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Investigation 9th Grade Students' Empathic Tendency Levels and Critical Thinking Skills

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Abstract

The purpose of this research is to investigate the level of Empathetic Tendency and Critical Thinking skills of students who were placed/enrolled in the 9th grade after the 2021 High School Entrance Exam (LGS) in the central district of Tokat province and to reveal the relationship between these two variables. In the research, the scanning model was used to reveal the existing situation as it is, and in addition, the relational model was used to determine the relations between the variables examined in the study. The study group consisted of 408 students. It was found that the empathetic tendency levels of 9th-grade students were slightly above average, while their critical thinking skills were below average. Empathetic tendency levels showed a significant difference according to the gender variable, but it did not show a significant difference according to the mother-father attitude variable, it was found that there was no significant relationship between empathetic tendency levels and academic achievement, but there was a negative and low-level significant relationship between empathetic tendency levels and critical thinking skills.

Keywords: Critical thinking, empathy, academic achievement.

Introduction

In today's information society, it has become almost a necessity to ensure that individuals have skills such as creativity, critical thinking, communication, cooperation, and managing life, as well as ensuring that they become good people, decent citizens, and qualified employees. Today's revised education programs also encompass these skills. In order to create and sustain the information society, it is necessary to educate individuals to know how to access information, produce information, and use the acquired knowledge to develop the necessary skills and competencies of the era (Buyruk, 2018).

New student achievements, which are called 21st-century skills, have been determined by associating reading and language skills in the native language with foreign languages, science and social sciences curriculum, and themes in the world (Ananiadou & Claro, 2009). In this context, the skills expected from students are grouped into three subjects: "life and career; information, media, and technology; and learning and innovation skills" (Partnership for 21st Century Skill, 2011). To be successful in this century, it is aimed that cognitive and social skills that will guide students in dealing with various problems of today and the future, including creativity, communication, cooperation, and critical thinking, will be provided to every student. In the framework programs that encompass 21st-century skills, it is necessary for students to acquire comprehensive knowledge or skills related to the subject areas included, and all students must show a high level of success in these subject areas (Partnership for 21st Century Skill, 2011).

Today's contemporary education features a student-centered approach that takes into account the value of knowledge and the existing experiences of the individual and structures learning in a direction that supports active participation in life, making the right decisions, and problem-solving. In this activity-based approach, a new understanding that allows the interaction of the student with the environment by taking into account their own experiences and individual differences and balancing knowledge and skills has been put into practice (Ministry of National Education [MONE], 2018). Today's educational understanding is now less about giving students information and more about giving them the skills to "understand, use, and distinguish significant knowledge from insignificant information and relate it to the World" (Harari, 2018). Furthermore, the logic of the individual's education, teaching, and following process stages is also expected to change in today's educational understanding. It has been

stated that the necessity of schools to prioritize life skills over technical skills has become more significant than in the past for individuals to cope with the changes of the future. Kenan (2005) states that the technological advancements and progress in the 21st century, political and economic changes in the world, the development of media tools, globalization, and developments in multiculturalism, will fundamentally affect education and schools. In this case, future individuals must acquire skills and competencies such as being able to interpret events in the world, produce original ideas and products, understand mass communication tools and create awareness, and be able to live with other languages and cultures.

In general, the concept of skill is the abilities that learners want to acquire, develop and transfer to live within the scope of the learning process (KKTC MEB, 2009). The Turkish Language Institute defines skill as "the ability to produce work, expertise, dexterity, or the ability of a person to successfully perform a task and accomplish a process in accordance with a purpose, based on inclination and learning" (TDK, 2022). Various studies, research, and reports prepared by international institutions and organizations have identified the key skills that 21st-century individuals should have in order to live smoothly in their working and social lives. A report prepared by OECD (2018) states that some current jobs will disappear over time and new jobs will emerge. In order not to be caught unprepared for new situations, it is emphasized that instead of transferring information in our schools, a qualified learning environment and time should be created, students should gain these skills and they should be prepared for new professions that will emerge. Thanks to these skills, individuals can produce more rational solutions to the problems they encounter, and they can achieve success in their working and social lives much easier.

An individual will not be sufficient with just information about a single field when facing new situations that may arise in the near future, so it will be necessary to have interdisciplinary knowledge. Cognitive and meta-cognitive skills such as critical and innovative thinking, learning to learn and self-regulation; social and emotional skills such as empathy, self-efficacy, and teamwork; and new literacies such as information and media literacy, as well as practical skills in different fields will be needed (Cansoy, 2018). In addition to using these basic skills and knowledge, attitudes and values directed by values such as behavior, motivation, trust, and virtuousness will have to be observable at personal, local, societal, and global levels (OECD, 2018).

Empathy

As a concept, empathy is a term that can be used interchangeably with terms such as compassion, sympathy, and identification in both literature and daily conversations (Sezer and Damar, 2005). Dökmen (2009) defines empathy as an emotionally charged action that is multi-dimensional and complex, with moral, cognitive, sensory, and behavioral components (Dökmen, 2009). Rogers (1959) defines empathy as "the process of correctly understanding and communicating the feelings and thoughts of the other person by putting oneself in their place, and communicating this to the other person." Empathic tendency indicates an individual's potential for empathy and this can be developed through education. The ability to put oneself in the other person's place is referred to as an empathic tendency (Mete and Gerçek, 2005). Empathy is based on the idea of understanding the state of the other person's being happy or not, and experiencing this situation in the mind as a state of feeling as if it were his own state of being happy or not. In this sense, the ability to empathize is important in social relations. On the other hand, it is a significant part of establishing firm relationships in all areas of life in the

relations of individuals with each other (Ayten, 2010). This ability, which is important in interactions between individuals, is also vital in any aspect of life in the society.

It can be said that individuals with developed empathetic abilities can easily adapt when faced with new situations, can easily see themselves in different places and different roles, and can be considered knowledgeable about many subjects due to their accumulation of knowledge. As a result, one of the differences between modern societies from other societies is that they consist of many people with strong empathy skills (Kağıtçıbaşı, 1998). Individuals who have acquired empathetic abilities are more successful than others in understanding the reasons for their own behavior, and thus exhibit conscious behavior characteristics (Findlay, Girardi, and Coplan, 2006). The individual perceives the world based on his assumptions, generalizations, prejudices, and stereotypes, which affect his behavior, but the individual is not aware that cognitive models often influence behavior in many situations (Paul, 1984). We can only provide this awareness to individuals by giving them the ability to think critically.

Critical Thinking

The concept of critical thinking, which appears in the form of "Kritikos" in Greek and "Criticus" in Latin, is used in the meanings of evaluation, judgment, and distinction. Criticism means evaluating and judging something in terms of its positive or negative aspects (Kaya, 1997). According to Ennis (1985), critical thinking is defined as " reflective and logical thinking that is focused on making decisions about what to do and what to believe, consisting of a three-part structure of judgment, development of knowledge and questioning." In another definition made by the American Psychological Association (APA) in 1990, it is defined as "the individual's ability to analyze, make evaluative judgments, and express these judgments consciously and systematically when making decisions and believing what to do" (Evancho, 2000).

Being able to make effective decisions (NCEE, 1988) is one of the cognitive skills that a well-educated individual should have in order to provide strong support against the constantly persuasive people around us, as the amount of knowledge produced increases day by day (Epstein, 1999). Additionally, critical thinking and decision-making skills are important for solving complex social problems encountered in life and for creating a democratic society. Education philosophers who argue that critical thinking is an integral part of education, argue against considering it as one of the options that can be used in the education-teaching process (Norris, 1985).

Critical Thinking Tendencies

In general, the term skill is the abilities that learners want to acquire, develop and transfer to life within the scope of the learning process (TRNC MoNE, 2009). In general, the term skill is the abilities that learners would need to acquire, develop and transfer to life within the scope of the learning process (TRNC MoNE, 2009). According to the dictionary of the Turkish Language Association, skill is "the ability to accomplish a task and to conclude a process in accordance with the purpose, depending on the state of being able to do something, mastery, dexterity or a person's disposition and education" (TDK, 2022). In the programs renewed in Turkey in 2018, skills are included in the forms of critical and creative thinking, communication, research, problem solving, using information technologies, entrepreneurship, and using Turkish correctly, beautifully, and effectively (MoNE, 2018). These skills and more are considered desirable characteristics for modern individuals. In order for individuals to effectively carry out their livelihoods in the future, it is necessary for them to be raised with these skills acquired

(Semerci and Yanpar Yelken, 2010). The concept of skill in the Oxford Advanced Learner's Dictionary is described as "the ability to do something well, a particular talent or type of ability", and disposition is "the natural qualities of a person's character, a disposition to do something, a tendency to behave in a certain way, the way in which something is placed or arranged." (Oxford Advanced Learner's Dictionary, 2022). Tendencies guide our use of skills and affect our behaviors (Tishman, Jay, and Perkins, 1992). The thinking tendency is a person's characteristic and willingness to think (Siegel, 1999).

Individuals are said to possess critical thinking skills and are using them in the form of "being curious, open-minded, systematic, analytical, intellectually mature, self-confident, and searching for the truth" (Branch, 2000). Possessing critical thinking skills does not mean using them in appropriate situations (Facione, 1990). The characteristics that make an individual considered a good thinker, before cognitive skills or abilities, are their research structure, searching for absolute truth, intellectual risk-taking, and inclination towards critical thinking (Tishman, Jay, and Perkins, 1992).

Critical thinking tendency includes elements such as the pursuit of truth, open-mindedness, analysis, systematicity, self-confidence, curiosity, and cognitive maturity (Facione, Facione & Sanchez, 1994; Walker, 2003). Demirel (2005) defines critical thinking skills as developing independent thinking, questioning courage, and thinking abilities, while also mentioning that emotional thinking skills such as having confidence in one's own thoughts are also being included.

Social sensitivity, which is a measure of an individual's potential to empathize in daily life, and critical thinking education (Dökmen, 1988), and critical thinking education which prepare individuals to be lifelong learners with an empathic tendency that plays a key role in the solution of social and social problems experienced by humanity (Derelioğlu, 2004), are important concepts in all curricula in our country due to their importance in raising individuals who question and research. These concepts are thought to greatly benefit individuals in terms of correctly perceiving and solving events.

Importance of the Study

The study aimed to determine the levels of empathic tendency and critical thinking of ninth-grade students and to reveal the relationship between these two variables. Additionally, the study examined the students' levels of emphatic tendency in terms of gender, mother's attitude, father's attitude, and academic achievement. When looking at the literature, it is seen that there are studies that examine the levels of the empathic tendency of teacher candidates (Ekinci and Aybek, 2010; Ocak, Eğmir and Ocak, 2016; Yıldırım and Şensoy, 2017; Kutluca, Yılmaz and İbiş, 2018; Çekin, 2013). Also, when reviewing the field literature, it is observed that there are no studies that investigate the critical thinking skills of high school students or they are limited in number (Erdem and Genç, 2015; Demir and Aybek, 2014). However, especially at the high school level, it is seen that current studies that can reveal the relationship between academic achievement and students' levels of empathy are insufficient inadequate. In our country, the general exams during the transition to secondary education affect both students and their families. The academic performance of students at this stage largely determines their future. It is thought that the empathy and critical thinking skills acquired with the support of their close environment will help individuals overcome various problems experienced during adolescence, and will contribute to making logical and consistent decisions by helping them help themselves. When an individual becomes an adult they need to develop many non-cognitive skills that will facilitate the application of cognitive skills and subjects in order to fully develop their potential as adults (National Research Council, 2012). It is important to focus on the development of cognitive and non-cognitive

skills in order to prepare students, who will take on duties and responsibilities in many different fields in the future, for the challenges of adulthood. The main starting point of this research is to determine the level of the empathetic tendency of students and to examine it in terms of various variables. The goal of the research is to raise awareness about the empathetic tendencies of middle school programs, teachers, and students at this level, to reveal and evaluate the missing aspects, and to contribute to the field.

The primary goal of mandatory education at the primary level of Turkey is "to provide the necessary basic knowledge, skills, behaviors, and habits to every Turkish child in order to become a good citizen; to raise them in accordance with national moral understanding by developing their interests, talents, and abilities, and to prepare them for life and higher education" (MoNE [Ministry of National Education], 1973). Additionally, this level of education also aims to equip individuals with the ability to generate solutions for problems they encounter, acquire social belonging and values, and adapt to the society they will live in and conform to societal rules. In summary, one of the goals of education provided in our schools is to enable students to conform to the society they live in by providing them with the necessary behaviors and supporting their socialization. An individual becomes socialized by being a part of society by acquiring social behaviors from their family, close and distant relatives, and friend groups (Çubukçu and Gültekin, 2006). Skills such as communication, discussion, group work, cooperation, empathy, social participation, entrepreneurship, and using language can be given as examples of social skills that should be exhibited frequently in one's social life (MoNE, 2006, 47). People who cannot communicate with others, share their thoughts, work together or act in unison, and are distant from understanding the feelings and thoughts of others, will not be able to socialize or live a happy and peaceful life with others. On the other hand, it is not possible for such individuals to achieve self-realization and make others benefit from them. Furthermore, empathetic understanding has the characteristic of bringing people closer and facilitating communication. When people establish empathetic communication with themselves, they feel understood and valued. Being understood and valued by others also relaxes the individual. Thus, an individual who feels not judged or criticized feels good. Empathy is not only an activity that benefits the person with whom empathy is established. Empathy is also important for the person who establishes empathy. People with high empathetic tendencies and skills have fewer conflicts with their surroundings and are more loved and sought after (Dökmen, 2008). Therefore, it is considered important to identify the empathetic tendencies and critical thinking skill levels of students and to reveal the relationship between them.

The purpose of the research is to determine the empathic tendency levels and critical thinking skills of ninth-grade students and to reveal the relationship between them. In this direction, the problem of the research is as follows: "What are the levels of empathic tendency and critical thinking skills of ninth-grade students?". Accordingly, the sub-problems of the research can be listed as follows:

1. Do ninth-grade students' levels of empathic tendency show significant differences according to gender?
2. Do ninth-grade students' levels of empathic tendency show significant differences according to their mother's attitudes?
3. Do ninth-grade students' levels of empathic tendency show significant differences according to the father's attitude?

4. Is there a significant relationship between ninth-grade students' levels of empathic tendency and their academic achievements?
5. Is there a significant relationship between ninth-grade students' levels of empathic tendency and their critical thinking skills?

Method

Model of the Research

In this research, which aims to determine the relationship between ninth-grade students' levels of empathy and academic success and various variables, the relational screening model, which is one of the general screening models, was used based on the quantitative research technique. According to Karasar (2016), in the processes applied to describe a past or present situation in studies with the scanning model, the subject of the research is to determine the event, individual, or object in its own conditions and as it is. The researcher must observe and document the event, individual, or object in an appropriate way without attempting to change or affect it in any way. The relational screening model, on the other hand, is a screening approach that aims to determine whether or not there is a change among multiple variables (Karasar, 2011).

Universe and Sample

The research universe consists of ninth-grade students who attend schools in Tokat in the 2021-2022 academic year. In the research, 440 ninth-grade students who registered for schools in the central district of the province and voluntarily participated in the study were taken as the sample. A simple random sampling method is used in sampling selection.

Data Collection Tools

In this research, which uses a screening model to determine the relationship between the critical thinking and empathy levels of ninth-grade students who were placed in schools in the central district of Tokat in the 2021-2022 academic year and various variables, "Personal Information Form", "Critical Thinking Tendency Scale" and "Empathy Tendency Scale" were used as data collection tools.

Personal Information Form

The personal information form was developed to collect information about the participants' gender, age, LGS score, social and sporting activities they are interested in, and the educational backgrounds of their parents. While these variables were handled by the researcher, the previous literature on the problem situation was discussed and the studies carried out became a source of inspiration.

Empathic Tendency Scale (ETS)

An individual with empathy skills correctly understands and shares the feelings and thoughts of other individuals with whom he interacts. Therefore, empathy is considered as one of the factors that positively affect our lives at both individual and societal levels and it is an important feature that can be developed through education (Karcı, 2010). In our country, the "Empathic Tendency Scale" developed by Dökmen in 1988 is used to measure the potential of empathy building in daily life.

Empathic Tendency Scale Responses are prepared as a Likert-type five-point rating scale with responses that range from "completely contradictory" to "completely agreeable." Items 3, 6, 7, 8, 11, 12,

13, and 14 in the measurement tool are negative statements and are scored inversely. The total score from the normal and reversed items gives the individual's empathic tendency score.

The reliability of the scale has been proven by the test-retest method and the split-half method (odd-even numbered items). The test-retest reliability was calculated as r=0.82, and the correlation between the scores obtained by the subjects on the single and double items was found to be r=0.86 (Dökmen 1988).

Critical Thinking Tendency Scale (CTS)

Another data collection tool used in the research is the "Critical Thinking Tendencies Scale" developed by Akbıyık (2002). The items of this scale were developed based on the critical thinking tendencies determined by Ennis (1985). The scale's reliability, which was created with 30 different items, in terms of internal consistency was calculated as 0.87 using the Cronbach Alpha coefficient method. In the critical thinking tendencies scale, the items with positive roots are scored between 1-5, and the items with negative roots are scored between 5-1. The academic achievements of the students were determined according to the schools that were registered to the high schools with and without exams, and the students in the 10th percentile were considered successful.

Collection of Data

The scales were administered to ninth-grade students studying in the central district of Tokat province through an electronic document prepared on Google Forms. Before administering the scales, the students participating in the research were provided with information about the purpose of the study and how the scales would be administered, and data was collected from students who voluntarily participated in the study. A total of 500 scale forms were included in the study, but due to invalid data forms such as incomplete marking, leaving questions unanswered, or not understanding the questions, 408 participant data were included in the study. The application took approximately 10-15 minutes.

Analysis of Data

In the research, the relationship between the levels of empathetic tendency and critical thinking skills of ninth-grade high school students and the determination of the relationship between these variables, and the variables such as gender, parent attitude, and academic achievement were analyzed using the calculations of data collected by using the SPSS 21 program. In the study, while analyzing quantitative data, the normality state of the scores obtained from the scales was determined by looking at the descriptive statistics.

Table 1. *Descriptive statistical values of the scales*

	Coefficient of Skewness	Coefficient of Kurtosis
ETS	-,007	,111
CTS	-,432	,547

When Table 1 is examined, it can be seen that the skewness and kurtosis coefficients obtained from the ETS and CTS are within the range of -2 and +2. Therefore, it can be stated that the data obtained from the scales show the characteristic of normal distribution. Based on this information, in the research, parametric tests were used for data analysis when the sample group was 30 or more, and nonparametric tests were used when the sample group was less than 30.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation **=** Sivas Cumhuriyet University Social and Human Sciences Ethics Committee

Date of ethical evaluation decision= 07.09.2021

Ethics assessment document number = 4

Findings

Descriptive statistics of high school students' empathic tendency levels are presented in Table 2.

Table 2. *Empathic tendency levels of high school students*

N	X̄	Ss
408	3,30	,346

When Table 2 is examined, it can be seen that the empathic tendency of high school students ($\bar{x}$ = 3.30) is slightly above the average level.

Descriptive statistics for the critical thinking skills of high school students are presented in Table 3.

Table 3. *Statistics on critical thinking skills of high school students*

N	X̄	Ss
408	2,80	,237

When Table 3 is examined, it can be seen that the critical thinking skills of high school students ($\bar{x}$ = 2.80) are below the average level.

The study also examined whether the empathic tendency levels of high school students showed a significant difference according to the gender variable, using an independent samples t-test, and the results are presented in Table 4.

Table 4. *Analysis of high school students' empathic tendencies by gender variable*

Category	N	X̄	Ss	sd	t	p
Male	181	3,21	,365	406	4,58	,000
Female	227	3,37	,314			

When Table 4 is examined, it can be seen that there is a significant difference in the average scores of the empathic tendency levels of high school students. ($[t_{(406)}$= 4, 58, p< .00]).

Using the Kruskal-Wallis Test, the study also examined whether the empathic tendency levels of high school students showed a significant difference according to the mother's attitude and father's attitude variable.

Table 5. *Analysis of the empathy levels of high school students according to the mother's attitude and father's attitude variables.*

	Tendency	N	Order Avr.	sd	X²	p
Mother Attitude	Authoritarian	40	208,75	3	1,980	,576
	Tolerant	270	201,44			
	Overprotective	88	215,99			
	Irrelevant	10	169,10			
Father Attitude	Authoritarian	53	202,74	3	3,280	,350
	Tolerant	261	199,21			
	Overprotective	68	227,95			
	Irrelevant	26	199,87			

When Table 5 is examined, it can be seen that the empathic tendency levels of high school students do not show a significant difference according to the mother's attitude and father's attitude variable (p>.05).

