the performance of dimensionality determination methods, specifically in dichotomous data. Some studies also compare various methods under different conditions in continuous data (Auerswald & Moshagen, 2019; Green et al., 2016). In this study, unlike other studies, we worked both on skewed data alone and manipulated the data to have 3 and 5 categories. Furthermore, the methods under investigation in terms of their performance may also differ from the literature. The dimensionality determination performance of EGA, which has been frequently used in recent years, is compared with the machine learning-based Comparison Data Forest method (Goretzko & Ruscio, 2023). The study investigated whether the machine learning method could solve skewed distributions. Therefore, this study may contribute to the literature in four aspects: i) examining which method performs better in skewed distributions, ii) examining the performance of machine learning methods in dimensionality determination, iii) examining whether machine learning methods can offer a solution for skewed distributions, and iv) examining the performance of the commonly preferred EGA in skewed and categorical datasets.

In this study, factor retention methods including Optimal Parallel Analysis (PA; Timmerman & Lorenzo-Seva, 2011), MAP (normal and revised), HULL, EGA with TMFG estimation [EGA(TMFG)], EGA with Glasso estimation [EGA(Glasso)], and the Comparison Data Forest method proposed by Goretzko and Ruscio (2023) were compared. The primary reason for preferring Optimal PA is that it accurately determines the number of dimensions even under challenging conditions (Golino et al., 2020; Nájera et al. 2021; Timmerman & Lorenzo-Seva, 2011). Conversely, EGA employs a network estimation method with a community detection algorithm that shows the number of dimensions and the distribution of items across relevant dimensions (Golino & Epskamp, 2017). Considering the literature, EGA is highly accurate in determining the number of dimensions (Lee, 2023). Furthermore, EGA is more resistant to differences in sample size, number of items, and correlations between dimensions (Golino & Epskamp, 2017).

Additionally, EGA is unaffected by researchers' a priori guidance (Lee, 2023), which is why it was preeffered in this study. The MAP method, which utilizes the partial correlation matrix and is based on principal component analysis, has been found to provide better results in determining the number of dimensions compared to other methods in a simulation study conducted by Kılıç and Uysal (2019). Therefore, the MAP method was also included in the study. On the other hand, the study included the HULL method because it suggests the number of dimensions based on fit indices. Finally, the study included the Comparison Factor Forest method (Goretzko & Ruscio, 2023), which utilizes machine learning methods of Random Forest and XGBoost algorithms and is based on the Comparison Data method (Ruscio & Roche, 2012). In this context, this research examines the performance of dimensionality determination methods under various simulation conditions. Within the research framework, the study compared the main effects of each condition and the interaction effects of conditions. Accordingly, answers were sought to the following questions:

(1) What are the accuracy values of dimensionality determination methods according to simulation conditions?

(2) What are the relative bias values of dimensionality determination methods according to simulation conditions?

2. METHOD

This study compares methods for determining dimensionality in a Monte Carlo simulation. In simulation studies, datasets generated based on desired characteristics (e.g., distribution, factor loadings, or number of items) are analyzed with the methods of interest, and the results are compared.

2.1. Simulation Conditions

Simulation factors such as distribution, sample size, number of items per factor, number of categories, and measurement model were determined in the study. In this study, 100 replications were conducted for each condition. Given that PA generates 500 datasets for each dataset, we preferred to conduct 100 replications considering the prolonged analysis time.
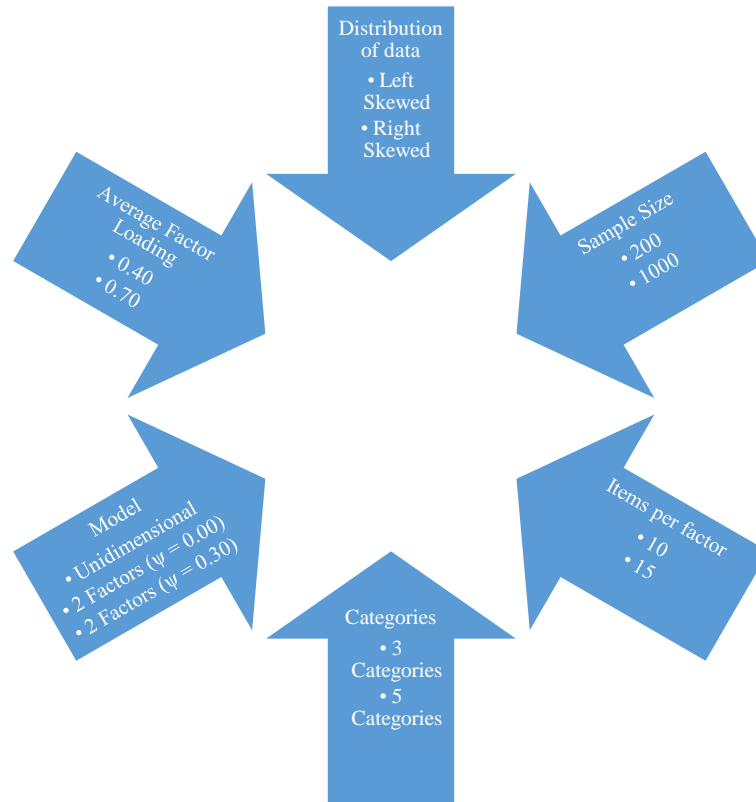
Figure 1. Simulation Conditions

We studied 2x2x2x2x3x2 = 96 simulation conditions (see Figure 1). Considering the distribution of the data, one of the simulation conditions, the datasets were skewed by a skewness coefficient of ±2.5. For this purpose, the dataset demonstrating a continuous normal distribution was generated, and then it was skewed using the cutoff points presented in Appendix 1. Generally, the skewness coefficient in real datasets falls within the range of ±2.00 (Garrido et al., 2011; Muthén & Kaplan, 1985). Therefore, a skewness coefficient of ±2.50 was chosen to examine extreme conditions.

Sample sizes of 200 and 1000 were determined as conditions. In simulation studies, sample sizes of 200 (small), 500 (medium), and 1000 (large) are commonly preferred (Beauducel & Herzberg, 2006; Li, 2016; West et al., 1995). In addition, Gorsuch (1974) proposed a minimum sample size of 200. Therefore, a sample size of 200 was included in this study. In addition, a sample size of 1000 was included as a simulation condition to examine the effect of increasing sample size on factor retention methods.

In their review study, Goretzko et al. (2021) reported that the number of items per factor in most studies (37.2%) was above 7. Therefore, this study determined the number of items per factor as 10 and 15. Since the study focuses on two-dimensional structures, when the number of items per factor is 15, the scale consists of 30 items. Therefore, thinking that longer scales would be less common, the number of items per factor was limited to 15.

In the condition related to the number of categories, there are 3 and 5 categories. As such, 5-point Likert-type items were included in the simulation condition, considering their common utilization (Lozano et al., 2008). Considering Likert-type scales, the number of categories would not be less than 3 in general. Dichotomous Likert-type scales may exist, but they are less common in practice. Therefore, the data was categorized into a minimum of 3 categories.