The Pearson Correlation test was used to determine whether there was a relationship between the empathic tendency levels of high school students and their academic achievement, and the results of the analysis are presented in Table 6.

Table 6. *The relationship between high school students' levels of empathic tendency and their academic achievement*

		Academic achievement
ETL	r	-,058
	p	,243

When Table 6 is examined, it can be seen that there is no significant relationship between the empathic tendency levels of high school students and their academic achievement.

The study also used the Pearson correlation test to examine if there is a relationship between the empathic tendency levels of high school students and their critical thinking skills, and the results are presented in Table 7.

Table 7. *The relationship between high school students' empathic tendency levels and critical thinking skills*

		Academic Achievement
EDB	r	-,140
	p	,005

When Table 7 is examined, it can be seen that there is a low and negative correlation between the empathic tendency levels of high school students and their critical thinking skills (p<.05).

Discussion and Conclusion

According to the research results, it was found that the empathetic tendencies of high school students are above the moderate level. The research findings of Filiz (2009) also support the findings obtained in this research. According to the study conducted by Filiz (2009), "In terms of empathetic tendency, the empathetic tendency scores of Science, Anatolian Teacher, and Anatolian high school students were higher than the empathetic tendency scores of general high school and vocational high school students." According to this result, it can be concluded that students with high empathic tendencies are placed in high schools that accept students by exam, and that empathic skill has a positive effect on academic success. In order to enhance academic achievement, which determines an

individual's future social life and status, empathetic skills should also be acquired alongside with academic subjects in the education process.

According to the second subproblem of the research, it has been found that the critical thinking skills of high school students are below the average level. In order to realize and use critical thinking skills, one must have a tendency towards critical thinking (Facione, P., Giancarlo, Facione N. and Gainen, 1995; Walker, 2003). Based on the conclusion that the critical thinking skills of high school students in the research sample are below the average level, it can be stated that they are unable to display critical thinking and related skills. In similar studies in the field, it has been found that the critical thinking levels of students (Demir, 2006; Karabacak, 2011; Yıldız, 2011; Yıldırım and Şensoy, 2011) are high. Results from different studies in the field also indicate that the critical thinking levels of students (Bakan, 2010; Saysal Araz, 2013; Görücü, 2014; Ocak and Kalender, 2017; Akar and Kara, 2016) are at average level. In contrast to these studies, Ersoy and Başer (2011) found that the critical thinking tendencies of primary school students are low.

The different results obtained from the studies can be attributed to the fact that critical thinking is affected by various variables such as personality, social environment, cultural interactions, cultural perception, education system, teacher attitude, use of technology, ability to produce and use information. Demirel (2005) states that critical thinking is a skill that not everyone possesses but can be developed with support, while Ormrod (2018) states that the development of critical thinking is based on certain precursor skills that start from a very young age and continue until adulthood. Murphy, et al. (2014) in their studies, states that the development of critical thinking is influenced by "social and emotional development, experience, play, communication, mental representations of the environment, and abstract thinking skills, which form the foundation of critical thinking skills in children."

According to the third subproblem of the research, it was investigated whether high school students' levels of empathetic tendency show a significant difference according to gender variable by doing independent groups t-test, and according to the results of the analysis, it was seen that there was a significant difference in favor of female students in the average scores of high school students' levels of empathetic tendency. Based on this finding, it can be said that empathetic tendency tends to differ by gender. Studies that support this study in the field (Acun Kapıkıran, Kapıkıran, and Başaran, 2010; Turnage, Hong, Stevenson and Edwards, 2012; Ekinci, 2009; İkiz, 2009) have also found that female students have higher levels of an empathetic tendency than male students. This result may be due to different parenting styles based on gender. Especially, girls being directed by their environment to be more compassionate, forgiving, understanding, compliant, and to control their behaviors, can lead to easier empathetic feelings for the girls.

In addition, studies conducted by (Ataşalar, 1996; Atilla, 2007; Balcı, 2012; Bulut and Düşmez, 2014; Büküm, 2013; Dinçyürek, 2013; Dökmen, 1987; Ercoşkun, 2005; Erçoşkun, Dilekmen, Ada and Nalçacı, 2006; Erkmen, 2007; Kolayiş and Yiğiter, 2010; Maden and Durukan, 2011; Pala, 2008; Yılmaz and Akyel, 2008) have found that there is no significant difference between the level of empathic tendency and empathic skill and gender.

In the findings of the fourth subproblem of the study, it was found that the levels of the empathetic tendency of high school students did not show a significant difference according to the variables of the mother's attitude and father's attitude. When the literature is examined, it has been

found that the mother's attitude, which is not consistent with this research (Albakır Yavuz, 2019; İmece, 2017; Özbaş, 2010), is effective on the empathic tendency levels of children. These results suggest that as the education level of the mother increases, empathetic tendencies also increase and that the education level of the mother is effective in the development of children's empathetic tendencies.

According to the results of the fifth subproblem of the study, it was found that there is no significant relationship between the levels of the empathetic tendency of high school students and their academic achievements. However, Bonnerlar (1984) stated in his study that "there is a significant correlation between the empathic understanding of the student and his grades". Also, in the studies of Çolakoğlu and Solak (2014), they found that the empathetic tendency scores of students in schools that admit students through exams (such as Science, Anatolian Teacher, and Anatolian High Schools) are higher than the scores of general high school and vocational school students. According to these results, it can be said that academic achievement increases empathetic tendencies.

In the last subproblem of the study, it was found that there is a low level of significant negative relationship between the empathetic tendency levels of high school students and their critical thinking skills. This result is consistent with the findings of Ekinci and Aybek's (2010) study, which found that "the critical thinking tendencies of teacher candidates do not vary according to the program they attend, gender, class level, the socio-economic level they perceive, and the education level of their parents and parents."

In summary, the study found that the level of the emphatic tendency among high school students is above average, while their critical thinking skills are below average. This result is consistent with the findings of Öztürk, Kıraç, and Doğru (2018) that as the emphatic tendency increases, the critical thinking ability also increases, which explains the conclusion that there is no significant relationship between the emphatic tendency levels of high school students and their academic achievements. Emphatic skills should be taught from an early age in order for individuals who are effective in society to have developed empathy skills, adopt the culture of reconciliation and discussion, pass the thoughts of others through their own mental filters, show an effective, democratic culture in their life without submitting to imposition and pressure, and be aware of their responsibilities (Akınoğlu, 2001; Evcen, 2002; Yağcı, 2008).

In this study, another striking result is that the levels of emphatic tendency and critical thinking skills among high school students in the sample were negatively low, and this may indicate that there is no significant relationship between academic achievement and emphatic tendency. According to Çubukçu, "individuals who ask questions, seek reasons, form assumptions and test them, think about results, make conclusions, search for new evidence and can think without prejudice in necessary situations" are defined as critical thinkers (Çubukçu, 2012). Akbıyık (2002) also states that students with high critical thinking ability also have high academic achievement. Empathetic tendencies and critical thinking skills that affect each other positively also affect academic achievement.

Critical thinking skills can be developed and used from childhood, which will lead to the development of other dimensions of thinking such as creativity, problem-solving, decision-making, and empathy in students. Every individual who possesses critical thinking skills can create new and original ideas, and by respecting the different thoughts produced, they can also increase their school and life achievements (Yağcı, 2008: 39).

Recommedations

Based on the findings of this study, the following recommendations can be made. Systematic efforts can be made to identify and develop the levels of empathic tendency and critical thinking skills of students at all levels of education. In addition, the activities in textbooks can be reviewed and open-ended questions can be prepared that will develop empathic tendencies and critical thinking skills. In this context, in-service training can be organized.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 100%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

9. Sınıf Öğrencilerinin Empatik Eğilim Düzeyleri ve Eleştirel Düşünme Becerilerinin İncelenmesi

Giriş

Geleceğin bireylerinden dünyada yaşanan olayları yorumlayabilmeleri, özgün fikir ve ürünler üretebilme, kitle iletişim araçlarını tanıma ve farkındalık oluşturma, başka dil ve kültürlerle bir arada yaşayabilme beceri ve yeterliliklerini kazanmaları gerekmektedir. Genel anlamda beceri; öğrenenlerde, öğrenme süreci kapsamında kazandırılması, geliştirilmesi ve yaşama aktarılması istenen kabiliyetlerdir (Kuzey Kıbrıs Türk Cumhuriyeti (KKTC) Milli Eğitim Bakanlığı (MEB), 2009). Uluslararası kurum ve kuruluşlar tarafından hazırlanan çeşitli inceleme, araştırma ve raporlarda 21. yüzyıl bireylerinin çalışma hayatı ve sosyal yaşamlarında sorunsuz yaşayabilmeleri için sahip olmaları gereken anahtar beceriler belirlenmiştir. OECD (2018) tarafından hazırlanan bir raporda gelecekte bugün var olan bazı mesleklerin zamanla kaybolacağı, yeni mesleklerin ortaya çıkacağı belirtilmektedir. Yeni durumlara hazırlıksız yakalanmamak için bugün okullarımızda bilgi aktarmak yerine, nitelikli öğrenme ortamı ve zamanları oluşturularak öğrencilere bu becerilerin kazandırılması, ortaya çıkacak yeni mesleklere hazırlanmaları gerektiği vurgulanmaktadır. WEF (World Economic Forum)da da bireylerin gelecekte edinmeleri gereken beceriler "karmaşık problem çözme, analitik ve eleştirel düşünme, yenilikçilik, yönetim, kişiler/birimler arası koordinasyon, duygusal zekâ, değerlendirme ve karar alma, hizmet odaklılık, müzakere ve bilişsel esneklik" olarak ifade edilmektedir (Gray, 2016). Bu beceriler sayesinde bireyler karşılaştıkları problemler karşısında daha akılcı çözümler üreterek çalışma ve sosyal yaşantılarında başarıyı daha kolay yakalayabilmektedirler.

Empati; kavram olarak hem literatürde hem de günlük konuşmalarda acıma, sempati, özdeşim kurma gibi genellikle birbirlerinin yerine kullanılabilen ve sıklıkla karıştırılan bir kavramdır (Sezer ve Damar, 2005). Dökmen (2009); karşıdakinin hissettiklerini birebir hissetmeyi duygusal nitelikli bir eylem olarak empatiyi ahlaki, bilişsel, duyusal ve davranışsal bileşenleri olan çok boyutlu ve karmaşık

bir kavram olduğunu belirtmektedir (Dökmen, 2009). Rogers (1959) empatiyi, "bireyin kendini karşısındaki insanın yerine koyarak onun istek duygu ve düşüncelerini doğru olarak anlayabilmesi ve bunu karsısındaki kişiye iletme süreci" şeklinde tanımlamaktadır. Empatik eğilim ise bireyin empati yapma potansiyelini göstermekte ve eğitim yoluyla geliştirilebilmektedir. Bireyin kendini karşısındakinin yerine koyabilme becerisi empatik eğilim yeteneği olarak ifade edilmektedir (Mete ve Gerçek, 2005). Bu anlamda empati kurma yeteneği sosyal ilişkilerde önemlidir. Diğer bir yandan da bireylerin birbirleri ile olan ilişkilerinde hayatın her alanında sağlam ilişkiler kurmak için önemli bir öğedir (Ayten, 2010).

Yunancada kritikos, Latince'de criticus şeklinde yer alan eleştirel kavramı değerlendirme, yargılama, ayırt etme anlamlarında kullanılmaktadır. Eleştirme, bir şeyi olumlu ya da aksi yönleriyle yorumlayarak değerlendirme ve yargılama anlamlarına gelmektedir (Kaya, 1997). Ennis (1985) eleştirel düşünmeyi; "yargılama, bilginin geliştirilmesi ve sorgulama şeklinde üçlü bir yapıdan oluştuğunu, ne yapılacağına, neye inanılacağına karar vermeye odaklanmış yansıtıcı ve mantıklı düşünme" olarak tanımlamaktadır.

Eleştirel düşünme ve karar verme becerileri yaşamda karşılaşılan karmaşık sosyal problemlerin çözümü ve demokratik bir toplum oluşturulabilmesi için de önemlidir. Eleştirel düşünmeyi eğitimin ayrılmaz bir parçası olduğunu savunan eğitim felsefecileri, bunu eğitim- öğretim sürecinde kullanabileceğimiz seçeneklerden biri olarak düşünülmesine karşı çıkmaktadırlar (Norris, 1985)

Oxford Advanced Learner's Dictionary'de beceri; " bir şeyi iyi yapma yeteneği, belirli bir yetenek veya yetenek türü", eğilim ise " bir kişinin karakterinin doğal nitelikleri, bir şey yapma eğilimi, belirli bir şekilde davranma eğilimi niteliği, bir şeyin yerleştirildiği veya düzenlendiği yol" şeklinde açıklanmaktadır (Oxford Advanced Learner's Dictionary, 2022). Eğilimler becerileri kullanmamıza kılavuzluk ederek davranışlarımıza etki etmektedir (Tishman, Jay ve Perkins, 1992). Düşünme eğilimi ise bireyin özelliği ve düşünmeye olan istekliliğidir (Siegel, 1999).

Bireylerin sahip olduğu eleştirel düşünme becerilerini ancak "meraklı olma, açık görüşlü olma, sistematik olma, çözümleyici olma, entelektüel olgunluk, özgüven sahibi olma, doğruyu arama", şeklinde kullandıkları ifade edilmiştir (Branch, 2000). Eleştirel düşünme eğilimi, "doğruyu arama, açık fikirlilik, çözümlemecilik, sistematiklik, kendine güven, meraklılık ve bilişsel olgunluk" gibi unsurları barındırmaktadır (Facione, Facione ve Sanchez, 1994).

Kişilerin günlük yaşamındaki empati kurma potansiyelinin bir göstergesi olan sosyal duyarlılık (Dökmen, 1988) insanlığın yaşadığı sosyal ve toplumsal sorunların çözümünde anahtar rol oynayan empatik eğilimle, bireyleri hayat boyu öğrenen kişiler olmaya hazırlayan eleştirel düşünme eğitimi (Derelioğlu, 2004), sorgulayan ve araştıran bireylerin yetiştirilmesinin de önemi sebebiyle ülkemizdeki tüm öğretim programlarında yer alan önemli kavramlardır. Bu kavramlar bireylere olayların doğru algılanması ve doğru şekilde çözümlenmesi noktasında oldukça fayda sağlayacağı düşünülmektedir.

Araştırmanın amacı, dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri ve eleştirel düşünme becerilerini belirleyerek bunlar arasındaki ilişkiyi ortaya çıkarmaktır. Bu amaç doğrultusunda araştırmanın problemi şu şekildedir: "Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri ve eleştirel düşünme becerileri ne düzeydedir?". Bu problem doğrultusunda araştırmanın alt problemleri ise şu şekilde sıralanabilir:

1- Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri cinsiyet değişkenine göre anlamlı farklılık göstermekte midir?

2- Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri anne tutum değişkenine göre anlamlı farklılık göstermekte midir?

3- Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri baba tutum değişkenine göre anlamlı farklılık göstermekte midir?

4- Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri ile akademik başarıları arasında anlamlı ilişki var mıdır?

5- Dokuzuncu sınıf öğrencilerinin empatik eğilim düzeyleri ile eleştirel düşünme becerileri arasında anlamlı ilişki var mıdır?

Yöntem

9. Sınıf öğrencilerinin empatik eğilim düzeylerinin akademik başarı ve çeşitli değişkenlerle ilişkisini belirlemek amacıyla yapılan bu araştırmada nicel araştırma tekniği esas alınarak genel tarama modellerinden ilişkisel tarama modelinden yararlanılmıştır.

Araştırma evrenini 2021-2022 yılında Tokat'ta 9. sınıfa devam eden öğrenciler oluşturmaktadır. Araştırmada ilin merkez ilçesinde yer alan sınavla ve sınavsız öğrenci alan okullara kayıt yaptıran ve çalışmaya gönüllü olarak katılan 440 dokuzuncu sınıf öğrencisi örneklem olarak alınmıştır. Örnekleme seçiminde basit kolay ulaşılabilir örnekleme seçim yöntemi kullanılmıştır.

2021-2022 eğitim öğretim yılında Tokat Merkez ilçede dokuzuncu sınıflara yerleşen öğrencilerin eleştirel düşünme ve empatik eğilim düzeylerinin çeşitli değişkenlerle ilişkisini belirlemek amacıyla tarama modelinden yararlanılan bu araştırmada veri toplama araçları olarak "Kişisel Bilgi Formu", "Eleştirel Düşünme Eğilimi Ölçeği" ve "Empatik Eğilim Ölçeği" kullanılmıştır.

Bulgular

Araştırma sonuçlarına göre lise öğrencilerinin empatik eğilimlerinin orta düzeyin biraz üzerinde olduğu tespit edilmiştir.

Araştırmanın ikinci alt problemine göre lise öğrencilerinin eleştirel düşünme becerilerinin orta düzeyin altında olduğu sonucuna ulaşılmıştır. Araştırma örneklemindeki lise öğrencilerinin eleştirel düşünme becerilerinin orta düzeyin altında olduğu sonucuna göre, eleştirel düşünme ve buna ilişkin becerileri sergileyemedikleri söylenebilir.

Araştırmanın üçüncü alt problemi olan lise öğrencilerinin empatik eğilim düzeylerinin cinsiyet değişkenine göre empatik eğilim düzeyi puan ortalamaları arasında kız öğrenciler lehine anlamlı bir fark olduğu görülmüştür.

Araştırmanın dördüncü alt problemine ilişkin bulgularda lise öğrencilerinin empatik eğilim düzeylerinin anne tutumu ve baba tutumu değişkenine göre anlamlı bir farklılık göstermediği sonucuna varılmıştır.

Araştırmanın beşinci alt probleminin sonuçlarına göre lise öğrencilerinin empatik eğilim düzeyleri ile akademik başarıları arasında anlamlı bir ilişki olmadığı görülmüştür.

Tartışma ve Sonuç

Araştırma sonuçlarına göre, lise öğrencilerinin empatik eğilimlerinin orta seviyenin üzerinde olduğu bulunmuştur. Filiz'in (2009) araştırma bulguları da bu araştırma sonucunda elde edilen bulguları desteklemektedir. Filiz'in (2009) yaptığı çalışmaya göre "empatik eğilim açısından Fen, Anadolu öğretmen ve Anadolu lisesi öğrencilerinin empatik eğilim puanları genel lise ve meslek lisesi öğrencilerinin empatik eğilim puanlarından daha yüksek" olduğu bulunmuştur. Bu sonuca göre sınavla öğrenci alan liselere empatik eğilimleri yüksek olan öğrencilerin yerleşmesi, empatik becerinin akademik başarıya olumlu etkisi olduğu sonucuna ulaşılabilir. Bireyin gelecekteki sosyal yaşamını, statüsünü de belirleyen akademik başarının artırılması, eğitim sürecinde derslerle birlikte empatik beceri de kazandırılmalıdır.

Araştırmanın ikinci alt problemine göre lise öğrencilerinin eleştirel düşünme becerilerinin orta seviyenin altında olduğu sonucuna ulaşılmıştır. Eleştirel düşünmenin gerçekleşmesi ve eleştirel düşünme becerilerinin kullanılması için eleştirel düşünmeye yönelik bir eğilime sahip olmayı gerektirmektedir (Facione, P., Giancarlo, Facione N. ve Gainen, 1995; Walker, 2003). Araştırma örneklemindeki lise öğrencilerinin eleştirel düşünme becerilerinin orta seviyenin altında olması sonucuna göre eleştirel düşünme ve buna yönelik becerilerin sergileyemediklerini ifade edilebilir. Alanyazındaki benzer çalışmalarda, öğrencilerin eleştirel düşünme seviyelerini (Demir, 2006; Karabacak, 2011; Yıldız, 2011; Yıldırım ve Şensoy, 2011) yüksek olduğunu tespit etmişlerdir. Alanyazındaki farklı çalışmalarda öğrencilerin eleştirel düşünme düzeylerinin (Bakan, 2010; Saysal Araz, 2013; Görücü, 2014; Ocak ve Kalender, 2017; Akar ve Kara, 2016) orta seviyede olduğu sonuçları da mevcuttur. Bu çalışmalardan farklı olarak Ersoy ve Başer de (2011) ilköğretim düzeyindeki öğrencilerin eleştirel düşünme eğilimlerinin düşük olduğunu ortaya koymuşlardır.

Yapılan çalışmalardan farklı sonuçlara ulaşılmasında eleştirel düşünmenin kişilik, sosyal çevre, kültürel etkileşim, kültürel algılama, eğitim sistemi, öğretmen tutumu, teknoloji kullanımı, bilgiyi üretme ve kullanma becerisi gibi farklı birçok değişkenin etkili olduğu söylenebilir. Demirel (2005) eleştirel düşünmenin her bireyin sahip olmadığı ancak desteklendiğinde geliştirilebilen bir beceri olduğunu belirtmekte, Ormrod (2018) ise eleştirel düşünmenin gelişiminin çok küçük yaşlarda başlayarak yetişkinliğe kadar süren birtakım öncü beceriler üzerine kurulu olduğunu belirtmektedir. Murphy, vd., (2014) çalışmalarında eleştirel düşünmenin gelişmesini etkileyen "sosyal ve duygusal gelişim, deneyim, oyun, iletişim, çevrenin zihinsel temsilleri, soyut düşünme becerileri gibi öncü becerilerin çocuklardaki eleştirel düşünme becerilerinin temelini oluşturduğunu" ifade etmektedir.

Araştırmanın üçüncü alt problemine göre lise öğrencilerinin empatik eğilim düzeylerinin cinsiyet değişkenine göre anlamlı farklılık gösterip göstermediğine bağımsız gruplar t-testi yapılarak bakılmış ve analiz sonuçları göre lise öğrencilerinin empatik eğilim düzeyi ortalama puanları arasında kız öğrenciler lehine anlamlı farklılık olduğu görülmüştür. Bu bulguya göre empatik eğilimin cinsiyet açısından farklılaştığı söylenebilir. Alanyazında çalışmayı destekleyen (Acun Kapıkıran, Kapıkıran ve Başaran, 2010; Turnage, Hong, Stevenson ve Edwards, 2012; Ekinci, 2009; İkiz, 2009) yaptıkları araştırmalarda da kız öğrencilerin erkek öğrencilere göre empatik eğilim düzeylerinin daha yüksek olduğunu bulmuşlardır. Bu sonuç ailelerin cinsiyete göre çocuk yetiştirme tarzlarından kaynaklanmış olabilir. Özellikle kız çocuklarının erkeklere göre daha şefkatli, bağışlayıcı, anlayışlı, uyumlu ve davranışlarını kontrol etmeleri noktasında çevreleri tarafından yönlendirilmeleri kız öğrencilerin empati kurmalarını kolaylaştırmasına neden olduğu söylenebilir.

Bunların yanı sıra (Ataşalar, 1996; Atilla, 2007; Balcı, 2012; Bulut ve Düşmez, 2014; Büküm, 2013; Dinçyürek, 2013; Dökmen, 1987; Ercoşkun, 2005; Erçoşkun, Dilekmen, Ada ve Nalçaçı, 2006; Erkmen, 2007; Kolayiş ve Yiğiter, 2010; Maden ve Durukan, 2011; Pala, 2008; Yılmaz ve Akyel, 2008) yaptıkları araştırmalarda empatik eğilim düzeyi ve empatik beceri ile cinsiyet arasında anlamlı bir farklılık olmadığı sonucuna ulaşmışlardır.

Çalışmanın dördüncü alt problemi bulgularında lise öğrencilerinin empatik eğilim düzeylerinin anne tutum ve baba tutum değişkenine göre anlamlı bir farklılık göstermediği sonucuna ulaşılmıştır. Literatür incelendiğinde bu araştırma ile tutarlılık göstermeyen (Albakır Yavuz, 2019; İmece, 2017; Özbaş, 2010) anne tutumunun çocukların empatik eğilim düzeylerinde etkili olduğu araştırmalara da rastlanmıştır. Bu sonuçlarda anne eğitim durumu arttıkça empatik eğilimlerinin arttığı, anne eğitim durumunun çocukların empatik eğilimlerinin gelişmesinde etkili olduğu söylenebilir.

Çalışmanın beşinci alt problemi sonuçlarına göre lise öğrencilerinin empatik eğilim düzeyleri ile akademik başarıları arasında anlamlı bir ilişkinin olmadığı görülmektedir. Ancak Bonnerlar (1984) çalışmasında, "öğrencinin empatik anlayışı ile notları arasında önemli bir korelasyon" olduğunu belirtmiştir. Yine Çolakoğlu ve Solak (2014) çalışmalarında günümüzde sınavla öğrenci alan (Fen, Anadolu Öğretmen ve Anadolu Lisesi gibi) liselerin öğrencilerinin empatik eğilim puanlarının genel lise ve meslek lisesi öğrencilerinin aldığı empatik eğilim puanlarından daha yüksek olduğunu bulmuşlardır. Bu sonuçlara göre akademik başarının empatik eğilimi arttırdığı söylenebilir.

Çalışmanın son alt probleminde lise öğrencilerinin empatik eğilim düzeyleri ile eleştirel düşünme becerileri arasında negatif yönde düşük düzeyde anlamlı bir ilişki olduğu bulunmuştur. Bu sonuç Ekinci ve Aybek'in (2010) çalışmalarında, "öğretmen adaylarının eleştirel düşünme eğilimi ile empatik eğilim düzeylerinin öğrenim gördükleri program, cinsiyet, sınıf düzeyi, algıladıkları sosyo-ekonomik düzey, anne ve baba eğitim düzeylerine göre eleştirel düşünme eğilimlerinin farklılaşmadığını" tespit ettikleri bulgularla tutarlılık göstermektedir.

Sonuç olarak çalışmada lise öğrencilerinin empatik eğilim düzeyleri orta seviyenin üzerinde, eleştirel düşünme becerilerinin ise orta seviyenin altında olduğu sonuçlarına ulaşılmıştır. Bu sonuçlara göre Öztürk, Kıraç ve Doğru (2018) çalışmalarında empatik eğilim arttıkça eleştirel düşünme yeteneğinin de arttığı sonucuna ulaşması, çalışmada elde edilen lise öğrencilerinin empatik eğilim düzeyleri ile akademik başarıları arasında anlamlı bir ilişkinin olmadığı sonucunu açıklamaktadır. Toplumda etkili olan bireylerin empati yeteneği gelişmiş, uzlaşı ve tartışma kültürünü benimsemiş, karşısındakinin düşüncelerini kendi zihinsel süzgeçlerinden geçirebilen, dayatma ve baskılara boyun eğmeden, etkili, demokrasi kültürünü yaşamında gösterebilen, katılımcı, sorumluluklarının farkında olması için (Akınoğlu, 2001; Evcen, 2002; Yağcı, 2008) empatik becerinin küçük yaşlardan itibaren okul programlarıyla öğretilmesi gerektiği ortaya çıkmaktadır.

Bu çalışmada ulaşılan dikkat çeken diğer bir sonuçta da örneklemde yer alan lise öğrencilerinin empatik eğilim düzeyleri ile eleştirel düşünme becerileri arasında negatif yönde düşük düzeyde kalması, akademik başarılarının da empatik eğilim düzeyleri ile anlamlı bir ilişkinin olmamasını belirlemiş olabilir. Çubukçu 'ya göre "soru soran, neden arayan, varsayım oluşturup bunları sınayan, sonuçlar üzerinde düşünen, çıkarımda bulunan, yeni kanıtlar araştıran ve gerekli durumlarda fikrini gözden geçirerek ön yargısız düşünebilen bireyler, eleştirel düşünür" olarak tanımlamaktadır (Çubukçu, 2012). Akbıyık (2002), eleştirel düşünme yeteneği yüksek olan öğrencilerin akademik başarıları da yüksek

olduğunu belirtmektedir. Birbirini olumlu yönde etkileyen empatik eğilim ve eleştirel düşünme becerileri aynı zamanda akademik başarıyı da etkilemektedir.

Eleştirel düşünme becerisinin ilk çocukluktan itibaren geliştirilerek kullanılmasıyla öğrencilerde yaratıcılık, problem çözme, karar verme, empati gibi diğer düşünme boyutları da gelişecektir. Eleştirel düşünme becerisine sahip her birey yeni ve özgün düşünceler yaratabilir, üretilen farklı düşüncelere de saygı göstermesiyle okul ve yaşam başarılarını da artırabilir (Yağcı, 2008: 39).

Öneriler

Bu çalışma bulgularına göre aşağıdaki şu önerilerde bulunulabilir. Tüm eğitim kademelerinde sistemli olarak öğrencilerin empatik eğilim düzeyleri ile eleştirel düşünme becerileri tespit edilerek geliştirmeye yönelik çalışmalar yapılabilir. Ayrıca ders kitaplarındaki etkinlikler gözden geçirilerek empatik eğilim düzeyleri ile eleştirel düşünme becerilerini geliştirecek açık uçlu sorular düzenlenebilir. Bu kapsamda hizmet içi eğitimler düzenlenebilir.

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Effect of Learning Styles on AcademicAchievement: A Meta-Analysis

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Abstract
The purpose of this study is to determine the effect levels of experimental studies in which the effects of learning styles on academic achievement are examined and to synthesize the findings of there search. Forth is purpose, experimental studies related to learning styles were examined and 18 studies that employed the learning-style based instruction and provided the data required for meta-analysis were included in the study. According to the fixed effect model of the studies, the overall effect size of the studies is d = 779, the Standard error value is SE = 0.056. In homogeneity tests, Q =110,686 was found. The absence hypothesis of homogeneity was rejected because the Q value exceeds its equivalent in the X2 table. I2 statistic value (83.738) was found to indicate high level of heterogeneity. By looking at the combined effect size value according to the random effects model (E ++ = 0.926), it is seen that the learning-style based instruction has a positive effect on academic achievement.

Keywords: Learning styles, meta-analysis, academicachievement

Introduction

From the moment of birth, human beings are interested in understanding and making sense of their environment. Individuals perceive the environment they are in with their own subjective personalities and reconstruct it in their minds. People's styles of obtaining information, ways of solving problems, organizational abilities, and methods of producing a product may differ. One of the qualities that make human beings a social entity and distinguish them from other living things is the ability to learn. There are many explanations about how learning occurs, but in general, it can be explained as the change in behaviors as a result of an individual's interaction with his environment (Seven & Engin, 2008; Yılmaz, 2009). Learning which is shaped by and shapes the social, physical and mental characteristics of people; begins with birth and continues throughout life. Described as both an active process and a product learning, differs among individuals (Can, 2011; Felder; 1996). One of the reasons for these differences is learning styles (Çelenk & Karakış, 2007; Kurt & Ekici, 2013).

Learning style is the whole of the cognitive, affective, and kinesthetic characteristics of the student which effects how the students perceive the environment in which learning takes place relatively consistently, how they communicate and how they answer questions (Ahmed, 2013). Described as general attitudes, behaviors, and patterns that direct and facilitate students' learning, learning styles have been classified by many theorists. The main learning style models used in the literature are the learning styles models of Kolb, Gregorc, Dunn and Dunn, Felder and Silverman (Vaishnav & Chirayu, 2013). In today's rapidly developing and changing conditions, one of the main objectives of education systems is to nurture individuals who adapt to change, learn to learn, have individual awareness, and are open to innovation. One of the healthiest ways to achieve these goals will be through instruction taking into account individual learning differences among students (Mutlu, 2008; Kabadayı, 2004). The idea which lays the foundations of the learning style-based instruction is that the classroom environments created by taking individual differences into consideration present richness for students (Demir, 2008).

Since the concept of learning styles, which emerged as a result of the study of students' individual differences, expresses students' learning preferences, it is necessary to take into account the individual differences of students and to create educational environments and teaching in this context (Ataseven & Oğuz, 2015; Bulut & Hasırcı, 2014; Kaf -Hasırcı, 2006; Kaplan & Kies, 1995). When the studies examining the effectiveness of instructional activities based on students' learning styles are

examined; It has been concluded that learning style-based instruction makes the course richer, increases student success, enables more permanent learning, and helps students to learn faster and easier (Arslan & Babadoğan, 2005; Bozkurt & Aydoğdu, 2009; Fer, 2011; Gelbal, 2010; Güven, 2004).

In the literature, many researchers have conducted studies on learning styles in various dimensions with different methods. Ataseven and Oğuz (2015) examined the theses written on learning styles with document review method. Studies on learning styles aiming to determine the effect of learning styles on academic achievement (Ekici, 2013; Kaf-Hasırcı, 2006; Koç, 2020), aiming to determine the relationship with various variables (Duman, 2008; Gülbahar, 2005; Güven, 2004; Kılıç & Karadeniz, 2004)), and the studies conducted in the descriptive survey model (Biçer, 2010; Mutlu, 2008; Şendil, 2011) were examined. Dinçöz (2007) worked on the learning styles of high school students in physics subject. Some of these studies (Arı, 2008; Arslan, 2012; Cengizhan & Özer, 2016; Çömek, 2009; Gökova, 2010; İnal 2013; Kaf-Hasırcı, 2006; Özdemir 2015) were conducted to determine whether the teaching conducted on different student groups based on learning styles has an effect on academic achievement; Science is a phenomenon that progresses in a cumulative way, there is a need for higher-level research with extensive coverage to interpret the knowledge accumulated by science in that field and to shed light on new studies (Akgöz, Ercan, & Kan, 2004). It is important to act from the knowledge accumulated by similar scientific studies in the respective field, to internalize this accumulation and to create a new foundation based on its contribution to the field. Glass (1976) stated that it is difficult and inadequate to generalize research in social sciences. The meta-analysis method combines the results of previous similar studies and facilitates generalizations in social sciences (Dinçer, 2014; Şahin & Tekdal, 2005). By using the meta-analysis method, more precise judgments and generalizations can be reached, because a single scientific study on a scientifically researched subject may be insufficient and incomplete in solving a problem, so combining the results of similar studies is important for the research area (Başol Göçmen, 2004; Dinçer, 2014; Çelik, 2013; Günhan Okursoy, 2009). From this point of view, since there is no research that examines the studies aimed at revealing whether learning styles have an effect on academic achievement or not, this study was needed, and the problem statement of the research was expressed as follows. "Does the education and instruction designed to accommodate the learning styles have an effect on the academic achievement of the student?"

This study was conducted to examine the effects of educational environments designed according to learning styles on academic achievement. Within the framework of this general purpose, it is aimed to determine the independent variables influencing learning styles and the effect sizes and directions of these variables by examining the scientific studies in this field.

Within the framework of the main purpose stated above, the answers to the following questions were sought within the scope of the study.

I. What is the effect of planned instruction according to learning styles on academic achievement?

II. Examined studies; Is there a significant difference between effect sizes according to course type, publication type and education level variables?

Method

This research is based on meta-analytical survey method. Meta-analysis study method is a variety of literature survey. It is a method that aims to make a holistic analysis by bringing together the results of quantitative studies (Durlak, 1995). In meta-analysis, it is aimed to calculate an integrated sample and a general effect size based on the samples and effect sizes of individual studies (Dinçer, 2014; Rothstein, Sutton, & Borenstein, 2005).

By examining the previous meta-analysis studies conducted in the field and considering the recommendations of the books accepted as reference in the field, the criteria for including and excluding the studies to be selected for this research were determined (Akgöz, Ercan & Kan, 2004; Çarkungöz & Ediz, 2009; Dinçer, 2014; Kaya & Kaya, 2013; Şahin & Tekdal, 2005) These inclusion & exclusion criteria are as follows;

Table 1. *Inclusion and exclusion criteria*

Inclusion criteria	Exclusion criteria
The sample size is specified.	Not using quantitative methods.
Arithmetic mean, standard deviation and t values for academic achievement are stated.	The article or paper being derived from a thesis
A reliable measurement tool to measure academic achievement is utilized.	Lack of data required to calculate effect size.
The selected study group is located within Turkish borders.	Absence of control group
Being conducted on the basis of one of the experimental research designs.	Not examining academic achievement
Published between 2006 and 2020.	
The experiment group receives instruction in accordance with their learning styles.	

As a result of the screening made in the light of the inclusionand exclusion criteria, 18 scientific studies were found to be suitable for this study. The flow chart showing the process of identifying the included studies is given below.

detection phase
- literature search based on keywords 283 theses ans 217 articles

scanning phase
- review by year227 theses and 142 articles

compliance testing phase
- examination in terms of academic achievement 40 theses and 27articles

inclusion phase
- review in terms of experimental studies 14theses 4 articles
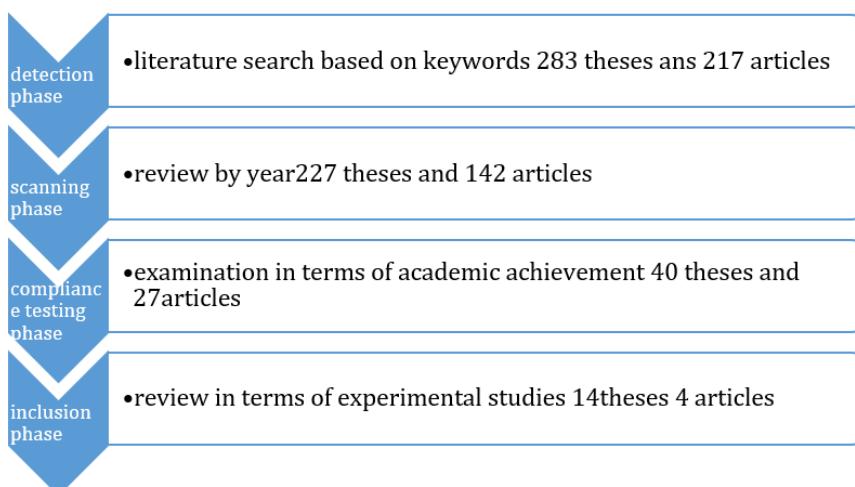
Figure 1. Prizma flowdiagramfor meta-analysis

Data Analysis

While analyzing the studies included in the study, first the individual effect sizes and variances of the studies were calculated and listed in a sample data table. Then, the moderator variables to be examined in the meta-analysis study were selected and the required data were transferred to the data table. The data in the sample data table has been transferred to the CMA (Comprehensive Meta-Analysis) program. After the data were entered into the program, the main effect size of the studies, bias analysis and heterogeneity test were analyzed with the program. Then, the effect sizes of the moderator variables were analyzed for significance, and the resulting data were transferred to the study.

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken. Since this study was a meta-analysis study, ethics committee approval was not required.

Findings

In this section, the findings of the study are presented.

Table 2 contains descriptive information about the studies included in the study.

Table 2. *Descriptive information about scientific studies included in the study*

Variable	Value	(f)	(%)
Publication type	Master's thesis	7	38.9
	Doctoral dissertation	7	38.9
	Article	4	22.2
Stage	Elementary School	3	16.7
	Middle School	4	22.2
	High School	4	22.2
	Undergraduate	7	38.9
Subject area	Science	8	42.2
	Computer Science	1	5.3
	Mathematics	3	15.8
	Social studies	3	15.8
	English	1	5.3
	Life sciences	2	10.6
	Math + Science	1	5.3

When the data in Table 2 are examined, it is seen that 7 studies were drafted as master's theses and doctoral dissertations and 4 studies were drafted as articles. The studies included in the study were mostly conducted at the undergraduate stage (f: 7). When we look at the variable of course subject area, most of the studies (f: 8) were conducted under the title of science.

Table 3 contains information about the combined sample size.

Table 3. *Overall sample size*

Sample Size Obtained from Studies Included in the Meta-Analysis Study	
Experiment (N)	Control (N)
738	727

When the data in Table 3 are examined, the overall experiment group size of the 18 studies included in the study consists of 738 individuals and the overall control group size consists of 727 individuals.

Table 4 contains information on individual effect sizes, variances, and standard error values of the studies.

Table 4. *Individual effect size of studies, variance value and standard error values*

Effect Size	Study	Effect Size	Variance	Standard Error
Small effect	Arslan (2012)	0.069	0.133	0.365
	Kaf (2006)	0.190	0.150	0.387
	Azar (2008)	0.200	0.055	0.235
	İnal (2013)	0.238	0.035	0.187
	Önder (2012)	0.434	0.085	0.292
Medium effect	Ermurat (2013)	0.554	0.094	0.307
	Özdemir (2015)	0.598	0.040	0.200
	Gökova (2010)	0.601	0.110	0.012
	Öztürk, (2017)	0.789	0.038	0.195
Large effect	BaşveBeyhan (2013)	0.874	0.066	0.257
	Ö. Kaf (2006)	0.875	0.178	0.422
	Gencel (2006)	0.891	0.088	0.195
Very large effect	Arı (2008)	1.034	0.038	0.364
	Cengizhan ve Özer (2016)	1.076	0.124	0.352
	Elçi (2008)	1.238	0.073	0.270
	Usta (2006)	1.309	0.367	0.135
	Çömek (2009)	1.318	0.281	0.079
	Önder (2006)	2.188	0.108	0.329
	Çakıroğlu (2014)	3.772	0.163	0.404

When the individual effect levels of the studies in Table 4 are examined, it is seen that 5 studies have small effect size, 4 studies have medium effect size, 3 studies have large effect size, and 7 studies have very large effect size.