Under the model conditions analyzed, unidimensional conditions plus conditions for two factors with an inter-factor correlation of 0.00 and two factors with an inter-factor correlation of 0.30 were examined. The reason for examining unidimensional structures is to prevent artificial success, as methods would always have a 100% success rate when they suggest a unidimensional structure. In two-dimensional structures, the inter-factor correlation can influence the performance of methods. Therefore, data were generated with interfactor correlations of 0.00 and 0.30. One of the reasons for selecting an inter-factor correlation of 0.30 is that this value is more commonly found in practical studies (Li, 2016) and is also preferred in simulation studies (Cho et al., 2009; Curran et al., 1996; Flora & Curran, 2004; Foldnes & Grønneberg, 2017).

The average factor loading was manipulated as 0.40 and 0.70. Since the lowest recommended factor loading is generally 0.30 (Costello & Osborne, 2005) or 0.40 (Tabachnick & Fidell, 2019), an average factor loading condition of 0.40 was included. On the other hand, the condition of 0.70 was added as a simulation condition to examine structures with high factor loadings.

2.2. Evaluation Criteria

The accuracy was used as evaluation criteria. As evidenced in the literature, this statistic is used to compare the performance of methods (Goretzko & Bühner, 2022; Kılıç & Uysal, 2019). Accuracy is calculated as

$$Accuracy = \frac{Correct\ Estimates}{n_{rep}}.100 \qquad 1$$

Where correct estimates means cases where the number of factors was correctly identified by the respective method. The other evaluation criteria is relative bias (RB). RB is calculated as

$$RB = \frac{\hat{\zeta} - \zeta_{TRUE}}{\zeta_{TRUE}} \qquad 2$$

Where ζ_{TRUE} is true for the number of factors in simulation conditions (1 or 2). $\hat{\zeta}$ means the average of the number of factors estimates. $|RB| > 0.10$ indicates substantial bias (Flora & Curran, 2004; Forero et al., 2009). So we used the cut-off criteria as 0.10 for RB.

2.3. Data Analysis

We used the lavaan package (Rosseel, 2012) in the R software (R Core Team, 2022) to generate data. In addition, we used the EFA.MRFA package (Navarro-Gonzalez & Lorenzo-Seva, 2021) for Optimal PA and HULL methods, EFA.dimensions package (O'Connor, 2022) for MAP analysis, EGAnet package (Golino & Christensen, 2020) for EGA. For the Comparison Factor Forest method, we used the codes shared by Goretzko and Bühner (2022).

3. FINDINGS

This section presents the findings in the order of research problems.

3.1. Examination of Accuracy Values

Figure 2 shows the accuracy values obtained from the methods. Additionally, accuracy values are presented in Appendix 2 for researchers who wish to conduct a detailed examination. In addition, one-way ANOVA was conducted to identify the variables influencing accuracy values. The ANOVA results indicated that distribution of data [$F_{(1, 658)} = 0.03$, $p = 0.86$], model [$F_{(2,658)} = 0.93$, $p = 0.39$], and items per factor [$F_{(1,658)} = 0.72$, $p = 0.40$] conditions differed in terms of accuracy values. Furthermore, the average factor loading [$F_{(1, 658)} = 96.80$, $p < 0.01$, $\eta^2 = 0.13$], number of categories in variables [$F_{(1, 658)} = 5.38$, $p < 0.05$, $\eta^2 = 0.008$], sample size [$F_{(1,658)} = 73.39$, $p < 0.01$, $\eta^2 = 0.10$], and method [$F_{(1,658)} = 13.62$, $p < 0.01$, $\eta^2 = 0.11$] differed in terms of accuracy averages. The simulation condition that has the greatest effect on accuracy scores is average factor loadings. This is followed by factor retention method and sample size. Eta square values show that average factor loading has a significant effect on accuracy values, while sample size and method have a moderate effect.
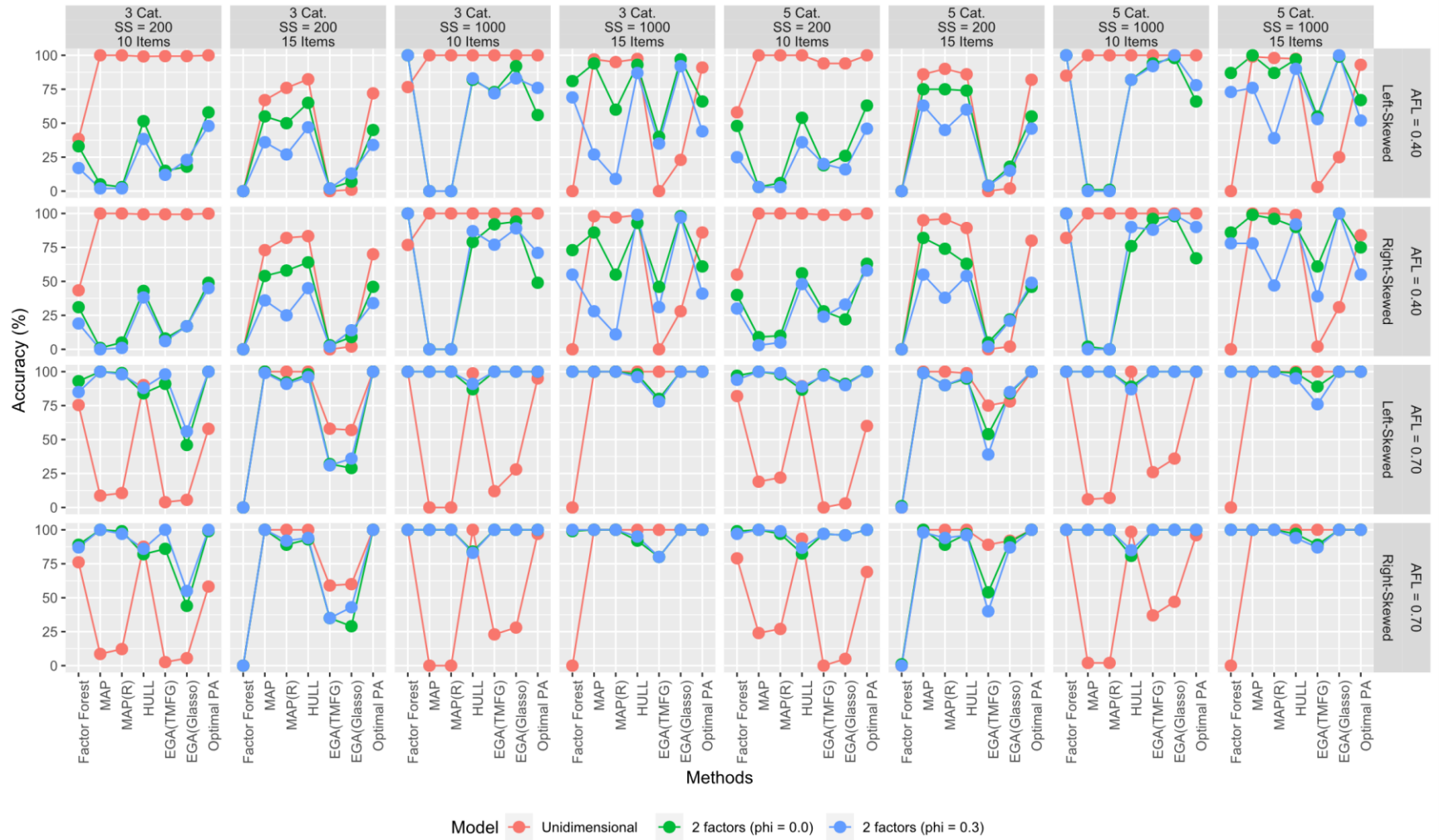
Figure 2. Accuracy Values of the Methods