Publishing Bias
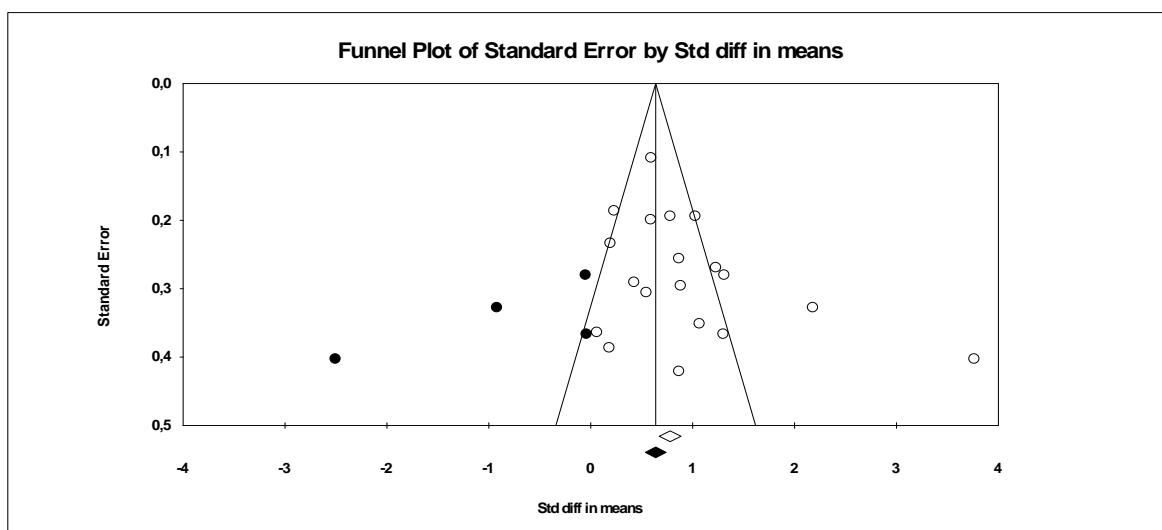
Figure 2. Funnel plot

Figure 2 shows that 19 effect sizes obtained from 18 studies have a symmetrical distribution. Vertical line in the graph shows the overall effect size in the absence of publication bias. The fact that

the distribution in the chart shows symmetrical features with respect to the vertical line indicates that there is no display of publication bias. In order to make more detailed comments on publication bias, it is necessary to look at the statistical value of Begg and Mazumder rank correlations.

Table 5 contains detailed information about Begg and Mazumder rank correlations statistics.

Table 5. *Statistics of Begg and Mazumdar rank correlations*

Begg and Mazumdar rank correlations	
Kendal's S statistics (P-Q)	44.0000
Kendal's Tau without continuity correction	
Tau	0.25731
z- value for tau	1.53937
P-value (1-tailed)	0.06186
P-value (2-tailed)	0.12372

Upon examination of the data in Table 5, the P-value (2-tailed) being greater than 0.05 reveals that there is no publication bias in the meta-analysis (Dinçer, 2014). Table 6 contains information on the Classic Fail-Safe N value regarding the publication bias of the research.

Table 6. *Classic fail-safe N value*

Variable	Value
z value of the observed study	14.75018
p value of the observed study	0.00000
Alfa	0.05000
Number of observed studies	19
Number of studies to be included for p> alfa	1058

When the data in Table 6 are examined, the number of studies that should be included in meta-analysis is 1058 in order for the p value to exceed the significance level of 0.05. It can be concluded that there is no publication bias, since it is unlikely to access 1058 more studies that test the effect of learning styles on academic achievement with experimental designs.

Table 7 includes the findings calculated according to the fixed and random effects model of the studies.

Table 7. *Results of the studies according to the fixed effect and random effects model and heterogeneity test results*

Model	Effect size and 95% confidence interval					Null Hypothesis		Heterogeneity			
	Number of ...	Effect size	Standard error	Variance	Lower limit	Upper limit	Z-value	P	Q-value	Df (Q)	I2
Fixed	19	0.779	0.055	0.003	0.672	0.886	14.229	0.000	110.686	18	83.738
Random	19	0.936	0.144	0.021	0.644	1.208	6.438	0.00			

When the data in Table 7 are examined, the general effect size of the studies included in the study according to the fixed effect model is d = 779, the standard error value is SE = 0.056, the upper limit of the confidence interval is 0.886 and the lower limit is 0.672. When the results of the homogeneity test were examined, the value of Q = 110.686 was found. In order to interpret the Q value, the X2 table was looked at and it was found that the equivalent in 18 degrees of freedom at the 95% significance level was 8.231. The value of the Q statistic (110.686) with 18 degrees of freedom was found to exceed the equivalent value in the chi-square table (8.231) therefore the null hypothesis of homogeneity was

rejected according to the fixed effect model. In other words, it exhibits a heterogeneous feature according to the fixed effect model. The I2 statistic, which reveals the ratio of the overall effect size of the studies to the total variance, reveals a sharper result regarding the heterogeneity of the study (Popay vd, 2006). When interpreting the data for the I2 statistic, it is assumed that 25% heterogeneity is low, 50% is moderate, and 75% is at a high level (Dinçer, 2014). It was seen that the I2 statistic value (83.738) in Table 5 indicates a high level of heterogeneity. Homogeneity tests (Q statistic value and I2 statistic value) showed that the studies have heterogeneity. Due to heterogeneity, the operating model of the study was accepted as random effects.
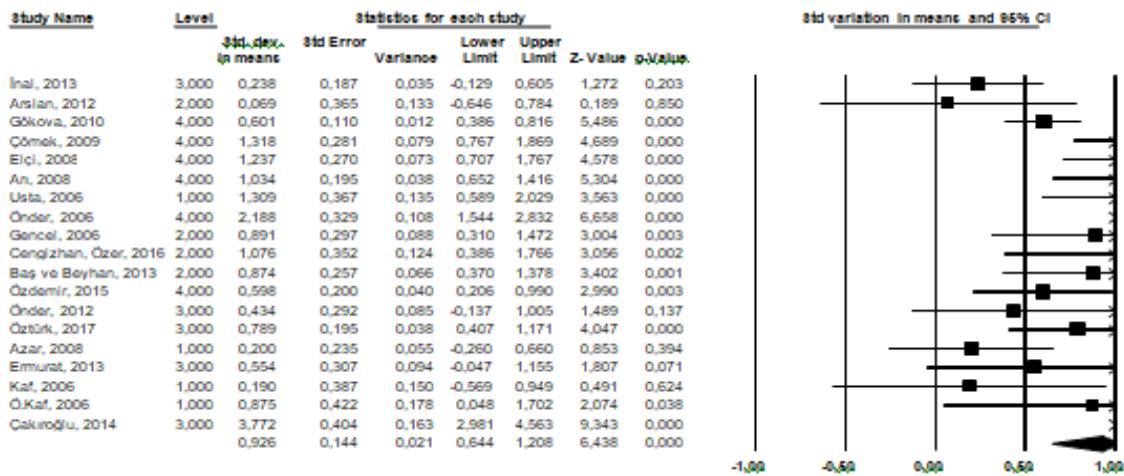
Figure 3. Effect sizes of studies in random effects model

When the data in Figure 3 are examined, looking at the combined effect size value (E ++ = 0.926), it is seen that the effect of learning style-based instruction on academic achievement is positive. According to the combined effect size value (0.926), it can be said that there is a high level of positive effect.

Table 8 contains information about the moderator variable analysis of the studies.

Table 8. *Moderator analysis*

Variable	Value	N	Effect Size	Standard Error	Df	Confidence Interval		Qb	P
						Lower	Upper		
Type of Publication	Master thesis	7	1.232	0.350	6	0.546	1.919	1.974	0.373
	Doctoral dissertation	7	0.807	0.169	6	0.475	1.139		
	Article	5	0.712	0.129	4	0.460	0.964		
Stage	Elementary School	4	0.607	0.280	3	0.059	1.156	2.762	0.430
	Middle School	4	0.757	0.197	3	0.370	1.144		
	High School	5	1.111	0.462	4	0.204	2.017		
	Undergraduate	6	1.104	0.207	5	0.699	1.509		
Subject Area	Science	8	0.636	0.174	7	0.294	0.978	63.733	0.000
	Computer Science	1	0.601	0.110	0	0.386	0.816		
	Mathematics	3	1.497	0.335	2	0.840	2.154		
	Social studies	3	0.731	0.126	2	0.484	0.979		
	English	1	0.874	0.257	0	0.370	1.378		
	Life sciences	2	0.512	0.342	1	-0.158	1.182		
	Math + Science	1	3.772	0.404	0	2.961	4.563		

Examination of the data in Table 7 reveals that the type of publication variable did not play a moderator role (Qb = 1.974; p = 0.373), and the education stage variable did not play a moderator role (Qb = 2.762; p = 0.430). The subject area variable plays a moderator role between learning styles and academic achievement (Qb = 63.733; p <0.05).

Discussion and Conclusion

The number of studies on learning styles is increasing quantitatively, as in any field of science which progresses cumulatively. This situation has made it necessary to combine similarly patterned/designed studies aiming for the same goal, analyze them according to a certain systematic and present them to the reader (Sağlam & Yüksel, 2007; Üstün & Eryılmaz, 2014). In this study, a meta-analysis was conducted to investigate the effect of learning-style based instruction on academic achievement. Inclusion and exclusion criteria were established in line with the purpose of the study, and the studies were examined according to these criteria. As a result of the screening, 18 studies were included in the meta-analysis study and the total control group comprised 727 individuals and the experiment group comprised 738 individuals. 19 different individual effect sizes were obtained from 18 studies included in the meta-analysis, and all of these effect sizes were found to be positive. As a result of the analysis, the combined effect size was calculated as (E ++ = 0.779) (lower limit 0.672; upper limit 0.886; p = 0.000 at 95% confidence interval). Data obtained from the results of the homogeneity test (Q = 110.686; df: 18, p = 0.000 and I2 = 83.738%) the hypothesis that the calculated effect sizes are homogeneous was rejected, the analyzes were made according to the random effects model. The combined effect size calculated according to the random effects model was calculated as (E ++ = 0.926) (lower limit 0.644; upper limit 1.208; p = 0.000 at 95% confidence interval). This calculated effect size is a highly statistically significant according to Cohen (1988)'s effect size classification (Dinçer, 2014). It has been seen that these results are compatible with similar studies conducted earlier in the literature. Dunn, Griggs, Gorman, Olson, & Beasley examined 42 studies focusing on the effect of learning styles on academic achievement and calculated the joint effect size as (E++=0.755). Similarly, Lovelace (2005) reached the result of a high level of positive effect in a meta-analysis study in which he examined studies prepared according to the Dunn and Dunn learning model. However, it is seen that there are studies that do not coincide with these results. For example, Slemmer (2002) calculated the effect size in 48 experimental studies (d=0.13) in which he examined the effect of learning styles on academic achievement. Similarly, Kavale and Fortness (1987) examined 39 studies on this subject and calculated the overall effect size (d=0.14).

The fact that teaching activities designed in accordance with learning styles have a positive effect on academic achievement, has been concluded by many previous studies (Aslan & Babadoğan, 2005; Ataseven & Oğuz, 2015; Azar, 2006; Baş & Beyhan, 2013; Elçi, 2008; Ermurat, 2013; Gökova, 2010; Önder, 2006; Kaf, 2006; Özdemir, 2015). The conclusion of this meta-analysis study stating that learning styles have a positive significant effect on academic achievement; in this respect, has been supported by the results of previous studies.

Publication bias for 19 effect sizes obtained from 18 studies was calculated with funnel plot, Begg and Mazumdar rank correlation value and Classic Fail-Safe N statistics, and by looking at the statistical values found, it was concluded that there was no publication bias. This result shows great similarities with the results of the study by Kanadlı (2016).

As a result of the meta-analysis, the effect size difference for the publication type moderator variable is not statistically significant (Qb = 1.974; p = 0.373). Likewise, the effect size difference of the education stage moderator variable is not statistically significant (Qb = 2.762; p = 0.430). In other words, it has been determined that the publication type (master's thesis, doctoral dissertation or article) of the studies included in the meta-analysis did not cause a differentiation in the effect size of learning-style based instruction on the progress of academic achievement. Likewise, the education stage (primary school, secondary school, high school or undergraduate), did not cause a differentiation in the effect size of learning-style based instruction on the progress of academic achievement. According to Kök (2018), in order to make broader generalizations for variables that do not cause differentiation in meta-analysis studies, new studies to be conducted in this field are required.

However, a significant difference was found between the mean effect sizes according to the subject area variable (science, computer science, mathematics, social studies, English, life science, mat + science) (Qb = 6.733; p = 0.000). This result contradicts with the results of the meta-analysis study conducted by Kanadlı (2016). This contradiction is thought to be due to the fact that, after 2016, the studies that meet the inclusion criteria of this research are mostly focused on 'Science'. It is thought that this differentiation will disappear if similar numbers of studies are conducted in other fields. Because it is supported by the results of the experimental studies that learning-style based instruction makes a positive contribution to academic success in every field (Arslan, 2012; Azar, 2008; Ermurat, 2013; Gökova, 2010; İnal; 2013; Kanadlı, 2016; Kaf-Hasırcı, 2006; Önder, 2012; Özdemir, 2015; Öztürk, 2007).

Recommedations

Standard scores (such as p and z values) and effect sizes can be reported in studies to facilitate comparison of experimental studies.

The overall effect size of learning styles on academic achievement is calculated as (E ++ = 0.926). It may be suggested to conduct meta-analysis studies in this area at certain time intervals.

In this study, three types of moderator variables were examined (Publication type, Education stage and subject area). Other variables can be examined in similar studies.

Studies conducted with experimental designs are included in the meta-analysis in this study. A meta-analysis may also be recommended on correlational studies conducted in the same field.

In this study, the general effect of learning-style based instruction on academic achievement was calculated by meta-analysis method. Meta-analysis studies can be conducted on other dimensions of learning styles.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Öğrenme Stillerinin Akademik Başarı Üzerindeki Etkisi. Bir Meta-Analiz

Giriş

Öğrenme stili; öğrencilerin nispeten istikrarlı bir şekilde öğrenmenin gerçekleştiği ortamı nasıl algıladığı, nasıl iletişim kurduğu ve sorulara nasıl cevap verdiğini etkileyen ve öğrencinin bilişsel, duyuşsal ve devinimsel özelliklerinin bütünüdür (Ahmed, 2013). Öğrencilerin bireysel farklılıklarının araştırılması sonucunda ortaya çıkan öğrenme stilleri kavramı, öğrencilerin öğrenmeye karşı tercihlerini ifade ettiğinden dolayı, öğrencilerin bireysel farklılıklarının göz önünde tutulması ve bu bağlamda eğitim öğretim ortamlarının oluşturulması ve öğretimin gerçekleştirilmesi gerekmektedir. Öğrencilerin öğrenme stilleri dikkate alınarak yapılan eğitim faaliyetlerinin etkililiğini inceleyen çalışmalar incelendiğinde; öğrenme stiline dayalı eğitimin dersi daha zengin hale getirdiği, öğrenci başarısını artırdığı, daha kalıcı öğrenmelerin gerçekleşmesini sağladığı, öğrencilerin daha hızlı ve kolay öğrendiği gibi olumlu sonuçlara ulaşılmıştır (Arslan ve Babadoğan, 2005; Bozkurt ve Aydoğdu, 2009; Fer, 2011; Gelbal, 2010; Güven, 2004).

Alanyazında, öğrenme stilleri ile ilgili çeşitli boyutlarda farklı yöntemlerle birçok araştırmacı tarafından çalışmaların yapıldığı görülmüştür (Ekici, 2013; Kaf-Hasırcı, 2006; Koç, 2020). Bilim birikimli olarak ilerleyen bir olgudur, bilimin o alanda oluşturduğu bilgi birikimini yorumlamak ve yeni çalışmalara ışık tutmak için geniş kapsayıcılığa sahip üst araştırmalara gereksinim vardır (Akgöz, Ercan ve Kan, 2004). İlgili alandaki benzer bilimsel çalışmaların ortaya koyduğu bilgi birikiminden hareket etmek, bu birikimi özümsemek ve yeni bir temel oluşturmak, alana yapacağı katkıdan dolayı önem arz etmektedir.

Meta-analiz yöntemi, daha önce yapılan benzer çalışmaların sonuçlarını birleştirerek, sosyal bilimlerde de genellemelerin yapılmasını kolaylaştırmaktadır (Dinçer, 2014). Meta-analiz yöntemi kullanılarak daha kesin yargılara ve genellemelere varılabilir, çünkü bilimsel olarak araştırılan bir

konuda tek bir bilimsel çalışmanın önem arz eden bir problemin çözümünde yetersiz ve eksik kalabileceğinden dolayı benzer çalışmaların sonuçlarının harmanlanması araştırılan alan için önemlidir (Başol Göçmen, 2004). Bu noktadan hareketle öğrenme stillerinin akademik başarıya etkisinin olup olmadığını ortaya koymaya yönelik çalışmalarımeta analitik yöntemle inceleyen bir araştırmaya rastlanmadığından bu araştırmaya gereksinim duyulmuş ve araştırmanın problem cümlesi şu şekilde ifade edilmiştir. "Öğrenme stillerine uygun olarak düzenlenen eğitimin ve öğretimin öğrencinin akademik başarısı üzerindeki etkisivar mıdır?" Bu amaç çerçevesinde şu sorulara yanıt aranmıştır:

- Öğrenme stilleri ile akademik başarı arasındaki ilişkinin etki büyüklüğü ve yönü nedir?
- Yapılan çalışmaların uygulandığı ders türleri arasında öğrenme stillerine göre düzenlenen eğitimin etki büyüklükleri arasında anlamlı bir fark var mıdır?
- Araştırmaların yayın türü değişkenine göre öğrenme stillerine göre düzenlenen eğitimin etki büyüklükleri arasındaki fark anlamlı mıdır?
- Öğretim kademesine göre öğrenme stillerine göre yapılan eğitimin etki büyüklükleri arasında anlamlı bir fark var mıdır?

Yöntem

Bu araştırma meta-analitik tarama yöntemi esas alınarak yapılmıştır. Meta analiz çalışmaları bir tür alanyazın tarama yöntemidir. Nicel çalışmaların sonuçları bir araya getirilerek bütünsel bir analiz yapmayı hedefleyen bir yöntemdir (Durlak, 1995). Meta analizde bireysel çalışmaların örneklemleri ve etki büyüklüklerinden yola çıkarak bütünleştirilmiş bir örneklem ve genel bir etki büyüklüğünün hesaplanması amaçlanmaktadır (Dinçer, 2014; Rothstein, Sutton ve Borenstein, 2005). Alanda yapılmış daha önceki meta-analiz çalışmaları incelenerek ve alanda referans kabul edilen kitapların önerileri dikkate alınarak bu araştırma için seçilecek çalışmaları araştırmaya dahil etme ve araştırmadan hariç tutma kriterleri şu şekilde belirlenmiştir.

Dahil edilme kriterleri
- Örneklem sayısının belirtilmiş olması.
- Akademik başarıya için ortalama, ss ve t değerlerinin verilmiş olması.
- Akademik başarıyı ölçmeye yönelik bir ölçme aracının kullanılmış olması.
- Çalışma grubunun Türkiye sınırları içerisinden seçilmiş olması.
- Deneysel araştırma desenlerinden biri esas alınarak yürütülmüş olma.
- Deney gurubuna öğrenme stillerine uygun düzenlenmiş eğitim verilmiş olma.

Hariç tutulma kriterleri
- Nicel yöntemlerin kullanılmamış olması
- Tezden türetilmiş makale veya bildiri olması
- Etki büyüklüğünü hesaplamak için gerekli olan verilerin sunulmamış olması
- Kontrol grubunun olmaması
- Akademik başarıyı incelemiyor olması

Araştırmaya dahil edilen çalışmalara analiz edilirken, önce araştırmaların bireysel etki büyüklükleri ve varyansları hesaplanarak örnek bir veri tablosuna eklenmiştir. Daha sonra meta analiz çalışmasında incelenecek olan moderatör değişkenler seçilmiş ve veri tablosuna gereken veriler aktarılmıştır. Örnek veri tablosundaki veriler CMA (Compherensive Meta-Analiz) programına aktarılmıştır. Daha sonra hem gene letki büyüklüğü hem de moderatör analizleri yapılmıştır.