Considering the factor determination methods in Figure 2, none of the methods exhibited adequate performance in all conditions. The average accuracy of the methods for all conditions was 54.32% for Factor Forest, 69.28% for MAP, 66.25% for MAP(R), 85.73% for HULL, 55.47% for EGA (TMFG), and 64.96% for EGA (Glasso). In all unidimensional conditions with an average factor loading of 0.40, except for the factor forest, other methods had sufficient accuracy (>90%). As the number of factors increased, the performance of methods also changed. Under the conditions of low average factor loading (0.40), two factors, and 10 items per factor, regardless of sample size, HULL, MAP, Revised MAP, and optimal PA did not demonstrate adequate performance. Under these conditions, Factor Forest had 100% accuracy when the sample size was 1000. Under the same conditions, but with a smaller sample size (n = 200), the Factor Forest method did not demonstrate adequate performance. Under the conditions of low average factor loading (0.40) two factors, and 10 items per factor, EGA methods had sufficient accuracy values in datasets consisting of 5-category variables and a sample size of 1000.

The study found that EGA (TMFG), MAP, Revised MAP, and Optimal PA methods demonstrated adequate performance in two-dimensional structures with 10 items and AFL of 0.70, regardless of the number of categories and sample size. EGA (Glasso) and Factor Forest demonstrated adequate performance in conditions other than those where the sample size was 200 and the number of categories was 3. However, under these conditions, the performance of the HULL method was lower than other methods. Only under one of these specified conditions (3 categories and a sample size of 1000), it had an accuracy rate of over 90%.

In unidimensional structures where the number of items per factor was 15 and AFL was 0.40, the performances of EGA methods and Factor Forest were quite low. Under these conditions, the accuracy value for Factor Forest was 0. However, the EGA methods had an accuracy value of around 25%. The HULL method, on the other hand, demonstrated adequate performance in 5-category data when the sample size was 1000. MAP and revised MAP methods exhibited adequate performance in both sample sizes when there were 5 categories. They also demonstrated adequate performance when there were 3 categories and the sample size was 1000.

Under all conditions with two-dimensional structures where the number of items per factor was 15 and AFL was 0.40 ($\psi = 0.00$ and $\psi = 0.30$), EGA (TMFG), Optimal PA, and Factor Forest did not demonstrate adequate performance. EGA (Glasso), on the other hand, demonstrated sufficient accuracy for the specified conditions when there were 5 categories and a sample size of 1000. The HULL method had sufficient accuracy with a sample size of 1000 for the specified conditions. In most of the specified conditions, MAP and revised MAP methods had accuracy rates of lower than 90%.

In unidimensional structures where the number of items per factor was 15 and AFL was 0.70, the accuracy value for Factor Forest was 0. In contrast, HULL, MAP, revised MAP, and Optimal PA methods

demonstrated 100% accuracy. EGA methods showed sufficient accuracy under the sample size of 1000. However, EGA methods demonstrated inadequate performance under the specified conditions in small sample sizes.

In two-dimensional structures where the number of items per factor was 15 and AFL was 0.70 (ψ = 0.00 and ψ = 0.30), all conditions demonstrated that Optimal PA, Revised MAP, MAP, and HULL methods have sufficient accuracy. Under the specified conditions, Factor Forest exhibited adequate performance only with a sample size of 1000, while its performance was quite low with a sample size of 200. Put differently, under the conditions where the sample size was 1000, Factor Forest achieved at least 99% accuracy, while under the same conditions with a sample size reduced to 200, it achieved a maximum of 1% accuracy. EGA (TMFG) did not achieve sufficient accuracy under any of the specified conditions, while EGA (Glasso) achieved sufficient accuracy in all conditions where the sample size was 1000. The accuracy values of the methods did not show significant variations based on whether the data were right-skewed or left-skewed.

3.2. Examination of RB Values

RB values obtained from the methods can be seen in Figure 3. In addition, RB values are presented in Appendix 3 for researchers who wish to examine them in detail. One-way ANOVA was conducted to determine the simulation conditions influencing the RB values. ANOVA results indicated that the distribution of data [$F(1, 658) = 0.01$, $p = 0.92$] and number of categories in variables [$F(1, 658) = 0.23$, $p = 0.23$] did not differ in terms of RB values. In contrast, Model [$F(2, 658) = 31.91$, $p < 0.01$, $\eta2 = 0.09$], average factor loading [$F(1, 658) = 9.08$, $p < 0.01$, $\eta2 = 0.01$], items per factor [$F(1, 658) = 84.79$, $p < 0.05$, $\eta2 = 0.11$], sample size [$F(1, 658) = 28.20$, $p < 0.01$, $\eta2 = 0.04$], and method [$F(1, 658) = 61.88$, $p < 0.01$, $\eta2 = 0.36$] differed in terms of RB averages. The simulation condition that has the greatest effect on RB is factor retention method. This is followed by items per factor and sample size. Eta square values show that factor retention method has a significant effect on RB values, while items per factor has moderate and sample size has small effect. The RB averages of the methods for all conditions were 0.93 for Factor Forest, -0.25 for MAP, -0.23 for MAP(R), -0.01 for HULL, 0.46 for EGA (TMFG), and 0.42 for EGA (Glasso).

For two-factor structures with an AFL of 0.70, the MAP, revised MAP, HULL, and optimal PA methods had RB values within appropriate ranges (|RB| < 0.10) under all simulation conditions. Under the same conditions, the Factor Forest method did not demonstrate adequate performance when the sample size was 200 and the number of items was 15, overestimating the number of factors. EGA (Glasso) indicated adequate performance under the specified conditions with a sample size of 1000 but did not indicate adequate performance in most conditions with a sample size of 200. Similarly, EGA (TMFG) demonstrated inadequate performance in most conditions with a sample size of 200 while also performing inadequately in some conditions with a sample size of 1000.

Considering the unidimensional structures, one could express that the Factor Forest method tends to overestimate the number of factors in most conditions. The Factor Forest method exhibited an adequate RB value in unidimensional structures, where AFL was 0.70, the number of items was 10, and the sample size was 1000. The MAP and revised MAP methods generally had negative RB values under conditions where the number of items was low. The HULL method demonstrated adequate performance under most conditions for unidimensional structures. However, conditions where the sample size was 200 and AFL was 0.40 reduced the performance of the HULL method. The optimal PA method generally exhibited adequate RB values in unidimensional structures under most conditions. However, it made biased estimations under conditions where the sample size was small, AFL was low, and the number of items was 15. The EGA methods had adequate RB values under conditions with a sample size of 200, few items, and low AFL. They demonstrated adequate performance under the conditions where the sample size was 1000 and the AFL was 0.40, and also under conditions where the AFL was 0.70 and the number of items was 15.
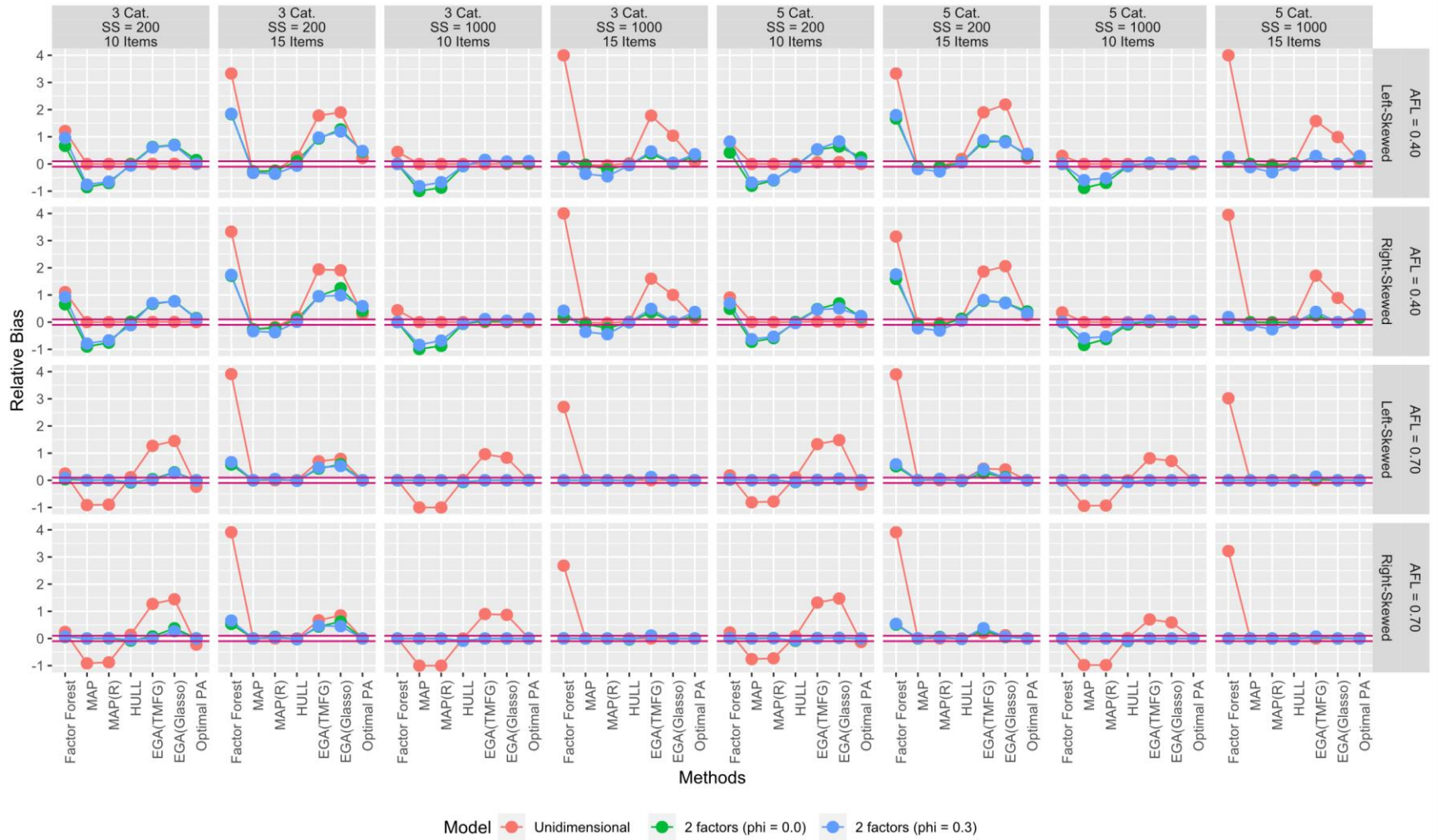
Figure 3. RB Values of the Methods

In two-dimensional structures where the AFL was 0.40, the HULL method had sufficient RB values under most conditions. The Factor Forest method did not perform adequately under any conditions when the sample size was 200. However, it showed better performance under conditions where the number of items was 10 rather than conditions where the sample size was 1000. The revised MAP method did not have sufficient RB values under nearly all specified conditions. MAP, on the other hand, had sufficient RB values under conditions where the sample size was 1000, the number of items was 15, and the interfactor correlation was 0. EGA (TMFG) demonstrated adequate performance under conditions where the sample size was 1000, the number of items was 10, and there was no correlation between dimensions. EGA (Glasso) had sufficient RB values under more conditions compared to EGA (TMFG). EGA (Glasso) had sufficient RB values under all conditions when the sample size was 1000 but did not have sufficient RB values under any of the conditions when the sample size was 200.

4. DISCUSSION AND CONCLUSION

This study examined the performance of factor retention methods in skewed distributions. In other words, no method yields correct results under any condition. However, when examined in general, the Factor Forest method might be suitable for use in two-factor structures where there are a small number of items per factor and a high sample size. Similarly, in their study, Goretzko and Ruscio (2023) found that the Factor Forest method yielded more biased results in unidimensional structures compared to the comparison data (CD) method. Since the Factor Forest method yielded more inconsistent results than other methods in this research, using this method alone for determining the number of factors may increase the Type I error rate and reduce the test power. Therefore, the suggestion by Goretzko and Ruscio (2023) that this method can be used in conjunction with the CD method could be considered in future studies.

In this study, among the examined simulation conditions, the MAP method ($n_{condition} = 56$) and the Optimal PA method ($n_{condition} = 55$) demonstrated adequate performance in more conditions compared to other factor determination methods. These methods were followed by the Revised MAP ($n_{condition} = 53$), HULL ($n_{condition} = 51$), EGA Glasso ($n_{condition} = 48$), Factor Forest ($n_{condition} = 33$), and EGA (TMFG; n=31) methods, respectively. However, these results are valid considering all simulation conditions. Researchers can decide on the factor retention method by evaluating simulation conditions close to their own conditions. In this study, the skewness coefficients of the variables were determined to be ±2.5. Although the skewness coefficient was above the upper and lower limits estimated in real data, MAP and optimal PA, which demonstrated adequate performance under more than half of the conditions, were more robust to skewed distributions compared to other methods. This study's results support the literature findings that Optimal PA yields accurate results under challenging conditions (Golino et al., 2020; Nájera et al. 2021).