Araştırmanın Etik İzinleri

Yapılan bu çalışmada "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında uyulması belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan "Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler" başlığı altında belirtilen eylemlerden hiçbiri gerçekleştirilmemiştir.

Bulgular

Bu araştırmada öğrenme stillerine uygun olarak yapılan eğitimin akademik başarı üzerindeki etkisinin araştırmak için meta-analiz yapılmıştır. Çalışmanın amacı doğrultusunda dahil edilme ve hariç tutulma kriterleri oluşturulmuş ve bu kriterlere göre araştırmalar incelenmiştir. Yapılan tarama sonucunda 18 çalışma meta-analiz çalışmasına dahil edilmiş ve 738 kişilik deney ile 727 kişilik kontrol grubu büyüklüğüne ulaşılmıştır. Meta-analize dahil edilen 18 çalışmadan 19 ayrı bireysel etki büyüklüğü elde edilmiştir, bu etki büyüklüklerinin tamamının pozitif yönde olduğu tespit edilmiştir. Yapılan analiz sonucunda birleştirilmiş etki büyüklüğü (E++ =0,779) olarak hesaplanmıştır (%95 güven aralığında alt limit 0,672; üst limit 0,886; p=0,000). Homojenlik testi sonuçlarından elde edilen veriler ile (Q=110,686; df:18, p=0,000 ve I2= %83, 738) hesaplanan etki büyüklüklerinin homojen olduğuna ilişkinhipotez reddedilmiştir, rastgele etkiler modeline göre analizler yapılmıştır. Rastgele etkiler modeline göre hesaplanan birleştirilmiş etki büyüklüğü ise (E++ =0,926) olarak hesaplanmıştır (%95 güven aralığında alt limit 0,644; üst limit 1,208; p=0,000). Hesaplanan bu etki büyüklüğü Cohen (1988)'in etki büyüklüğü sınıflamasına göre yüksek düzeyde istatistiksel olarak anlamlı bir etki büyüklüğüdür (Dinçer, 2014).

Yapılan meta-analiz sonucunda yayın türü moderatör değişkenine ait etki büyüklüğü farkı istatistiksel olarak anlamlı değildir (Q_b= 1,974; *p*= 0, 373). Aynı şekilde eğitim kademesi moderatör değişkenlerine ait etki büyüklüğü farkı da istatistiksel olarak anlamlı değildir (Q_b= 2,762; *p*=0, 430). Diğer bir deyişle meta-analize uygulanan araştırmaların yayın türünde; (yüksek lisans tezi, doktora tezi ya da makale) öğretim stillerine göre düzenlenmiş öğretim uygulamalarının akademik başarı gelişiminde etki büyüklüğü bakımından bir farklılaşmaya etki etmediği saptanmıştır. Öte yandan ders türü moderatörüne göre ise anlamlı bir sonuç elde edilmiştir.

Tartışma ve Sonuç

Öğrenme stillerine uygun olarak tasarlanan öğretim etkinliklerinin akademik başarıya olumlu etki yaptığı, daha önce yapılmış olan (Ataseven ve Oğuz, 2015; Özdemir, 2015; Baş ve Beyhan, 2013; Ermurat, 2013; Gökova, 2010; Elçi, 2008; Önder, 2006; Kaf, 2006; Azar, 2006; Aslan ve Babadoğan, 2005) birçok çalışma tarafından saptanmıştır. Bu meta-analiz çalışmasından elde edilen, öğrenme stillerinin akademik başarı üzerinde pozitif anlamlı etkisi olduğu yönündeki sonuç; bu bakımdan daha önce yapılmış olan araştırmaların sonuçlarıyla desteklenmiştir. Moderatör değişkenler bakımından ders türü değişkenine göre (fen, bilgisayar, matematik, sosyal, İngilizce, hayat bilgisi, mat+fen) ortalama etki büyüklükleri arasında anlamlı bir fark bulunmuştur (Qb= 63,733; p=0, 000). Bu sonuç Kanadlı, (2016) tarafından yapılmış olan meta-analiz çalışmasının sonuçları ile çelişmektedir. Bu çelişki, 2016 yılından sonra, bu araştırmanın dahil edilme kriterlerine uyan çalışmaların daha çok 'Fen' alanında yoğunlaşmış olmasından kaynaklandığı düşünülmektedir.

Öneriler

Yapılan deneysel çalışmaların daha kolay karşılaştırılabilmesi için standart puanlar (p ve z değeri gibi) ve etki büyüklükleri araştırmalarda rapor edilebilir.

Öğrenme stillerinin akademik başarı üzerindeki genel etki büyüklüğü (E++ =0,926) olarak hesaplanmıştır. Belli zaman aralıklarında bu alanda meta-analiz çalışmaları yapılması önerilebilir.

Bu araştırmada üç tür moderatör değişken incelenmiştir (Yayın türü, Okul seviyesi ve ders türü). Benzer çalışmalarda başka değişkenler de incelenebilir.

Bu çalışmada deneysel desenlerle yürütülen çalışmalar meta-analize dahil edilmiştir. Aynı alanda yapılan korelasyonel çalışmalar üzerinde de meta-analiz yapılması önerilebilir.

Bu çalışmada öğrenme stillerine uygun yapılan eğitimin akademik başarı üzerindeki genel etkisi meta-analiz yöntemiyle hesaplanmıştır. Öğrenme stillerinin başka boyutları üzerinde de meta-analiz çalışmaları yapılabilir.

Employers Views on Problems Encountered by Individuals with Intellectual Disabilities at Workplace

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Abstract

This research aims to determine employers' views on the problems experienced by mentally disabled individuals in the workplace. The study was conducted with ten employers who employed individuals with intellectual disabilities in a Western Black Sea Region province. The research data, which was conducted as a case study from qualitative research method designs, were collected through face-to-face interviews with semi-structured interview questions. The obtained data were analysed by content analysis. At the end of the data obtained, the findings of the research were gathered under a main theme and six categories. These categories are shift system, rest time, harmony and communication with colleagues, like the job, hygiene and cleaning, and tools and machines used in the workplace. According to the research findings, employers stated that individuals with intellectual disabilities have problems keeping up with the shift system and rest periods. In addition, employers stated that individuals with intellectual disabilities have problems liking their work and fulfilling the task. Employers pointed out that these problems stemmed from their inadequacies. They reported that they had problems in cleaning and hygiene, especially in the food sector. The study's findings were discussed concerning the relevant literature, and suggestions for future research were included.

Keywords: Employers, job, intellectual disabilities, case study, special education.

Introduction

The ability of individuals with intellectual disabilities to be independent and productive depends on having a profession and actively participating in working life. In this sense, individuals with intellectual disabilities should be given vocational education/training appropriate to their interests and abilities and placed in a job aligned with their education. Individuals with intellectual disabilities who are given vocational training and placed in a position should be productive individuals and continue their working life. On the other hand, a stable business life depends on employers' expectations, identifying problems in business life, and producing solutions. In this context, this study aims to determine employers' opinions about the difficulties experienced by individuals with intellectual disabilities in the work environment.

Vocational training is the first stage of acquiring a profession for individuals with intellectual disabilities. Vocational education is a program designed for students to gain knowledge, skills, and competencies specific to a particular job, trade, or occupation/occupation class (UNESCO, 2012). By focusing on pre-service education and training in vocational education, students are prepared to meet the needs of the labour market in certain occupations (Chiang et al., 2022). In this context, individuals with intellectual disabilities who do not receive vocational training and are not recruited into the workforce cannot gain their independence in social and financial terms. In addition, they cannot become producers in society. The way to prevent this situation is to provide vocational training to individuals with intellectual disabilities, employ them, and follow the employment processes.

Vocational education and training focus on the ability of individuals with disabilities to do valuable and productive work in different jobs according to their abilities (Majid & Razzak, 2015). In this sense, it is aimed at individuals with special needs to live independently, become self-sufficient, and integrate with society (Özbey & Diken, 2010). Individuals with intellectual disabilities need professional skills to integrate with the community and move from being a consumer to a producer as independent individuals. Gaining vocational skills to students with intellectual disabilities allows individuals to earn money, work in cooperation, and improve their social relations. In addition, the acquisition of vocational skills also increases the value given to individuals with intellectual disabilities (Maciag et al., 2000). For

this reason, individuals with intellectual disabilities need to acquire a profession that will participate in working life to integrate with society as independent adults.

It is not enough for individuals with intellectual disabilities to have a job alone to be independent and productive. They also need to be placed where they can work and produce. In this sense, an essential stage after completing vocational training is the employment stage. In the 84th article of Labour Law No. 1475, "The Employment Agency is responsible for collecting information for all kinds of economic enterprises and other works that are like free art, doing the necessary studies for requesting workers and organizing the job search, directing them to the profession, increasing the vocational education of the workers and training skilled workers obliged to work on the necessary measures." provision is included. In addition, it is tried to increase the employment opportunities of individuals with special needs through the quota system stipulated in Article 30 of Labour Law No. 4857. Fifty or more workers are employed within the quota system defined in Article 30 of the relevant Labour Law; a) 3% in private sector workplaces and 4% in public workplaces (EKPSS score is required for disabled employment in public workplaces). In addition, for each individual with special needs employed by private sector employers, all of the employer's shares of social security premiums at the minimum wage are covered by the Treasury. Fines collected from employers for not employing special needs workers are used for individuals with special needs to establish their own business, find a job, support technologies, work placement, and ensure their adaptation to work and workplace and in such projects. Individuals with special needs who are registered with the Turkish Workers' Organization (ISKUR) are directed to courses or on-the-job training programs to increase their professional qualifications or to be placed in jobs suitable for their situation by providing employment and vocational counselling services. In addition, İSKUR encourages individuals with special needs to set up their own businesses (ISKUR, 2018). Despite all legal regulations and supports, there are problems in the employment of individuals with special needs. Individuals with special needs face many difficulties in the labour market, such as unemployment, discrimination, and social prejudice. This situation has a negative impact on the employment rates and earnings of individuals with special needs (Aköğretmen & Orhan, 2020). It is vital to investigate these problems and produce solutions because it is thought that identifying the problems experienced and revealing the answers will contribute to acquiring a profession and employing individuals with special needs.

In the related literature, there are various studies on the employment of individuals with intellectual disabilities. Research findings are generally determining employer attitudes toward individuals with special needs (Akardere, 2005; Eratay & Eldeniz-Çetin, 2013; Fırat, 1993; Hasırcıoğlu, 2006; Özmen, 1996), directing them to the profession and employing them (Soyal, 1993), physical evaluating the suitability of the employer (Ün et al., 2001), opinions and suggestions of employers and other stakeholders regarding employment (Baran & Cavkaytar, 2007; Uçar, 2016; Özdemir, 2008), planning the transition from school to work and professional life, and getting the opinions of the managers regarding this transition (Gürsel et al., 2007; Gürsel & Ergenekon, 2001), employer perceptions (Olson et al., 2001; Ozawa & Yaeda, 2007), problems experienced in the employment process (Kurt, 2020), knowledge levels of individuals with special needs regarding their employment rights (Orhan, 2015) and employment policies (Sen, 2018).

Various studies examine the employment problems of individuals with intellectual disabilities in the literature. Migliore et al. (2007) stated that most of the participants want to work in unprotected

workplaces as a result of their research examining the difference between the employment policies of individuals with intellectual disabilities and the implementation process. He also stated that, if necessary, support is provided to individuals with intellectual disabilities, they can work in unprotected workplaces. Güneş & Akçamete (2014), as a result of their research in which employers took the opinions of employers regarding the employment of individuals with special needs; stated that it is essential for them to be compatible, to work with a team, to take responsibility, to use technology, to communicate, to have academic, security and job skills to employ individuals with special needs. Employers suggested that individuals with special needs should receive some of their education at their workplaces during school. That job description should be made, and individuals with special needs should be trained according to their job descriptions. As a result of the research of Uçar (2016), in which he examined the opinions and suggestions of the stakeholders involved in the employment process of individuals with intellectual disabilities, the stakeholders suggested that the number and diversity of workshops should be increased. In addition, while teachers and school administrators said they were involved in the employment process by guiding them, parents and employers indicated that they were not. Bolli et al. (2018) drew attention to the participation of employers in three circles at the end of their research in which they measured the education-employment link. These; a) employer involvement in defining qualification standards, b) employer involvement in deciding the timing of curriculum updates, and c) a combination of workplace and classroom training. Kurt (2020) stated that at the end of his research examining the employment problems of individuals with intellectual disabilities, employers eliminated the existing prejudices and hesitations of individuals with intellectual disabilities through their success after starting their business life.

As summarized above, a limited number of studies have been found in the literature on what kind of competencies employers expect from individuals with intellectual disabilities and the problems they experience in their workplaces. However, many studies are needed to examine the expectations and problems experienced by employers who employ individuals with intellectual disabilities. In this context, it is thought that the data obtained at the end of the research is essential in contributing to the relevant literature. This research was needed because it will guide employers about the points to be taken into account when hiring individuals with intellectual disabilities and can form an idea about the problems faced by individuals with intellectual disabilities. Based on this requirement, the research aims to determine the employers' views on the problems faced by individuals with intellectual disabilities who are placed in a job. In line with this general purpose; the opinions of employers regarding the work habits of individuals with intellectual disabilities, their attitudes towards work, the problems they experience in their relations with their colleagues, the problems they experience in work-related skills, the problems they experience in displaying social behaviour in the work environment, the problems they encounter in displaying their communication skills and the problems they experience in fulfilling new job skills were consulted.

Method

Model

This research was conducted to determine the opinions of employers about the problems experienced by individuals with intellectual disabilities in the work environment and was carried out as a case study from qualitative research designs. A case study is a qualitative approach in which the researcher collects detailed and in-depth information about real life, a current limited system, or

multiple limited situations in a specific time through various sources of information and presents a situation description or situation themes (Creswell, 2013; Glesne, 2015). Bogdan & Biklen (1998) stated that the unit to be examined in case studies could be an individual or a community, and the situation of this person or community in a special process can be examined.

Research Group

To add speed and practicality to the research, easily accessible case sampling, one of the purposeful sampling methods, was used in the selection of participants (Yıldırım & Şimşek, 2018). In this sense, the research was carried out with ten workplaces and employers in a city center located in the Western Black Sea Region, who employ mentally handicapped workers and agreed to participate voluntarily. The demographic information of the participants is shown in Table 1.

Table 1. *Demographic pieces of information about participants*

No	Gender	Age	Education Level	Professional Experience (year)	Professional Area	Number of Individuals with Intellectual Disability Employed
1	Women	34	Undergraduate	9	Textile	1
2	Men	47	Undergraduate	20	Transportation	1
3	Men	50	High School Graduate	32	Retailing	1
4	Men	48	High School Graduate	30	Automobile Industry	1
5	Men	62	Primary School Graduate	50	Food Industry	1
6	Men	54	High School Graduate	32	Automobile Industry	1
7	Women	46	High School Graduate	20	Food Industry	1
8	Women	44	Undergraduate	15	Textile	1
9	Men	39	Associate degree	19	Repair Work	1
10	Men	47	Associate degree	27	Food Industry	1

When Table 1 is examined, the ages of the employers vary between 34 and 62; three are female, and seven are male. The educational status of the participants ranged from primary school to undergraduate. Their professional Experience varies between 9-50 years. Employers serve in the food, textile, transportation, retail, automotive, and repair/repair sectors. Each employer employs one intellectually disabled individual.

Data Collection Tools & Data Collection Process

At the end of the literature review, the interview questions used in the research were determined, and the researchers created an interview form. After the interview form was created, the interview form was given its final form by taking the opinions of two experts who have doctorate degrees in the field of special education and qualitative research. A pilot study was conducted with an employer to test the questions before data collection began. As it was seen that the questions were easily understandable and answerable at the end of the pilot interview, no changes were made to the data collection tool. The study did not include the pilot interview to try out the questions.

The data of the research were collected in the semi-structured interview technique, which is one of the qualitative data collection methods. Appointments were made for the interview by determining the suitable days and hours for the employers who agreed to participate in the research. The interviews were conducted in the employers' rooms in their factories. All of the interviews were conducted face-to-face and one-on-one by the researcher. In the interviews, seven semi-structured questions were directed to the participants in order and recorded with a voice recorder. The shortest interview lasted 12 minutes 23 seconds and the longest 18 minutes 38 seconds.

Data Analysis

The data obtained at the end of the research were analysed with content analysis. After the interviews were completed, the transcription of the audio recordings was started. While the transcripts of the interviews were made, each speech was made as it was heard, without any corrections, and in the order of the interviewees. Secondly, the information in the written data was systematically coded. The primary purpose here is to reach concepts and relationships that can explain the collected data (Miles et al., 2018; Yıldırım & Şimşek, 2018). For this, similar data were brought together within the framework of specific concepts and themes. To ensure the reliability of the data obtained, the opinion of an expert working in the field of special education and experienced and knowledgeable in qualitative research was taken. The coding made by the researcher and the expert was compared. The formula [Agreement/ (Disagreement + Disagreement)] X 100 suggested by Miles & Huberman (1994) was used in the comparison. As a result of the calculation, the rate of agreement between encoders was 89%.

Ethical Permits of Research

In this work, we adhered to the guidelines outlined in the "Higher Education Institutions Scientific Research and Publication Ethics Directive." The directive's second section, "Actions Against Scientific Research and Publication Ethics," has a list of actions that have not been taken.

Findings

This section presents the themes, categories, and codes obtained from the information given by the employers interviewed and that constitute the research findings. The research findings were gathered under the theme of the problems experienced by employers in the work environment of individuals with intellectual disabilities. The categories and codes of the study are shown in Figure 1.
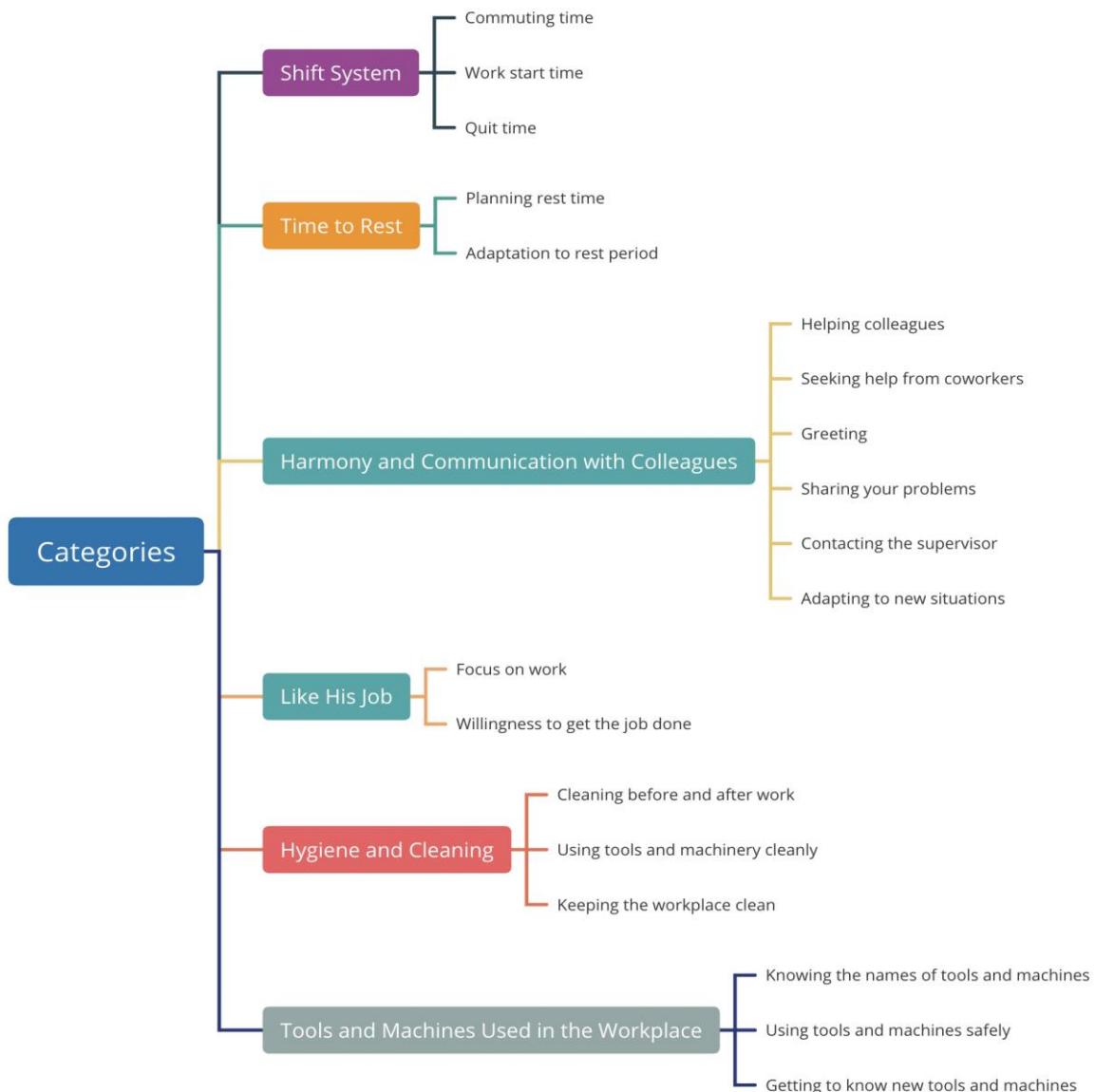
Figure 1. Opinions of employers on the problems experienced by employees with intellectual disabilities at work

As seen in Figure 1, the problems experienced by employers of employees with intellectual disabilities in their working environments are grouped under six categories. These categories are; shift system, rest time, harmony and communication with colleagues, like the job, hygiene and cleaning, and tools and machines used in the workplace.