The EGA (TMFG) and EGA (Glasso) methods cannot be considered suitable factor determination methods for conditions with a sample size of 200. However, they may be suitable for use in larger samples (≥1000) and two-factor structures. The fact that EGA (TMFG) and EGA (Glasso) yield similar results when used for factor determination indicates consistency between these methods, and their combined use may increase the chances of accurately determining the number of factors.

5. RECOMMENDATIONS

The simulation conditions examined in this study are limited. This study examined unidimensional structures as well as two-dimensional structures with interfactor correlations of 0.00 and 0.30. Considering structures with more than two factors in education and psychology, future research could focus on working with data exhibiting skewed distributions involving a greater number of factors and items to compare the performance of different methods. This study skewed the variables by having 3 and 5 categories. In future studies, the researchers could compare the performance of methods using continuous datasets or datasets with dichotomous variables. On the other hand, practitioners could be advised to (i) avoid using the Factor Forest method alone and ii) consider the suggestions of the MAP, Optimal PA and HULL methods. However, it should be noted that these generalizations are limited to datasets exhibiting skewed distributions and simulation conditions.

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Appendix-1.

The number of categories	Right Skewed (Skewness Coefficient = 2.5)	Left Skewed (Skewness Coefficient = -2.5)
3	$Y = \begin{cases} 0, & y_i^* \leq 1 \\ 1, & 1 < y_i^* \leq 1.80 \\ 2, & y_i^* > 1.80 \end{cases}$	$Y = \begin{cases} 0, & y_i^* \leq -1.80 \\ 1, & -1.80 < y_i^* \leq -1 \\ 2, & y_i^* > -1 \end{cases}$
5	$Y = \begin{cases} 0, & y_i^* \leq 0.75 \\ 1, & 0.75 < y_i^* \leq 1.28 \\ 2, & 1.28 < y_i^* \leq 1.645 \\ 3, & 1.645 < y_i^* \leq 2.05 \\ 4, & y_i^* > 2.05 \end{cases}$	$Y = \begin{cases} 0, & y_i^* \leq -2.25 \\ 1, & -2.25 < y_i^* \leq -1.80 \\ 2, & -1.80 < y_i^* \leq -1.30 \\ 3, & -1.30 < y_i^* \leq -0.8 \\ 4, & y_i^* > -0.8 \end{cases}$

Appendix-2. Accuracy Values of the Methods

			10 Items												15 Items											
			Average Factor Loadings = 0.40						Average Factor Loadings = 0.70						Average Factor Loadings = 0.40						Average Factor Loadings = 0.70					
			Unidimensional		2 Factors				Unidimensional		2 Factors				Unidimensional		2 Factors				Unidimensional		2 Factors			
					Ψ = 0.00		Ψ = 0.30				Ψ = 0.00		Ψ = 0.30				Ψ = 0.00		Ψ = 0.30				Ψ = 0.00		Ψ = 0.30	
Categories	Sample Size	Methods	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS
3	200	M_1	38.4	43.4	33.0	31.0	17.0	19.0	75.4	76.1	93.0	89.0	85.0	87.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	200	M_2	100.0	100.0	5.0	1.0	2.0	0.0	8.7	8.6	100.0	100.0	100.0	100.0	67.0	73.0	55.0	54.0	36.0	36.0	100.0	100.0	100.0	100.0	99.0	100.0
3	200	M_3	100.0	100.0	3.0	5.0	2.0	1.0	10.6	12.2	99.0	99.0	98.0	97.0	76.0	82.0	50.0	58.0	27.0	25.0	100.0	100.0	92.0	89.0	91.0	92.0
3	200	M_4	99.2	99.4	51.5	43.0	38.4	38.1	90.1	87.6	84.0	82.0	88.0	86.0	82.4	83.3	65.0	64.0	47.0	45.0	100.0	100.0	98.0	92.9	96.0	94.0
3	200	M_5	99.4	99.4	15.0	8.0	12.0	6.0	3.9	2.6	91.0	86.0	98.0	100.0	0.0	0.0	2.0	3.0	2.0	2.0	58.0	59.0	32.0	35.0	31.0	35.0
3	200	M_6	99.4	99.4	18.0	17.0	23.0	17.0	5.6	5.5	46.0	44.0	56.0	55.0	1.0	2.0	7.0	9.0	13.0	14.0	57.0	60.0	29.0	29.0	36.0	43.0
3	200	M_7	100.0	99.9	58.0	49.0	48.0	45.0	57.9	58.2	100.0	99.0	100.0	100.0	72.0	70.0	45.0	46.0	34.0	34.0	100.0	100.0	100.0	100.0	100.0	100.0
3	1000	M_1	76.6	76.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0	81.0	73.0	69.0	55.0	0.0	0.0	100.0	99.0	100.0	100.0
3	1000	M_2	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0	97.0	98.0	94.0	86.0	27.0	28.0	100.0	100.0	100.0	100.0	100.0	100.0
3	1000	M_3	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0	95.0	97.0	60.0	55.0	9.0	11.0	100.0	100.0	100.0	100.0	100.0	100.0
3	1000	M_4	100.0	100.0	82.0	79.0	83.0	87.0	98.7	100.0	87.0	84.0	91.0	83.0	97.4	98.7	93.0	93.0	87.0	99.0	100.0	100.0	98.0	92.0	96.0	95.0
3	1000	M_5	100.0	100.0	73.0	92.0	72.0	77.0	12.0	23.0	100.0	100.0	100.0	100.0	0.0	0.0	40.0	46.0	35.0	31.0	100.0	100.0	80.0	80.0	78.0	80.0
3	1000	M_6	100.0	100.0	92.0	94.0	83.0	89.0	28.0	28.0	100.0	100.0	100.0	100.0	23.0	28.0	97.0	98.0	92.0	97.0	100.0	100.0	100.0	100.0	100.0	100.0
3	1000	M_7	100.0	100.0	56.0	49.0	76.0	71.0	95.0	97.0	100.0	100.0	100.0	100.0	91.0	86.0	66.0	61.0	44.0	41.0	100.0	100.0	100.0	100.0	100.0	100.0
5	200	M_1	58.0	55.0	48.0	40.0	25.0	30.0	82.0	79.0	97.0	99.0	94.0	97.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0
5	200	M_2	100.0	100.0	3.0	9.0	3.0	3.0	19.0	24.0	100.0	100.0	100.0	100.0	86.0	95.0	75.0	82.0	63.0	55.0	100.0	100.0	99.0	100.0	99.0	98.0
5	200	M_3	100.0	100.0	6.0	10.0	3.0	5.0	22.0	27.0	98.0	97.0	99.0	99.0	90.0	96.0	75.0	74.0	45.0	38.0	100.0	100.0	90.0	89.0	90.0	94.0
5	200	M_4	100.0	100.0	54.0	56.0	36.0	48.0	89.3	93.4	86.7	82.5	89.0	86.7	86.0	89.3	74.0	63.0	60.0	54.0	98.9	100.0	94.9	96.9	96.0	96.0
5	200	M_5	94.0	99.0	19.0	28.0	20.0	24.0	0.0	0.0	98.0	97.0	97.0	97.0	0.0	0.0	4.0	5.0	4.0	2.0	75.0	89.0	54.0	54.0	39.0	40.0
5	200	M_6	94.0	99.0	26.0	22.0	16.0	33.0	3.0	5.0	91.0	96.0	90.0	96.0	2.0	2.0	18.0	22.0	15.0	21.0	78.0	92.0	84.0	91.0	85.0	87.0
5	200	M_7	100.0	100.0	63.0	63.0	46.0	58.0	60.0	69.0	100.0	100.0	100.0	100.0	82.0	80.0	55.0	46.0	46.0	49.0	100.0	100.0	100.0	100.0	100.0	100.0
5	1000	M_1	85.0	82.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	0.0	87.0	86.0	73.0	78.0	0.0	0.0	100.0	100.0	100.0	100.0

Note: Skewness of the Data

Categories	Sample Size	Methods	10 Items Average Factor Loadings = 0.40 Unidimensional		2 Factors Ψ = 0.00		Ψ = 0.30		10 Items Average Factor Loadings = 0.70 Unidimensional		2 Factors Ψ = 0.00		Ψ = 0.30		15 Items Average Factor Loadings = 0.40 Unidimensional		2 Factors Ψ = 0.00		Ψ = 0.30		15 Items Average Factor Loadings = 0.70 Unidimensional		2 Factors Ψ = 0.00		Ψ = 0.30	
			LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS	LS	RS
5	1000	M_2	100.0	100.0	1.0	2.0	0.0	0.0	6.0	2.0	100.0	100.0	100.0	100.0	99.0	100.0	100.0	99.0	76.0	78.0	100.0	100.0	100.0	100.0	100.0	100.0
5	1000	M_3	100.0	100.0	1.0	0.0	0.0	0.0	7.0	2.0	100.0	100.0	100.0	100.0	98.0	100.0	87.0	96.0	39.0	47.0	100.0	100.0	100.0	100.0	100.0	100.0
5	1000	M_4	100.0	100.0	82.0	76.0	82.0	90.0	100.0	98.6	89.0	80.8	87.0	85.0	97.4	98.8	97.0	90.0	90.0	92.0	100.0	100.0	99.0	97.0	95.0	94.0
5	1000	M_5	100.0	100.0	94.0	96.0	92.0	88.0	26.0	37.0	100.0	100.0	100.0	100.0	3.0	2.0	55.0	61.0	53.0	39.0	100.0	100.0	89.0	89.0	76.0	87.0
5	1000	M_6	100.0	100.0	98.0	98.0	100.0	99.0	36.0	47.0	100.0	100.0	100.0	100.0	25.0	31.0	99.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
5	1000	M_7	100.0	100.0	66.0	67.0	78.0	90.0	100.0	96.0	100.0	100.0	100.0	100.0	93.0	84.0	67.0	75.0	52.0	55.0	100.0	100.0	100.0	100.0	100.0	100.0

Skewness of the Data

M_1: Factor Forest, M_2: MAP, M_3: MAP(R), M_4: HULL, M_5: EGA(TMFG), M_6: EGA(Glasso), M_7: Optimal PA