Regarding the shift system, in the first category of the research, employers stated that employees with intellectual disabilities have problems with their arrival and departure times, starting and leaving work. Regarding this category;

"I must state that they couldn't keep up with the shift system when they started to work, and accordingly, they had problems going to and from the service. Again, there were problems with shift changes, and he could not understand when he would start work." (Participant 3).

They expressed their opinion: "They could not keep up with the shift system, and accordingly there were problems in going to and from the service" (Participant 5).

Regarding rest time, in the second category of the research, employers mentioned that their employees with intellectual disabilities have problems planning and adapting to rest time. For these categories and codes, Participant 1;

"He was dozing off during the rest breaks, which was a problem for us for a long time. Other than that, we do not have any problems". Another interviewee said, "There are times when he goes overtime during breaks, but he usually arrives on time and gets to work." he expressed his opinion.

Regarding the third category of the study, which is the category of harmony and communication with colleagues, the opinions of employers mentioned that they have problems in helping their colleagues and asking for help, greeting, sharing their concerns, communicating with their supervisors, and adapting to new situations. For this category;

"He sometimes has incompatibilities with his colleagues. I can say that it happens often, I think it is not the incompatibility they experience, but the negativities experienced by other normal workers who work with them." (Participant 5)

"When he asks for help from his friends, he wants help immediately, he doesn't want to tire himself at all, his friends say you can do it, but he gets angry because he is not helped." (Participant 3)

Another interviewee said, "When he has a problem, he does not share a request with us sometimes, he tells it to his friend who works on the same machine, but he does not share it with us. If he's going to ask for permission, if I have a secretary, he won't hesitate and come later." (Participant 1) expressed their opinions.

For the fourth category of the research, the category of liking the job, employers drew attention to the issues of focusing on the job and willingness to fulfil the job. Regarding these codes, Participant 2 expressed his opinion as follows:

"I think he loves what he does. She loves her job. In my opinion, they like their job more than normal workers. He comes back a little late from his rest breaks, but I think it's not because of his reluctance but because of tiredness."

Regarding the hygiene and cleaning category, the fifth category of the research, employers expressed their views on cleaning before and after work, using tools and machines cleanly, and keeping the workplace clean. For the relevant category, Participant 4;

"We couldn't get used to washing hands and putting in work clothes at the beginning of work, and we have serious problems in this regard. We have to remind each time." he expressed his opinion.

In the last category of the research, the category of tools and machinery used in the workplace, employers stated that they had problems knowing the names of agencies and machines, using them safely, and using new tools and machines.

"It was a long time before he taught me how to use the machine, but after that, he learned how to use it quite comfortably." (Participant 1)

"We don't use many terms in what we do, so we have almost no problems. We don't have a problem if we take care, not to overuse business terms." (Participant 2).

Discussion and Conclusion

In this research, which was conducted to determine the expectations and problems of employers who employ individuals with intellectual disabilities, interviews were conducted with ten employers. As a result of the analysis of the data collected from the employers, the findings were gathered under six categories. These categories are; shift system, rest time, harmony and communication with colleagues, like the job, hygiene and cleaning, and tools and machines used in the workplace. This section discusses the findings obtained in the research in relation to the literature.

In the research, employers stated that individuals with intellectual disabilities have problems keeping up with the shift system, and therefore they have problems commuting and commuting hours. This affects the starting and quitting times of work. Baran & Cavkaytar (2007) states that keeping up with the job and coming to work on time are the main issues that employers focus on. In this context, following up on individuals with intellectual disabilities work and establishing routines is essential. Compliance with working hours, a necessity of regular working life, is a requirement for individuals with intellectual disabilities to have a stable working life. Considering that individuals with intellectual disabilities need lifelong support, their working life becomes meaningful with the placement of the individual and the support provided during the working process (Cavkaytar & Artar, 2019). Therefore, it is necessary to provide support to individuals who are placed in a job in the methods of complying with working hours, starting and leaving the job.

Employers participating in the research stated that individuals with intellectual disabilities have problems planning and adapting to rest periods and hours. Individuals with intellectual disabilities should be supported in planning and adjusting their rest periods, and necessary stimuli should be given. Providing social support by colleagues may contribute to the compliance of individuals with intellectual disabilities with working hours and to planning resting time and sleeping. Artar (2018) listed the social supports offered as motivating the individual with intellectual disability to work, giving advice, keeping an eye on the individual, listening to the individual, and spending free time with the individual. In this sense, individuals with intellectual disabilities can develop during resting hours and other areas with problems if necessary social support is provided.

Employers stated that individuals with intellectual disabilities have problems in harmony and communication with their colleagues. Considering that getting a job, working sustainably, and participating in the social and business environment are the main objectives for individuals with intellectual disabilities (Cavkaytar & Artar, 2019), these individuals need to communicate and be compatible with their friends in the workplace where they are placed. In this sense, job placement should be considered a process, and necessary support should be provided. According to the research, communication, being compatible, and working with a team (Güneş & Akçamete, 2014), are among the features employers look for and are necessary for efficient business life. It is essential to support individuals with intellectual disabilities in these areas after being placed in a job.

The employers stated that they did not have any problems regarding the problems they experienced in focusing on the job and fulfilling the job in terms of liking the job they do. Employers who stated that they did not think that the problems experienced were caused by not being able to enjoy the job reported that they were caused by fatigue or inadequacy. The way for individuals with intellectual disabilities to love their job can be overcome by providing vocational training in line with their interests,

talents, and competencies and placing them in relevant positions. In this sense, vocational education should focus on the ability of individuals with intellectual disabilities to do valuable and productive work (Majid & Razzak, 2015). In addition, as Uçar (2016) stated, increasing the number and variety of workshops can contribute to individuals with intellectual disabilities acquiring a profession suitable for their interests and abilities. In addition, as Bolli et al. (2018) stated in the context, employers are required to participate in three processes.

They mentioned that they have problems cleaning before and after work, using tools and machines cleanly, and keeping the place they work clean, especially for the issues faced by individuals with mental disabilities working in workplaces operating in the food sector. Considering the industry, cleanliness and hygiene are regarded as an essential issue. The study of Ataman et al., (2023 indicates that individuals with intellectual disabilities point out that masks and protective gloves are necessary for hygiene. In this sense, necessary training should be given carefully and in detail in the pre-employment process. Since vocational education focuses on pre-service education and training (Chiang et al., 2022), education on hygiene should be given in the school where the individual attends.

Finally, the employers drew attention to the problems they encountered in knowing the names of the tools and machines used in the workplaces, using them safely, and using new tools and machines. In this sense, employers who stated that they did not use too many technical terms indicated that they had problems until they got used to using the machine or tool, and then they did not encounter many problems. Wehmeyer & Webb (2012) stated that in-service training and continuous support of competencies are required for individuals with intellectual disabilities to start working in a job that suits their interests and competencies and for sustainable business life. For individuals with intellectual disabilities to have a sustainable business life, they should be supported and trained about new machines and tools. It is also imperative for them to use technology and have business skills (Güneş & Akçamete, 2014). The success of individuals with intellectual disabilities in their work depends on their ability to use tools and machines. Another important point for individuals with disabilities is that deciding for himself/herself what he needs (Kösretaş et al., 2022). In this respect, the employment process, which is considered a process, should include continuous monitoring and training.

Based on the results of this research, opinions of employers working with individuals with intellectual disabilities working in different sectors can be obtained for future research. Views of other stakeholders such as families, individuals with intellectual disabilities, and educators can be consulted. Experimental research can be done. Project studies can be done on a national scale. For practical purposes, employers can participate in the preparation process of vocational training content. Employers can be informed about special education. More deterrent sanctions may be imposed on workplaces that do not employ special-needs individuals.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 33.4%

Author 2: 33.3%

Author 3: 33.3%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research

Genişletilmiş Türkçe Özet

Zihinsel Yetersizliği Olan Bireylerin İşyerinde Karşılaştıkları Sorunlara İlişkin İşveren Görüşleri

Giriş

Zihinsel yetersizliği olan bireylere bir meslek edindirme sürecinin ilk aşaması mesleki eğitim sürecidir. Meslek eğitim, öğrencilerin belirli bir mesleğe, ticarete veya meslek/meslekler sınıfına özgü bilgi, beceri ve yeterlilikleri kazanmaları için tasarlanmış eğitim programları olarak tanımlanmaktadır (UNESCO, 2012). Mesleki eğitimde hizmet öncesi eğitim ve öğretime odaklanılarak öğrenciler belirli mesleklerde işgücü piyasasının ihtiyaçlarını karşılamaya hazırlanır (Chiang vd., 2022). Bu bağlamda meslek bir mesleki eğitim almayan ve işgücüne kazandırılmayan zihinsel yetersizliği olan bireyler, sosyal ve maddi anlamda bağımsızlıklarını kazanamazlar. Ayrıca toplumda üretici konuma geçemezler. Bu durumun önüne geçebilmenin yolu ise zihinsel yetersizliği olan bireylere mesleki eğitim sağlamak, istihdam etmek ve istihdam süreçlerini takip etmektir.

Bu anlamda mesleki eğitim ile özel gereksinimli bireylerin bağımsız yaşamaları, kendi kendine yeten bir birey olmaları ve toplumla bütünleşmeleri amaçlanmaktadır (Özbey & Diken, 2010). Zihinsel yetersizliği olan bireylerin, toplumla bütünleşmeleri, bağımsız bireyler olarak tüketici konumdan üretici bir konuma geçmeleri için meslek becerilerinin kazandırılması gerekmektedir. Zihinsel yetersizliği olan öğrencilere meslek becerilerinin kazandırılması; bireylere para kazanma, iş birliği içinde çalışma, sosyal ilişkilerini geliştirme fırsatı sağlamaktır. Ayrıca meslek becerilerinin edinimi zihinsel yetersizliği olan bireylere verilen değerin artmasını da sağlamaktadır (Maciag vd., 2000). Bu nedenle zihinsel yetersizliği olan bireylerin bağımsız bir yetişkin olarak toplum ile bütünleşebilmesi için çalışma hayatına katılacak bir meslek edinmeleri önem taşımaktadır. Meslek edinen bu bireyler çeşitli iş yerlerine yerleştirilmekte ve iş hayatına katılmaktadırlar. Bu bağlamda zihinsel yetersizliği olan bireyleri istihdam eden işverenlerin beklentilerinin ve yaşadıkları sorunların detaylı olarak incelenebilmesi için çok sayıda araştırmaya gereksinim duyulmaktadır. Bu gereksinimden hareketle araştırmanın amacı, işe

yerleştirilen zihinsel yetersizliği olan bireylerin işyerinde karşılaştıkları sorunlara ilişkin işveren görüşlerinin neler olduğunu belirlemektir. Bu genel amaç doğrultusunda; işverenlerin, zihinsel yetersizliği olan bireylerin çalışma alışkanlıklarıyla, işe yönelik tutumlarıyla, çalışma arkadaşlarıyla ilişkilerinde yaşadığı sorunlara, işe ilişkin becerilerde yaşadıkları sorunlara, iş ortamında sosyal davranış sergilemede yaşadıkları sorunlara, iletişim becerilerini sergilemede yaşadıkları sorunlara ve yeni iş becerilerini yerine getirmede yaşadıkları sorunlara ilişkin görüşlerine başvurulmuştur.

Yöntem

İşverenlerin zihinsel yetersizliği olan bireylerin iş ortamında yaşadıkları sorunlara ilişkin görüşlerini belirlemek için yapılan bu araştırma nitel araştırma desenlerinden durum çalışması olarak gerçekleştirilmiştir (Creswell, 2013; Glesne, 2015). Bogdan & Biklen (1998), durum çalışmalarında incelenecek birimin bir birey olabileceği gibi bir topluluk da olabileceğini, ayrıca bu kişi veya topluluğun özel bir süreç içindeki durumunun da incelenebileceğini belirtmişlerdir.

Araştırmaya hız ve pratiklik kazandırmak adına katılımcı seçiminde amaçlı örnekleme yöntemlerinden kolay ulaşılabilir durum örneklemesine başvurulmuştur (Yıldırım & Şimşek, 2018). Bu anlamda araştırma Bolu İli şehir merkezinde zihinsel yetersizliği olan bireyleri istihdam etmiş ve araştırmaya gönüllü olarak katılmayı kabul eden 10 işveren ile gerçekleştirilmiştir.

Literatür taraması sonunda araştırmada kullanılacak görüşme soruları belirlenmiş ve araştırmacılar tarafından bir görüşme formu oluşturulmuştur. Görüşme formu oluşturulduktan sonra özel eğitim ve nitel araştırmalar alanından doktora derecesine sahip iki uzmandan görüş alınarak görüşme formuna son şekli verilmiştir. Veri toplamaya geçilmeden önce soruların test etmek amacıyla pilot görüşme gerçekleştirilmiştir. Yapılan pilot görüşme sonunda soruların kolaylıkla anlaşılabilir ve cevaplanabilir olduğu görüldüğü için veri toplama aracında herhangi bir değişiklik yapılmamıştır.

Araştırmanın verileri, nitel veri toplama yöntemlerinden biri olan yarı yapılandırılmış görüşme tekniği ile toplanmıştır. Araştırmaya katılmayı kabul eden işverenlere uygun oldukları gün ve saat belirlenerek görüşme için randevu alınmıştır. Görüşmeler işverenlerin fabrikalarındaki odalarında gerçekleştirilmiştir. Görüşmelerin tamamı araştırmacı tarafından yüz yüze ve bire-bir olarak gerçekleştirilmiştir. Görüşmeler ses kayıt cihazı ile kaydedilmiştir.

Araştırma sonunda elde edilen veriler içerik analizi ile analiz edilmiştir. İçerik analiziyle temel olarak birbirine benzeyen veriler belirli kavramlar ve temalar çerçevesinde bir araya getirilmiştir. Elde edilen verilerin güvenirliğini sağlamak adına özel eğitim alanında çalışan ve nitel araştırmalar konusunda deneyimi olan bir uzmandan görüş alınmıştır. Araştırmacı ve uzmanın yaptığı kodlamalar karşılaştırılmıştır. Yapılan karşılaştırmada Miles & Huberman'ın (1994) önerdiği [Görüş Birliği/(Görüş Ayrılığı + Görüş Birliği)] X 100 formülü kullanılmıştır. Yapılan hesaplama sonucu kodlayıcılar arası uyum oranı %89 olarak bulunmuştur.

Bulgular

Zihinsel yetersizliği olan bireyleri istihdam eden işverenlerin beklentilerinin ve yaşadıkları sorunların belirlenmesi amacıyla yapılan bu araştırmada 10 işverenle görüşmeler yapılmıştır. İşverenlerden toplanan verilerin analizi sonucunda bulgular altı kategori altında toplanmıştır. Bu kategoriler; vardiya sistemi, dinlenme zamanı, çalışma arkadaşları ile uyum ve iletişim, yaptığı işi sevme, hijyen ve temizlik ve işyerinde kullanılan alet ve makinalar şeklindedir.

Araştırmada işverenler zihinsel yetersizliği olan bireylerin vardiya sistemine ayak uydurmada sorunlar yaşadıklarını bundan kaynaklı olarak işe gidiş-geliş saatlerinde sorunlar yaşadıklarını belirtmişlerdir. Bu durum işe başlama ve işi bırakma saatlerini etkilemektedir. Araştırmaya katılan işverenler zihinsel yetersizliği olan bireylerin dinlenme süreleri ve saatleri ile ilgili olarak planlama ve süreye uyum konularında sorunlar yaşadıklarını belirtmişlerdir. Zihinsel yetersizliği olan bireylerin dinlenme sürelerini planlama ve uyma noktasında desteklenmesi ve gerekli uyaranların verilmesi gerekmektedir.

İşverenler zihinsel yetersizliği olan bireylerin çalışma arkadaşları ile uyum ve iletişim konularında sorunlar yaşadıklarını ifade etmişlerdir. İşverenler yaptığı işi sevme noktasında işe odaklanma ve işi yerine getirmede yaşadıkları sorunlara ilişkin bir sorun yaşamadıklarını belirtmişlerdir. Yaşanan sorunların işi sevememeden kaynaklandığını düşünmediklerini ifade eden işverenler, yorgunluk veya yetersizlikten kaynaklandığını bildirmişlerdir.

Özellikle gıda sektöründe faaliyet gösteren işyerlerinde çalışan zihinsel yetersizliği olan bireylerin iş yaşamında karşılaştıkları sorunlara yönelik iş öncesi ve sonrası temizlik, alet ve makinaları temiz kullanma ve çalıştığı yeri temiz tutma konusunda sorunlar yaşadıklarına değinmişlerdir. Sektörel olarak düşünüldüğünde temizlik ve hijyen önemli bir konu olarak değerlendirilmektedir.

İşverenler son olarak iş yerlerinde kullanılan alet ve makinalara yönelik olarak alet ve makinaların ismini bilme, güvenli olarak kullanabilme ve yeni alet ve makinaları kullanmaya yönelik karşılaştıkları sorunlara dikkat çekmişlerdir. Bu anlamda çok fazla teknik terim kullanmadıklarını ifade eden işverenler, makina ya da aleti kullanmaya alışana kadar sorunlar yaşadıklarını daha sonra çok fazla sorunla karşılaşmadıklarını belirtmişlerdir.

Tartışma ve Sonuç

Zihinsel yetersizliği olan bireyleri istihdam eden işverenlerin görüşlerinin incelendiği bu araştırmanın sonunda zengin veriler elde edilmiştir. Elde edilen verilerden ilki işverenler zihinsel yetersizliği olan bireylerin vardiya sistemine ayak uydurmada sorunlar yaşadıklarını belirtmişlerdir. Baran & Cavkaytar (2007) işverenlerin üzerinde durduğu konuların başında işe ayak uydurma ve işe zamanında gelme olduğunu belirtmektedir. Bu bağlamda zihinsel yetersizliği olan bireylerin iş takiplerinin yapılması, rutinlerin oluşturulması oldukça önemlidir. Düzenli bir çalışma hayatının gerekliliği olan mesai saatlerine uyum zihinsel yetersizliği olan bireylerin istikrarlı bir çalışma hayatına sahip olmaları için bir gerekliliktir. Zihinsel yetersizliği olan bireylerin yaşam boyu desteğe gereksinim duydukları göz önüne alındığında çalışma hayatları bireyin işe yerleştirilmesi ve çalışma sürecinde sunulan desteklerle anlamlı hale gelmektedir (Cavkaytar & Artar, 2019).

Çalışma arkadaşlarının sosyal destek sağlaması zihinsel yetersizliği olan bireylerin mesai saatlerine uymasına katkı sağlayabileceği gibi dinlenme süresini planlama ve uymaya da katkı sağlayabilir. Artar (2018) sunulacak sosyal destekleri zihinsel yetersizliği olan bireyi çalışmak için motive etme, tavsiyede bulunma, göz kulak olma, bireyi dinleme ve bireyle serbest zaman geçirme konularında destek olarak sıralamıştır. Bu anlamda zihinsel yetersizliği olan bireyler, gerekli sosyal destekler sağlanırsa dinlenme saatleri ve diğer sorun yaşadığı alanlarda gelişim gösterebilir.