Appendix-3. RB of the Methods

			10 Items						15 Items					
			Average Factor Loadings = 0.40			Average Factor Loadings = 0.70			Average Factor Loadings = 0.40			Average Factor Loadings = 0.70		
			Unidimensional	2 Factors Ψ=0.00	Ψ=0.30	Unidimensional	2 Factors Ψ=0.00	Ψ=0.30	Unidimensional	2 Factors Ψ=0.00	Ψ=0.30	Unidimensional	2 Factors Ψ=0.00	Ψ=0.30
Categories	Sample Size	Methods	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS	LS RS
3	200	M$_1$	1.2 1.1	0.7 0.7	1.0 0.9	0.2 0.2	0.0 0.1	0.1 0.1	3.3 3.3	1.8 1.7	1.8 1.7	3.9 3.9	0.6 0.5	0.7 0.7
3	200	M$_2$	0.0 0.0	-0.9 -0.9	-0.8 -0.8	-0.9 -0.9	0.0 0.0	0.0 0.0	-0.3 -0.3	-0.3 -0.3	-0.3 -0.3	0.0 0.0	0.0 0.0	0.0 0.0
3	200	M$_3$	0.0 0.0	-0.7 -0.8	-0.6 -0.7	-0.9 -0.9	0.0 0.0	0.0 0.0	-0.2 -0.2	-0.3 -0.2	-0.4 -0.4	0.0 0.0	0.0 0.1	0.0 0.0
3	200	M$_4$	0.0 0.0	-0.0 0.0	-0.1 -0.1	0.1 0.1	-0.1 -0.1	-0.0 -0.0	0.3 0.2	0.1 0.1	-0.1 0.0	0.0 0.0	-0.0 -0.0	-0.0 -0.0
3	200	M$_5$	0.0 0.0	0.6 0.7	0.6 0.7	1.3 1.3	0.0 0.1	0.0 0.0	1.8 1.9	0.9 1.0	1.0 0.9	0.7 0.7	0.4 0.4	0.5 0.5
3	200	M$_6$	0.0 0.0	0.7 0.8	0.7 0.8	1.4 1.4	0.3 0.4	0.3 0.3	1.9 1.9	1.3 1.2	1.2 1.0	0.8 0.8	0.6 0.6	0.5 0.4
3	200	M$_7$	0.0 0.0	0.1 0.1	0.0 0.1	-0.2 -0.2	0.0 0.0	0.0 0.0	0.2 0.3	0.4 0.4	0.5 0.6	0.0 0.0	0.0 0.0	0.0 0.0
3	1000	M$_1$	0.4 0.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	4.0 4.0	0.2 0.2	0.3 0.4	2.7 2.7	0.0 0.0	0.0 0.0
3	1000	M$_2$	0.0 0.0	-1.0 -1.0	-0.8 -0.8	-1.0 -1.0	0.0 0.0	0.0 0.0	-0.0 -0.0	-0.0 -0.1	-0.4 -0.4	0.0 0.0	0.0 0.0	0.0 0.0
3	1000	M$_3$	0.0 0.0	-0.9 -0.9	-0.7 -0.7	-1.0 -1.0	0.0 0.0	0.0 0.0	-0.0 -0.0	-0.2 -0.2	-0.5 -0.4	0.0 0.0	0.0 0.0	0.0 0.0
3	1000	M$_4$	0.0 0.0	-0.1 -0.1	-0.1 -0.1	0.0 0.0	-0.1 -0.1	-0.0 -0.1	0.0 0.0	-0.0 -0.0	-0.0 -0.0	0.0 0.0	-0.0 -0.0	-0.0 -0.0
3	1000	M$_5$	0.0 0.0	0.1 0.0	0.1 0.1	1.0 0.9	0.0 0.0	0.0 0.0	1.8 1.6	0.4 0.4	0.5 0.5	0.0 0.0	0.1 0.1	0.1 0.1
3	1000	M$_6$	0.0 0.0	0.0 0.0	0.1 0.1	0.8 0.9	0.0 0.0	0.0 0.0	1.0 1.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
3	1000	M$_7$	0.0 0.0	0.0 0.1	0.1 0.1	0.0 0.0	0.0 0.0	0.0 0.0	0.1 0.1	0.3 0.2	0.4 0.4	0.0 0.0	0.0 0.0	0.0 0.0
5	200	M$_1$	0.8 0.9	0.4 0.5	0.8 0.7	0.2 0.2	0.0 0.0	0.0 0.0	3.3 3.1	1.7 1.6	1.8 1.8	3.9 3.9	0.5 0.5	0.6 0.5
5	200	M$_2$	0.0 0.0	-0.8 -0.7	-0.7 -0.6	-0.8 -0.8	0.0 0.0	0.0 0.0	-0.1 -0.0	-0.1 -0.1	-0.2 -0.2	0.0 0.0	0.0 0.0	0.0 0.0
5	200	M$_3$	0.0 0.0	-0.6 -0.6	-0.6 -0.5	-0.8 -0.7	0.0 0.0	0.0 0.0	-0.1 -0.0	-0.1 -0.1	-0.3 -0.3	0.0 0.0	0.0 0.1	0.0 0.0
5	200	M$_4$	0.0 0.0	-0.1 0.0	-0.1 -0.0	0.1 0.1	-0.1 -0.1	-0.1 -0.1	0.2 0.1	0.1 0.1	0.1 0.0	0.0 0.0	-0.0 -0.0	-0.0 -0.0
5	200	M$_5$	0.1 0.0	0.5 0.5	0.5 0.5	1.3 1.3	0.0 0.0	0.0 0.0	1.9 1.9	0.8 0.8	0.9 0.8	0.4 0.2	0.3 0.3	0.4 0.4
5	200	M$_6$	0.1 0.0	0.6 0.7	0.8 0.5	1.5 1.5	0.0 0.0	0.0 0.1	2.2 2.1	0.8 0.7	0.8 0.7	0.4 0.1	0.1 0.0	0.1 0.1
5	200	M$_7$	0.0 0.0	0.2 0.2	0.1 0.2	-0.2 -0.1	0.0 0.0	0.0 0.0	0.2 0.2	0.3 0.4	0.4 0.3	0.0 0.0	0.0 0.0	0.0 0.0
5	1000	M$_1$	0.3 0.4	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	4.0 4.0	0.1 0.1	0.3 0.2	3.0 3.2	0.0 0.0	0.0 0.0
5	1000	M$_2$	0.0 0.0	-0.9 -0.8	-0.6 -0.6	-0.9 -1.0	0.0 0.0	0.0 0.0	-0.0 0.0	0.0 -0.0	-0.1 -0.1	0.0 0.0	0.0 0.0	0.0 0.0
5	1000	M$_3$	0.0 0.0	-0.7 -0.6	-0.5 -0.5	-0.9 -1.0	0.0 0.0	0.0 0.0	-0.0 0.0	-0.1 -0.0	-0.3 -0.3	0.0 0.0	0.0 0.0	0.0 0.0
5	1000	M$_4$	0.0 0.0	-0.1 -0.1	-0.1 -0.0	0.0 0.0	-0.1 -0.1	-0.1 -0.1	0.0 0.0	-0.0 -0.0	-0.0 -0.0	0.0 0.0	-0.0 -0.0	-0.0 -0.0
5	1000	M$_5$	0.0 0.0	0.0 0.0	0.0 0.1	0.8 0.7	0.0 0.0	0.0 0.0	1.6 1.7	0.3 0.2	0.3 0.4	0.0 0.0	0.1 0.1	0.1 0.1
5	1000	M$_6$	0.0 0.0	0.0 0.0	0.0 0.0	0.7 0.6	0.0 0.0	0.0 0.0	1.0 0.9	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0
5	1000	M$_7$	0.0 0.0	0.0 -0.0	0.1 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.1 0.2	0.2 0.2	0.3 0.3	0.0 0.0	0.0 0.0	0.0 0.0

M$_1$: Factor Forest, M$_2$: MAP, M$_3$: MAP(R), M$_4$: HULL, M$_5$: EGA(TMFG), M$_6$: EGA(Glasso), M$_7$: Optimal PA

GENİŞLETİLMİŞ TÜRKÇE ÖZET

**ÇARPIK DAĞILIMLARDA FAKTÖR SAYISI BELİRLEME YÖNTEMLERİNİN
PERFORMANSLARININ İNCELENMESİ**

GİRİŞ

Açımlayıcı faktör analizinde (AFA), faktör sayısına karar vermek en önemli adımlardan biridir (Cosemans & et al., 2022; Finch, 2020; Reio & Shuck, 2015; Svetina, 2011; Zhang, 2007). AFA'da olması gerekenden az faktör çıkarmak değişkenleri daha küçük bir faktör uzayına sıkıştırır ve bu durum da bilgi kaybına, önemli faktörlerin ihmal edilmesine ve artan hata yüklerine neden olur (Cosemans vd., 2022). Olması gerekenden fazla faktör çıkarmak ise aslında bir arada olan faktörlerin bölünmesine veya önemsiz faktörlere neden olabilir (Cosemans & et al., 2022; Finch, 2020; Lee & et al, 2023). Bu nedenle boyut sayısına karar vermede kullanılacak kriterler de önemli hale gelmektedir.

Bir ölçme aracının boyutluluğuna karar verirken sadece bir yönteme göre karar vermek de problemli olabilir (Ledesma vd., 2015; Lee, 2023). Her bir yöntemin kendine ait üstün ve zayıf yanları bulunmaktadır. Bu nedenle hangi yöntemin verinin hangi koşulunda iyi sonuçlar verdiğinin incelenmesi önemli hale gelmektedir. Bu durumda da hangi yöntemlerin inceleneceği sorusu ortaya çıkabilir. Boyutluluk belirleme yöntemleri incelendiğinde genellikle Horn (1965) tarafından önerilen paralel analiz (PA) yönteminin popüler olduğu ancak bu yöntemin yanında Minimum Average Partial Correlation (MAP), HULL (Lorenzo-Seva vd., 2011) veya son zamanlarda daha sık kullanılmaya başlanan Açımlayıcı Grafikl Analizi (EGA) yöntemleri bulunmaktadır. Makine öğrenmesi yöntemlerinin birçok alanda uygulama bulmasıyla birlikte boyutluluk belirleme yöntemi olarak kullanımını öneren araştırmacılar da olmuştur. (Goretzko & Ruscio, 2023).