Zihinsel yetersizliği olan bireyler için işe girmek, girdikleri işte sürdürülebilir şekilde çalışma ve iş ortamındaki sosyal çevreye katılım temel amaç olarak (Cavkaytar & Artar, 2019) düşünüldüğünde bu bireylerin yerleştirildikleri iş ortamındaki arkadaşları ile iletişim kurması ve uyumlu olması

gerekmektedir. Bu anlamda işe yerleştirme bir süreç olarak ele alınmalı ve süreç içerisinde gerekli destekler sağlanmalıdır. Yapılan araştırmalara göre işverenlerin aradığı özellikler arasında yer alan iletişim, uyumlu olma, ekip ile çalışma (Güneş & Akçamete, 2014) verimli bir iş hayatı için bir gerekliliktir. Bu anlamda mesleki eğitim zihinsel yetersizliği olan bireylerin yararlı ve üretken iş yapma yeteneklerine odaklanmalıdır (Majid & Razzak, 2015).

Özellikle gıda sektöründe faaliyet gösteren işverenler temizlik, alet ve makinaları temiz kullanma ve çalıştığı yeri temiz tutma konularına dikkat çekmişlerdir. Bu anlamda gerekli eğitimlerin iş öncesi süreçte dikkatli ve detaylı bir şekilde verilmelidir. Mesleki eğitimin hizmet öncesi eğitim ve öğretime odaklanıldığı düşünüldüğünde (Chiang vd., 2022) hijyen konusundaki eğitimin bireyin devam ettiği okulda verilmesi gerekmektedir.

Wehmeyer & Webb (2012) zihinsel yetersizliği olan bireylerin ilgi ve yeterliklerine uygun işte çalışmaya başlamasının ve iş yaşamının sürdürülebilir olması için hizmet içi eğitimler ve sürekli olarak yeterliklerin desteklenmesi gerektiğini belirtmişlerdir. Zihinsel yetersizliği olan bireylerin sürdürülebilir bir iş yaşamının olması için yeni makine ve aletler hakkında desteklenmesi ve eğitimler verilmesi gerekmektedir. Ayrıca teknolojiyi kullanma ve iş becerilerine sahip olmaları da oldukça önemlidir (Güneş & Akçamete, 2014). Zihinsel yetersizliği olan bireylerin çalıştıkları işte başarılı olmaları alet ve makinaları kullanma yeterliliklerine bağlıdır. Bu yönüyle bir süreç olarak ele alınan istihdam süreci sürekli izleme ve eğitimi kapsamalıdır.

Öneriler

Bu araştırmanın sonucundan hareketle ileri araştırmalara yönelik olarak; farklı sektörlerde çalışan zihinsel yetersizliği olan bireylerle çalışan işverenlerin görüşleri alınabilir. Aileler, zihinsel yetersizliği olan bireyler, eğitimciler gibi diğer paydaşların görüşlerine başvurulabilir. Deneysel araştırmalar yapılabilir. Ulusal çapta proje çalışmaları yapılabilir. Uygulamaya yönelik ise işverenlerin mesleki eğitim içeriklerinin hazırlanma sürecine katılımları sağlanabilir. İşverenler özel eğitim konusunda bilgilendirilebilir. Özel gereksinimli bireyleri istihdam etmeyen işyerlerine daha caydırıcı yaptırımlarda bulunulabilir.

Need Assessment for Early Childhood Values Education Program: Examining Views of Preschool Teachers on Values

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Abstract
The aim of this study is to examine views of preschool teachers on values education. Face to face interviews were conducted to get preschool teacher's views on values education during 2021-2022 Academic year. Teachers were asked for their opinions about the difficulties they encountered in the field of values education, the types of activities they used for values education, and the most difficult and easiest value rankings, why they need a preschool education program in the field of values education. Moreover, they are asked to list 10 values that need to be included in the MoNE's list of values. According to the findings of this study, it was determined that teachers need a values education program "to prevent moral corruption." The top 10 values that teachers want to be included in MoNE's preschool education program are as follows: Love, respect, honesty, patriotism, responsibility, justice, sharing, empathy, self-esteem and cooperation. It was found that preschool teachers mostly prefer drama, Turkish language and art activities for values education. Preschool teachers stated that the first 3 values that can be easily gained by children are "love, sharing, responsibility" values while the most difficult 3 values are "empathy, justice and cooperation." The difficulties faced by preschool teachers in the field of values education were determined as follows: the absence of a values education program, difficulties in explaining children some values due to the fact that they are too abstract for children to comprehend, lack of related resources and inadequate parent-teacher cooperation in this regard.

Keywords: Values education, preschool, curriculum, need assessment.

Introduction

Values education, one of the frequently discussed topics in Turkey in recent years, has also been emphasized in the preschool education program. The Ministry of National Education (MoNE) draws attention to the importance of values education with the curriculum change it made in 2017. In the document published by MoNE regarding this curriculum change, it is emphasized that individuals should be supported personally, socially and cognitively in the developing technology age.

Unlike previous curricula, values and value education have been the main focus of the renewed curricula. A comprehensive literature review covering current curricula has been made. National, moral and universal values aimed to be transferred to students by being associated with achievements (education and training objectives) in each discipline have been collected under 10 (ten) main headings. Attitudes and behaviours related to these values have been determined (MoNE, 2017: 7).

MoNE has determined ten root values in the new training program for this purpose which are values of justice, friendship, honesty, self-control, patience, respect, love, responsibility, patriotism, benevolence. When international education programs are analysed, it is seen that values education is emphasized and some values are brought to the fore. For example, in Reggio Emilia schools in Italy, "participation, discussion, forming a learning community, cooperation, environmental awareness, research, family-community ties, expressing one's ideas, right of choice, curiosity," in Dutch schools in Belgium "equality, experience, environmental awareness, language learning (French and Dutch), freedom, participation, happiness and satisfaction, responsibility, respect, respect for differences," in Waldorf schools in Germany "taking responsibility, gratitude, self-control, environmental awareness, cooperation, respect for differences," in schools where High/Scope program is applied in the United States the values of "equality, taking responsibility, being planned, sharing, self-control, competition, cooperation" are determined to be frequently emphasized (İnan, 2011).

Literature review shows that there are many researches on values education. However, there aren't many researches on the opinions of preschool teachers working on the field about values, their

problems and current needs. The purpose of this research is to reveal the opinions of preschool teachers about values education and to make a needs analysis to create a preschool values education program.

Values Education in Early Childhood

Despite being a universal concept, values education, which is included in Preschool Education Program with goals, achievements and activities and frequently emphasized, has local features. Turkish Language Society (TDK) (2020) defines values as "all the material and moral elements that cover the social, cultural, economic and scientific values of a nation". As it is understood, in addition to international literature for the education of values, a lot of national interpretation is also needed because besides universal values, there are also values that vary from culture to culture. From a philosophical point of view, TDK also defined values as "what appears in the connection of the person as an entity that has wants and needs with the object". In other words, it is necessary to study values education not only on a universal and national basis, but also on a personal basis because values reflect only the communities in which they exist. As understood in the definition of the concept of values defined as "superior quality, merit, value", it is of great importance in human life.

The importance of preschool period among education periods has been recognized in recent years and it has been accepted that preschool institutions should be institutions that provide education besides care. In fact, it has been found in researches that besides physical growth in preschool period, other developmental features are rapidly acquired and human features are largely shaped. Therefore, early childhood is named as the "vital life period" (Önder, 2011). It is thought that the skills gained and the knowledge learned in these years affect the behaviour, attitude, belief, character and habits of the individual in the following years positively or negatively (Oktay, 2010). Hence, values education to be provided in this period is of great importance.

When universal and local values are investigated, the values frequently included in preschool education are found to be: not exaggerating, justice, understanding, determination, commitment, prudence, attention to others, completing task, courage, diligence, environmental awareness, solidarity (cooperation), appreciation, making the right decision, righteousness, friendship, honesty, regularity, flexibility, respect for differences, asking for permission when necessary, etiquette, respect for rights, love for animals and nature, tolerance, moderation, communication and empathy, doing the best work, optimism, fraternity, abiding by the rules, leadership, compassion, not being biased, self-control, freedom, selflessness and self-sacrifice, sharing, being patient, simplicity, sincerity, respect, love, waiting for turn, taking responsibility, sociability, keeping word, being compassionate, not being spoiled, being cautious, modesty, being frugal, harmony, love of homeland and flag, mutualisation (İnan, 2011).

Each society has its own values, namely "good" that it believes to be true (Aspin, 1997), and these values are criteria that add meaning to these societies and cultures (Fitcher, 2006). Values education aims to reveal the good that the individual has in his essence and aims to equip and protect the person with good values (Aydın, 2012). Values education can also be described as the process of bringing value to the individual and it is obvious that values education programs and schools have a very important role in raising qualified citizens (Aspin, 1997; Hökelekli & Gündüz, 2007). The values processed in a school are actually a product of all the members of the society that surrounds the children studying in the school, the natural life and the relationship between them (Tooth, 2010). Therefore, historical, social-cultural, geographical, economic and political environment and early childhood values education programs are in mutual interaction (Sofou, 2010). For example, while cooperation is emphasized in the

MoNE Preschool Education Program, competition is emphasized in the High/Scope program. (Weikart & Schweinhart, 2005). Therefore, while preparing preschool values education program, only universal values should not be emphasized and local values should not be forgotten.

Educational institutions have an important role in gaining values and reinforcing the values acquired in the family, and thus, values should be tried to be brought to children by making them a part of school life (Hökelekli & Gündüz, 2007). At the same time, educational institutions are considered as social control tools used to transfer the values adopted by the majority of the society to children and young people and to monitor whether these values are acquired by them (Erden, 1998). Therefore, teachers have a vital importance in transferring values to new generations (Özden, 2002). Especially children who leave their homes for the first time and start preschool education institutions take their teachers as role-models and learn values from them (Oktay, 1999). In the process of child's acquiring values, it is beneficial for teachers, families, written and visual media, internet, books and television to emphasize positive values (Balat, 2014). After all, it is often easier to give the child a new value than to try to eliminate negative behaviour (Uyanık-Balat & Balaban-Dağal, 2011). This study aims to examine views of preschool teachers on values education and reveal the need for values education program in preschool education period.

Method

This study planned as a preliminary assessment. It is cross-sectional descriptive type, and data were collected with questionnaire form by face to face interviews. Descriptive cross-sectional research methods try to prevail conditions what is practiced, attitudes what is held and trends what is developed. In educational area, 'cross-sectional studies involve indirect measures of the nature and rate of changes in the physical and intellectual development of samples of children drawn from representative age levels. These kinds of studies such as descriptive survey research, longitudinal, trend and prediction studies collect data at one point in time (Cohen, Manion & Morrison 2007). It would be said that a snapshot of crosssectional study enhances retrospective and prospective data for researchers in the physical and intellectual development of samples (Rose & Sullivan, 1993; Ruane 2005).

Collection of the Data

In this study, a need analysis was carried out in order to determine whether preschool teachers need a values education program and what they need if they do. Although values education is an increasingly important topic in Türkiye, there is no values education program in preschool education (Kayıran & Bağçeci, 2018). Creating an effective training program is only possible by determining the needs in the required fields. By determining the situation, determining the needs of the children through the opinions of the teachers can enable an inclusive education program. According to Taba-Tyler's program development model, the first main step to create an effective program is to determine the needs (Demirel, 2014). Within the framework of this research, it was tried to reach the opinions of preschool teachers about values education. For this purpose, a questionnaire form, one of the quantitative data collection techniques, was developed by the researchers (Appx-1). The interview form was finalized by getting expert opinions. Teachers' opinions were obtained through this form. The interviews were carried out one to one and were recorded with the questionnaire forms. These forms are one of the methods frequently preferred by researchers in recent years, as they enable detailed information on a subject and can exceed the limitations in tests and surveys (Yıldırım & Şimşek, 2005).

Study Group

In this research, in which teachers' opinions about values education were determined, criterion sampling, which is one of the purposeful sampling methods, was used. Purposeful sampling enables in-depth study of situations that are considered to have rich information (Patton, 1997). The criterion sampling method takes place by studying all situations that meet a set of predetermined criteria. These criteria can be created by the researcher or a ready-made criteria list can be used (Yıldırım & Şimşek, 2008). In this study, the criterion is preschool teachers who work in preschool classes or independent kindergartens affiliated to primary schools in the determined districts and voluntarily participate in this research. The sampling of this research consists of teachers selected from pre-school teachers working in the Onikişubat and Dulkadiroğlu districts of Kahramanmaraş province in 2021-2022 academic year through purposeful sampling. The demographic characteristics of the participants are as follows: 68% of the teachers participating in the study are between the ages of 30-40, 61% of them have 6-10 years of experience, 90% of them have bachelor's degree in preschool education, 10% of them have master's degree, 90% have never received are in-service training in values education, 90% is female and 10% is male.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 25) and the data were presented as mean, standard deviation, frequency and percentage. The resulting categories were tabulated with percentages, and the categories were exemplified by giving different numbers to the 100 preschool teachers participating in the study, regardless of their names or school. The tables were created under the following questions: 1- Why should values be taught? 2- What are the activity types you use most in values education? 3- What are the first three values you want children to gain in preschool education? 4- What are the first three values that can be acquired most easily in preschool period? 5- What are the top three values that can be hardest to gain in preschool period? 6- What are the difficulties you encounter in preschool values education?

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Kahramanmaras Sutcu Imam Universy Social and Human Sciences Ethics Committee

Date of ethical review decision= 10.01.2022

Ethics assessment document issue number= E.90861

Findings

The findings of the study are given under the problem statements.

Why should values be taught?

First, "Why should values be taught?" was asked to preschool teachers participating in the research. Percentages of the responses given by preschool teachers are presented in Table 1. The responses show that the reasons "preventing moral corruption (n=60, %60.0), socialization (n=10, %10.0) and democracy (n=6, %6.0)" are the most preferred ones for teaching values. On the other hand, 20% of the participant teachers said "it is necessary only because it is necessary (n=20, %20.0)", which shows that some teachers actually do not think much about it.

Table 1. *Why should values be taught?*

Reasons	N	%
Preventing moral corruption	60	60.0
Socialization	10	10.0
Democracy	6	6.0
Patriotism	3	3.0
Peace	1	1.0
Necessity	20	20.0
Total	100	100.0

What are the activity types you use most in values education?

The second question asked to preschool teachers is: "What are the first three values that they want to be brought to children in preschool education?" The first three values obtained from preschool teachers are presented in Table 2. As seen in the table, preschool teachers most want "respect, love and honesty" values to be given to children at preschool education. These values are followed by patriotism, responsibility and justice, respectively. Some of the responses they gave in the interview are as follows: T15 said "Respect, love, honesty", T24 "Honesty, self-esteem, patriotism", and T30 "Responsibility, justice, respect". On the other hand, T59 said, "Child education, team work, abiding by the rules".

Table 2. *Three values that come to the mind of teachers first*

Values	N	%
Respect	20	20.0
Love	14	14.0
Honesty	16	16.0
Patriotism	12	12.0
Responsibility	9	9.0
Justice	5	5.0
Sharing	5	5.0
Empathy	5	5.0
Self-esteem	4	4.0
Teamwork	3	3.0
Abiding by the rules	2	2.0
Benevolence	2	2.0
Moral education	2	2.0
Respect for rights	1	1.0
Humane values	1	1.0
Conscientious values	1	1.0
Child education	1	1.0
Truthfulness	1	1.0
Self-control	1	1.0
Respect for the environment	1	1.0
Total	100	100.0

What are the first three values you want children to gain in preschool education?

One of the research questions was about the types of activities that pre-school teachers used in values education. The responses are given in Table 3. According to the table, preschool teachers stated that they mostly use "drama activities", "Turkish language activities" and "art activities" in values education practices followed by visual presentation. It was determined that preschool teachers almost never used group activities such as reading/telling stories, traveling, cartoons, projects, and parent participation studies within the scope of values education. Beyond these, although there were such answers as "modeling, living and learning, tablet, computer" as examples of the activities used, these answers were not included in the ranking of the study since there are no such activity types to be applied in or outside the classroom. Another striking answer was the 'board' answer. Since there is no activity type called 'Clipboard' activity type in preschool education, this answer was not included in the ranking of the study. Some of the responses they gave in the interview with teachers are as follows: Among the teachers participating in the research, T17 said "Drama activity, Turkish language activity, art activity", T20 "Art activity, drama activity, visual presentation", and T56 "Drama activity, art activity, Turkish language activity". On the other hand, T93 said "Group activity, parent participation, trips".

Table 3. *Activities used in priority order in values education*

Activities	N	%
Drama method	33	33.0
Turkish language activity	20	20.0
Art activity	15	15.0
Visual presentation	13	13.0
Story about values	10	10.0
Trips	5	5.0
Cartoons	2	2.0
Parent participation	1	1.0
Group activity	1	1.0
Total	100	100.0

What are the first three values that can be acquired most easily in preschool period?

Preschool teachers were asked to list the first three values that are the most easily to be acquired in preschool period. The data obtained are shown in Table 4. According to preschool teachers, the first three values that can be acquired most easily are "love, sharing and responsibility" values followed by "respect, honesty and patriotism". On the other hand, it is seen that the courtesy value is at the very end of the table. Some of the responses they gave in the interview with teachers are as follows: Among the teachers participating in the research, T5 said "Sharing, love, respect", T32 "patriotism, love, respect", and T76 "love, responsibility, respect". On the other hand, T92 said, "Teamwork, abiding by rules, respect".

Table 4. *The top three values to be acquired easily*

Values	N	%
Love	20	20.0
Sharing	16	16.0
Responsibility	14	14.0
Respect	10	10.0
Honesty	9	9.0
Patriotism	6	6.0
Abiding by rules	5	5.0
Friendship	4	4.0
Benevolence	3	3.0
Self-control	2	2.0
Empathy	2	2.0
Self-esteem	2	2.0
Teamwork	1	1.0
Respect for the environment	1	1.0
Socialisation	1	1.0
Self-confidence	1	1.0
Generosity	1	1.0
Being merciful	1	1.0
Courtesy	1	1.0
Total	100	100.0

What are the top three values that can be hardest to gain in preschool period?

Preschool teachers were asked to list the first three values that the most difficult to be acquired in preschool period. The data obtained are shown in Table 5. According to the table, preschool teachers think that the first three values that are the hardest for children to grasp are "empathy, justice and teamwork". On the other hand, "self-confidence, generosity and self-care" values appear to be the last in the table. Some of the responses they gave in the interview with teachers are as follows: Among the teachers participating in the research, T10 said "Empathy, tolerance, patriotism", T48 "Justice, sharing, empathy", and T72 "Determination, sharing, teamwork". On the other hand, T66 said "Self-control, loyalty, abstract concepts".

Table 5. *The top three values hard to be acquired*

Values	N	%
Empathy	14	14.0
Justice	10	10.0
Teamwork	8	8.0
Sharing	7	7.0
Determination	6	6.0
Respect for different opinions	5	5.0
Rules	4	4.0
Social responsibility	4	4.0
Respect	4	4.0
Responsibility	4	4.0
Abstract concepts	4	4.0
Fidelity	4	4.0
Patience	3	3.0
Patriotism	3	3.0
Discipline	3	3.0
Tolerance	2	2.0
Modesty	2	2.0
Frugality	2	2.0
Honesty	2	2.0
Self-control	1	1.0
Being merciful	1	1.0
Courage	1	1.0
Love	1	1.0
Benevolence	1	1.0
Self-care	1	1.0
Self-confidence	1	1.0
Generosity	1	1.0
Self-care	1	1.0
Total	100	100.0

What are the difficulties you encounter in preschool values education?

Preschool teachers were asked to list problems related to values that might be encountered in values education in preschool period. The data obtained are shown in Table 6. The results show that values being "abstract concepts" is considered the hardest aspect. Some of the answers they gave in the interview with the teachers are as follows: T31, one of the teachers who participated in the research, said "My colleagues and I think that we are insufficient in this regard, we have difficulties in explaining some abstract issues in a concrete manner to teach values. Values education is not currently given according to students' levels. For example, it is difficult to bring honesty to children because it takes a long time". T50 said "I think that as with many colleagues, I am inadequate in the classroom about values education in preschool period. I struggle in pouring values into events and especially art events. We have a lack of resources. Material and resource support should be provided." T93 said "Students have difficulties in understanding abstract concepts, and we have difficulties in explaining and giving some abstract topics. I think topics should be more concrete. Teachers should be trained in the field of teaching and transferring these values for the values education in preschool period". On the other hand, T100 said "I think values education contribute a lot to students. Values education is much easier to understand if it takes the name of moral education instead."