Bu çalışmada boyutluluk belirleme yöntemlerinden optimal paralel analiz (Timmerman & Lorenzo-Seva, 2011), MAP (normal and revize), HULL, EGA(TMFG kestirimiyle), EGA(Glasso kestirimiyle) ve Goretzko & Ruscio (2023) tarafından önerilen karşılaştırmalı faktör ormanı (comparison factor forest) yöntemi karşılaştırılmıştır. Bu doğrultuda bu araştırmanın amacı faktör sayısı belirleme yöntemlerinin çeşitli simülasyon koşulları altında performanslarını değerlendirmektir. Araştırma çerçevesinde her bir koşulun temel etkisinin yanı sıra koşulların etkileşiminin etkisini karşılaştırılmıştır. Bu amaç doğrultusunda şu sorulara yanıt aranmıştır?

- Simülasyon koşullarına göre faktör sayısı belirleme yöntemlerinin doğru tahmin yüzdesi değerleri nasıldır?

- Simülasyon koşullarına göre faktör sayısı belirleme yöntemlerinin göreli yanlılık değerleri nasıldır?

YÖNTEM

Boyutluluk belirleme yöntemlerinin karşılaştırıldığı bu çalışma bir Monte Carlo simülasyonudur. Simülasyon çalışmalarında istenilen özelliklere (dağılım, faktör yükü ya da madde sayısı gibi) göre üretilen veri setleri ilgilenilen yöntemlerle analiz edilerek sonuçları karşılaştırılır.

Simülasyon Koşulları

Çalışmada simülasyon faktörleri olarak dağılım, örneklem büyüklüğü, faktör başına düşen madde sayısı, kategori sayısı ve ölçme modeli belirlenmiştir. Çalışmada her bir koşul için 100 replikasyon yapılmıştır.

Simülasyon koşullarından verilerin dağılımı koşulunda veri seti çarpıklık katsayısı ±2.5 olacak şekilde çarpık hale getirilmiştir. Örneklem büyüklüğü için 200 ve 1000 koşulları belirlenmiştir. Kategori sayısı koşulunda 3 ve 5 kategori bulunmaktadır. İncelenen model koşulunda tek boyutlu, 2 faktör ve faktörler arası korelasyon 0.00 ve 2 faktörlü faktörler arası korelasyonun 0.30 olduğu koşulları incelenmiştir. Ortalama faktör yükü 0.40 ve 0.70 olarak manipüle edilmiştir.

Veri Analizi

Verileri üretmek için için R paket programında (R Core Team, 2022) bulunan lavaan paketi (Rosseel, 2012) kullanılmıştır. Optimal paralel analiz ve HULL yöntemi için EFA.MRFA paketi (Navarro-Gonzalez & Lorenzo-Seva, 2021), MAP analizi için EFA.dimensions (O'Connor, 2022), EGA yöntemleri için EGAnet paketi (Golino & Christensen, 2020) kullanılmıştır. Karşılaştırmalı faktör ormanı (comparison factor forest) yöntemi için ise Goretzko & Bühner (2022) tarafından paylaşılan kodlar kullanılmıştır.

TARTIŞMA, SONUÇ VE ÖNERİLER

Çarpık dağılımlarda faktör sayısı belirleme yöntemlerinin performanslarının incelendiği bu çalışma sonucunda tüm koşulların doğru kestirim yüzdesi değerlerinin ortalaması dikkate alındığında en yüksek ortalamaya HULL yönteminin sahip olduğu görülmüştür. Aynı zamanda en düşük göreli yanlılık (RB) ortalaması da HULL yöntemindedir. Ancak tüm koşullarda yeterli performansı gösteren bir yöntemin olmadığı söylenebilir. Diğer bir deyişle her koşulda doğru sonucu verecek bir yöntem bulunmamaktadır. Ancak genel olarak incelendiğinde factor forest yönteminin faktör başına düşen madde sayısının az ve örneklem büyüklüğünün yüksek olduğu iki faktörlü yapılarda kullanılmasının uygun olabileceği söylenebilir. Benzer şekilde Goretzko & Ruscio (2023) yaptığı çalışmada factor forest yöntemi karşılaştırmalı veri (comparison data [CD]) yöntemine göre tek boyutlu yapılarda daha yanlı sonuçlar göstermiştir. Factor forest yönteminin bu araştırmada diğer yöntemlerle daha tutarsız sonuçlar vermesi nedeniyle tek başına faktör sayısı belirleme yöntemi olarak kullanılmasının 1. tip hata oranını arttıracağı ve testin gücünü azaltacağı düşünülmektedir. Bu nedenle Goretzko & Ruscio (2023) tarafından bu yöntemin CD yöntemiyle birlikte kullanılabileceği önerisi bundan sonraki çalışmalarda dikkate alınabilir.

Bu çalışmada diğer faktör sayısı belirleme yöntemlerine göre, MAP (n=56) ve optimal PA (n=55) yöntemleri incelenen simülasyon koşulları içinde diğer yöntemlere göre daha çok koşulda yeterli

performansı göstermiştir. Bu yöntemleri ise; Revize MAP (n=53), HULL (n=51), EGA(Glasso) (n=48), factor forest (n=33) ve EGA(TMFG) (n=31) yöntemleri izlemektedir. Bu çalışmada değişkenlerin çarpıklık katsayısı ±2.5 olacak şekilde belirlenmiştir. Çarpıklık katsayısının gerçek verilerde tahmin edilen alt ve üst sınırın da üzerinde olmasına rağmen koşulların yarısından fazlasında yeterli performansı gösteren MAP ve optimal PA'nın çarpık dağılımlara diğer yöntemler göre daha dayanıklı olduğu söylenebilir. Bu çalışmanın sonuçları, Optimal PA'nın zorlu koşullar altında doğru sonuçlar verdiği alanyazındaki bulguları (Golino vd., 2020; Nájera vd. 2021) desteklemektedir. EGA(TMFG) ve EGA(Glasso) yöntemleri örneklem büyüklüğünün 200 olduğu koşullar için uygun bir faktör belirleme yöntemi olduğu söylenemez ancak büyük örneklemler (n≥1000) ve iki faktörlü yapılarda kullanılabilecek bir yöntemdir. EGA(TMFG) ve EGA(Glasso) faktör sayısı belirleme yöntemleri kullanılırken benzer sonuçlar vermesi yöntemler arasındaki uyum anlamına gelir ve birlikte kullanımı faktör sayısını doğru belirleme şansını arttırabilir. Gelecekteki çalışmalarda sürekli veri setleri ya da iki kategorili verilerle yöntemlerin performanslarının karşılaştırılması araştırmacılara önerilebilir. Diğer taraftan uygulayıcılara; i) tek başına factor forest yöntemini kullanmamaları, ii) optimal PA ve HULL yöntemlerinin önerilerini daha fazla önem vermeleri önerilebilir.