Table 6. *Challenges in values education*

Challenges	N	%
Abstract concepts	55	55.0
Parent-teacher cooperation	20	20.0
Lack of material	15	15.0
Age-developmental feature incompatibility	10	10.0
Total	100	100.0

Discussion and Conclusion

According to the findings of this research, it has been determined that teachers need a values education program "to prevent moral corruption". Values education starts with the family at home, but having a working mother, the increase of divorced families and communication problems between the family and child make it difficult to transfer values (Alpöge, 2011). The cause of degeneration may be for such reasons. In this case, the importance of the values education to be given in preschool education institutions becomes clear once again. On the other hand, values are also defined as definitive and systematic judgments in establishing a good and bad perception against a situation and determining the relationship of the individual with his environment (Veugelers & Vedder, 2003). Therefore, since the existence of man, the concept of values has been evolving and a different thing becomes a value and gains importance in each period. Accordingly, it is natural for individuals to set new ethical rules and follow them in solving the problems they face in life (Kale, 2007). In other words, the so-called degeneration is in fact a system of advanced new values, perhaps adapted to the new needs of the society. Thus, preschool values education should be developed and updated in accordance with the values of the society.

In this research, the top 10 values that teachers want to be included in the MoNE Preschool Education Program are as follows: 1-Respect, 2-Love, 3-Honesty, 4-Patriotism, 5-Responsibility, 6-Justice, 7-Sharing, 8-Empathy, 9-Self-esteem and 10-Cooperation (teamwork). As can be seen, the values that teachers consider important mostly consist of values that regulate inter-human relations. However, understanding and protecting animals and nature are essential for both the child's own needs and learning, as well as our ever-deteriorating nature and extinct animal species. (Alisinanoğlu, Özbey & Kahveci, 2007; Başal, 2005; Dere & Ömeroğlu, 2001; İnan, Trundle & Kantor, 2010). Therefore, it is necessary to conduct studies in order to keep the scope of value education broad and to raise the necessary awareness among teachers. Gülay & Ekici (2010) stated in their study that environmental awareness is highly emphasized in the field of self-care skills, but not in language and psycho-motor fields. In updating MoNE Preschool Education Program, it will be useful to review the items related to values education.

In this study, it was found that preschool teachers especially prefer drama, Turkish language and art activities for values education. It was also determined that preschool teachers hardly use group activities such as story reading, trips, cartoons, projects, and parent participation practices. However, many strategies can be applied to bring abstract subjects such as values to children. For example, in order to give responsibility value to children, in-class tasks that students would like to do and complete while not being watched can be produced, and children can learn to complete what they have to do and to bear the consequences by experiencing (Uyanık-Balat & Balaban-Dağal, 2006). On the other hand, in a study, teachers and cartoon/animation producers stated that quality cartoons emphasize human values, love, respect, social values, respect for differences, respect for the environment and animals, and

family values (İnan, 2016). As a result, preschool teachers should make guidance on the cartoons children watch at home by identifying quality cartoons and informing families.

In this study, preschool teachers stated that the top 3 values that can be easily brought to children are "love, sharing, responsibility" values, while the top 3 values hardest to give students are "empathy, justice and teamwork (cooperation)". Doğanay (2007) stated that empathic thinking must be included in the values education process in order to encourage reflective thinking and tolerant behaviour. On the other hand, schools where Reggio Emilia's early childhood education philosophy is applied, teamwork is frequently emphasized and children are encouraged to express themselves in different ways other than verbal communication and to communicate with others, are very successful in terms of teamwork. (Malaguzzi, 1998). As a matter of fact, Bersani & Jarjoura (2002) determined that the values of individual identity, getting to know each other, establishing relationships, listening, sharing, curiosity, interpretation, cooperation and participation are at the forefront in these schools. Since the teachers stated that they had difficulty in explaining young children justice, justice education can be prepared by analysing the applications of very successful approach, Reggio Emilia, and the justice practices of other democratic school types. In addition, in this research, it was determined that one of the challenges faced by preschool teachers in the field of values education is that there is no default education program.

In this study, another challenge faced by preschool teachers in the field of values education is that they have difficulty in explaining values to children because they are abstract concepts and they do not have sufficient resources and materials. Balat & Dağal (2011) state that values should be included in a quality preschool education program. However, unlike character education, where certain values are imposed, values of the society in which children live are determined and values education is done accordingly. (Santrock, 2001). According to New (1999), while preparing the values education program, it is necessary to think not only "What will we teach?" and "How will we teach?" but also "Why will we teach that?" and "Why will we it that way?" While preparing the program, socio-cultural factors, children's plans for the future and the time they live in should be taken into account in integrated education as well as planning developmentally appropriate practices, and a value education program should be developed in line with the subject, person to learn and educational environment (New, 1999).

Finally, in this research, another difficulty faced by preschool teachers in the field of values education was found to be "inadequate or lack of parent-teacher cooperation". On the other hand, it was found that some teachers, even a few, believe that the preschool child is not yet mature enough to grasp values.

Recommedations

The teachers stated that they need values education to prevent moral corruption. More research is needed to find out what they mean by degeneration.

Awareness levels of teachers about the values other than the top 10 values "Respect, love, honesty, patriotism, responsibility, justice, sharing, empathy, self-esteem and cooperation (teamwork)" they want to have in the MoNE Preschool Education Program should be investigated, in-service training should be given in order to increase their awareness and sample studies they can apply should be provided.

It was found that preschool teachers mostly prefer drama, Turkish language and art activities for values education. A program or in-service training should be designed on how to give values with different educational methods and techniques, such as games, multiple-representations, discussions, bibliotherapy, stories, and project work, suitable for preschool children.

Preschool teachers stated that the top 3 values that can be easily given to children are "love, sharing, responsibility" values, and the top three values that can be hardest to teach are "empathy, justice and teamwork (cooperation)" values. Sample training programs should be designed for these values that teachers have difficulty in teaching.

In the need analysis in the field of values education, the difficulties faced by preschool teachers were determined as "the absence of a values education program, difficulties in explaining to children due to the fact that values are an abstract concept, lack of related resources and inadequate parent-teacher cooperation in this regard". A comprehensive early childhood values education program needs to be developed, concrete work techniques should be taught on abstract topics, and other topics specifically needed by teachers should be included in the program and examples of home support should be provided.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 100%

Conflict Statement

It should be clearly emphasized that there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Okulöncesine Yönelik Değerler Eğitimi Programı İçin Bir İhtiyaç Analizi Çalışması: Okulöncesi Öğretmenlerinin Değerler Eğitimi Hakkındaki Görüşleri

Giriş

Son yıllarda ülkemizde sıkça konuşulan konulardan biri olan değerler eğitimi, okulöncesi eğitim programında da vurgulanmıştır. Milli Eğitim Bakanlığı (MEB) 2017'de gerçekleştirdiği müfredat değişikliği ile birlikte değerler eğitiminin önemine dikkat çekmektedir. MEB bu müfredat değişikliğiyle ilgili yayınladığı dokümanda; gelişen teknoloji çağında, bireylerin kişisel, sosyal ve bilişsel yönden desteklenmesi gerektiğine vurgu yapmaktadır. MEB bu amaçla yeni eğitim programında on kök değer belirlemiştir. Bunlar: Adalet, dostluk, dürüstlük, özdenetim, sabır, saygı, sevgi, sorumluluk, vatanseverlik, yardımseverlik değerleridir. Eğitim kurumları, değerlerin kazandırılmasında ve ailede edinilmiş değerlerin pekiştirilmesinde önemli bir role sahiptirler ve bu sebepten, değerler okul yaşantısının bir parçası haline getirilerek çocuklara kazandırılmaya çalışılmalıdır (Hökelekli & Gündüz, 2007). Aynı zamanda, eğitim kurumları, toplumun çoğunluğu tarafından benimsenmiş değerlerin çocuk ve gençlere aktarımı ve bu değerlerin öğrenciler tarafından kazanılıp kazanılmadığının takibinde kullanılan toplumsal kontrol araçları olarak da düşünülmektedirler (Erden, 1998).

Dolayısıyla, öğretmenler, değerlerin yeni nesillere aktarılmasında hayati bir öneme sahiptirler (Özden, 2002). Özellikle evlerinden ilk defa ayrılıp okulöncesi eğitim kurumlarına başlayan çocuklar, öğretmenlerini örnek almaktadır ve değerleri öğretmenlerinden öğrenmektedirler (Oktay, 1999). Alanyazın tarandığında, değerler eğitimine ilişkin birçok araştırma yapıldığı görülmektedir. Ancak, sahada çalışan okulöncesi öğretmenlerin değerler eğitimine ilişkin görüşleri, yaşadıkları problemler ve güncel ihtiyaçları konusunda çok fazla araştırma bulunmamaktadır. Bu araştırmanın amacı, okulöncesi öğretmenlerinin değerler eğitimi hakkındaki görüşlerini ortaya koymak ve okulöncesine yönelik bir değerler eğitimi programı oluşturulabilmesi için ihtiyaç analizi yapmaktır.

Yöntem

Bu çalışmada, okulöncesi öğretmenlerinin değerler eğitimi programına ihtiyaç duyup duymadığı, duyuyorsa neye ihtiyacının olduğunun tespit edilmesi amacıyla bir ihtiyaç analizi çalışması gerçekleştirilmiştir. Değerler eğitimi ülkemizde önemi giderek artan bir konu olmasına rağmen, okulöncesi eğitim alanında bir değerler eğitimi programı bulunmamaktadır (Kayıran ve Bağçeci, 2018). Etkili bir eğitim programı oluşturmak ancak gerekli olan alanlarda ihtiyaçların saptanması ile mümkün olabilir. Durum tespiti yapılarak, öğretmenlerin görüşleri vasıtasıyla çocukların ihtiyaçlarının saptanması kapsayıcı bir eğitim programına olanak sağlayabilir. Taba-Tyler'ın program geliştirme modeline göre etkin bir program oluşturmak için ilk ana basamak ihtiyaçların saptanmasıdır (Demirel, 2014).

Bu araştırma çerçevesinde, okulöncesi öğretmenlerinin değerler eğitimi alanındaki görüşlerine ulaşılmaya çalışılmıştır. Bu amaçla araştırmacılar tarafından, nitel veri toplama tekniklerinden biri olan yarı-yapılandırılmış görüşme formu hazırlanmıştır. Uzman görüşleri alınarak, yarı-yapılandırılmış görüşme formuna son hal verilmiştir. Hazırlanan bu form aracılığıyla öğretmenlerin görüşleri elde edilmiştir. Görüşmeler birebir gerçekleştirilmiş olup, görüşme formları ile kayıt altına alınmıştır. Öğretmenlerin değerler eğitimi ile ilgili görüşlerinin belirlendiği bu araştırmada, amaçlı örnekleme yöntemlerinden ölçüt örneklem kullanılmıştır. Bu çalışmadaki yarı-yapılandırılmış görüşmede ölçüt, belirlenen ilçelerdeki ilkokullara bağlı okulöncesi sınıflarında ya da bağımsız anaokullarında görev yapan ve gönüllü olarak bu araştırmaya katılan okulöncesi öğretmenleridir. Bu araştırmanın örneklemini; 2021-2022 eğitim-öğretim yılında Kahramanmaraş ili Onikişubat ve Dulkadiroğlu ilçelerinde görev yapan okulöncesi öğretmenlerinden amaçlı örnekleme yoluyla seçilen öğretmenler oluşturmuştur. Katılımcıların demografik özelliklerine bakıldığında; araştırmaya katılan öğretmenlerden %68'i 30-40 yaşları arasındadır, %61'i 6-10 yıl arası deneyime sahiptir, %90'ı okulöncesi öğretmenliği lisans mezunu olup, %10'u yüksek lisans yapmakta, %90'ı değerler eğitimi ile ilgili hizmet içi eğitim hiç almamıştır, % 90'ı kadın, %10'u erkektir.

Araştırmada, veriler SPSS (versiyon 25) kullanılarak analiz edilmiş ve ortalama, standart sapma, frekans ve yüzde olarak sunulmuştur. Elde edilen kategoriler yüzdelerle tablolaştırılmış ve araştırmaya katılan 100 okul öncesi öğretmenine isim ve okul ayrımı yapılmaksızın farklı sayılar verilerek kategoriler örneklendirilmiştir. Tablolar aşağıdaki sorular altında oluşturulmuştur: 1- Değerler neden öğretilmelidir? 2- Değerler eğitiminde en çok kullandığınız etkinlik türleri nelerdir? 3- Okul öncesi eğitimde çocuklara kazandırmak istediğiniz ilk üç değer nedir? 4- Okul öncesi dönemde en kolay kazanılabilen ilk üç değer nedir? 5- Okul öncesi dönemde edinilmesi en zor olabilecek ilk üç değer nelerdir? 6- Okul öncesi değerler eğitiminde karşılaştığınız zorluklar nelerdir?

Bulgular

Bu araştırmanın bulgularına göre, öğretmenlerin bir değerler eğitimi programına, "ahlaki yozlaşmanın önlenmesi için ihtiyaç duyduğu" tespit edilmiştir. Değerler eğitimi aile ile evde başlar, ama annenin çalışması, boşanmış ailelerin artması ve aile çocuk arasındaki iletişim sorunları değerlerin aktarımını zorlaştırmaktadır (Alpöge, 2011). Bu durumda, okulöncesi eğitim kurumlarında verilecek değerlerinin eğitiminin önemi bir kez daha ortaya çıkmaktadır. Bu araştırmada, öğretmenlerin, MEB Okulöncesi Eğitim Programında bulunmasını istedikleri ilk 10 değer sırasıyla şunlar çıkmıştır: 1-Saygı, 2-Sevgi, 3-Dürüstlük, 4-Vatanseverlik, 5-Sorumluluk, 6-Adil olma, 7-Paylaşma, 8-Empati, 9-Özsaygı ve

10-İşbirliği (ekip çalışması). Görüldüğü üzere, öğretmenlerin değer verdiği değerler çoğunlukla insanlararası ilişkileri düzenleyen değerlerden oluşmaktadır. Halbuki, hayvanları ve doğayı koruma bilincine sahip olmak, bunları anlamak, hem çocuğun kendi ihtiyaçları ve öğrenmesi açısından, hem de giderek bozulmakta olan doğamız ve yok olan hayvan türleri açısından çok gereklidir (Alisinanoğlu, Özbey, Kahveci, 2007; Başal, 2005; Dere, Ömeroğlu, 2001; İnan, Trundle, Kantor, 2010). Dolayısıyla, değer eğitiminin kapsamını geniş tutmak ve öğretmenlerde gerekli farkındalıkların oluşması için çalışmalar yapmak gerekmektedir. MEB Okulöncesi Eğitim Programının güncellenmesinde, değerler eğitimine ilişkin maddelerin tekrar gözden geçirilmesi yararlı olacaktır. Bu araştırmada, okulöncesi öğretmenlerinin değerler eğitimi için en fazla drama, Türkçe dil etkinliği ve sanat etkinliklerini tercih ettikleri bulunmuştur. Okulöncesi öğretmenlerinin, değerler eğitimi kapsamında, hikaye okuma, gezi, çizgi film, proje gibi grup etkinlikleri ve veli katılımı çalışmalarını ise çok az veya nerdeyse hiç kullanmadıkları tespit edilmiştir. Bu araştırmada okulöncesi öğretmenleri, çocuklara en kolay kazandırılabilecek ilk 3 değerin "sevgi, paylaşma, sorumluluk" değerleri olduğunu, en zor kazandırılabilecek ilk üç değerin ise "empati, adil olma ve ekip çalışması (işbirliği)" değerleri olduğunu belirtmişlerdir. Bu araştırmada elde edilen verilere göre, değerler eğitimi alanında yapılan ihtiyaç analizi türünde bu araştırmada, okulöncesi öğretmenlerinin karşılaştıkları güçlükler "Değerler eğitimi programının var olmaması, değerlerin soyut bir kavram olmasından dolayı çocuklara anlatmakta zorluk çekmeleri, ilgili kaynakların azlığı ve bu konuda veli-öğretmen işbirliğinin yetersizliği" olarak tespit edilmiştir. Öte yandan, az da olsa, bazı öğretmenlerin, değerler eğitimi vermek için, okulöncesi dönem çocuğunun henüz yeterli olgunluğa ulaşmadığına inandıkları tespit edilmiştir.

İhtiyaç analizi türündeki bu araştırmanın verileri doğrultusunda sonuç olarak denilebilir ki; kapsamlı bir erken çocukluk değerler eğitimi programının geliştirilmesi, soyut konuları somut çalışma tekniklerinin öğretilmesi, ve öğretmenlerin özellikle ihtiyaç duydukları diğer konuların programa dahil edilmesi ve evde destekleme örneklerinin sunulması gerekmektedir. Geliştirilecek değerler eğitimi programına okulöncesi seviyesine uygun değerlerin dahil edilmesi ve değerlerin kazandırılma sürecinde, kolaylık ve güçlük derecesine göre etkinlik türlerini belirlemenin ve çeşitlendirmenin faydalı olacağına inanılmaktadır.

Tartışma ve Sonuç

Bu araştırmanın bulgularına göre öğretmenlerin "ahlaki yozlaşmayı önlemek için" bir değerler eğitimi programına ihtiyaç duydukları tespit edilmiştir. Değerler eğitimi evde aile ile başlamaktadır ancak annenin çalışan olması, boşanmış ailelerin artması ve aile ile çocuk arasındaki iletişim sorunları değerlerin aktarılmasını zorlaştırmaktadır (Alpöge, 2011). Yozlaşmanın nedeni bu gibi nedenlerle olabilir. Bu durumda okul öncesi eğitim kurumlarında verilecek değerler eğitiminin önemi bir kez daha ortaya çıkmaktadır. Değerler ise bir duruma karşı iyi ve kötü algı oluşturmada ve bireyin çevresiyle ilişkisini belirlemede kesin ve sistematik yargılar olarak da tanımlanmaktadır (Veugelers ve Vedder, 2003). Dolayısıyla insanın varoluşundan bu yana değerler kavramı evrilmiş ve her dönemde farklı bir şey değere dönüşerek önem kazanmaktadır. Buna göre bireylerin yaşamda karşılaştıkları sorunların çözümünde yeni etik kurallar belirlemeleri ve bunlara uymaları doğaldır (Kale, 2007). Başka bir deyişle, sözde yozlaşma, aslında belki de toplumun yeni ihtiyaçlarına uyarlanmış, gelişmiş yeni değerler sistemidir. Bu nedenle okul öncesi değerler eğitimi toplumun değerlerine uygun olarak geliştirilmeli ve güncellenmelidir.

Bu araştırmada okul öncesi öğretmenlerinin değerler eğitimi için özellikle drama, Türkçe ve sanat etkinliklerini tercih ettikleri tespit edilmiştir. Ayrıca okul öncesi öğretmenlerinin hikaye okuma, gezi, çizgi film, proje, veli katılımı uygulamaları gibi grup etkinliklerini çok az kullandıkları belirlenmiştir. Ancak değerler gibi soyut konuları çocuklara kazandırmak için birçok strateji uygulanabilir. Örneğin çocuklara sorumluluk değeri kazandırmak için, öğrencilerin izlenmediği halde yapmak istedikleri ve tamamlamak istedikleri sınıf içi görevler üretilebilir ve çocuklar yapması gerekenleri tamamlamayı ve sonuçlarına katlanmayı yaşayarak öğrenebilirler. (Uyanık-Balat ve Balaban-Dağal, 2006). Öte yandan bir çalışmada öğretmenler ve çizgi film/animasyon yapımcıları kaliteli çizgi filmlerin insani değerlere, sevgiye, saygıya, toplumsal değerlere, farklılıklara saygıya, çevreye ve hayvanlara saygı ve aile değerlerine vurgu yaptığını belirtmişlerdir. (İnan, 2016). Sonuç olarak okul öncesi öğretmenleri kaliteli çizgi filmleri belirleyerek ve aileleri bilgilendirerek çocukların evde izledikleri çizgi filmler konusunda rehberlik etmelidirler.

Öneriler

Okul öncesi öğretmenleri ahlaki yozlaşmayı önlemek için değerler eğitimine ihtiyaç duyduklarını belirtmişlerdir. Yozlaşmanın neden meydana geldiğini bulmak için daha fazla araştırmaya ihtiyaç var.

Öğretmenlerin MEB Okul Öncesi Eğitim Programında yer almasını istedikleri ilk 10 değer olan "Saygı, sevgi, dürüstlük, vatanseverlik, sorumluluk, adalet, paylaşım, empati, özgüven ve işbirliği (takım çalışması)" dışındaki değerlere ilişkin farkındalık düzeyleri; araştırılması, farkındalıklarının artırılması için hizmet içi eğitimler verilmeli ve uygulayabilecekleri örnek çalışmalar sağlanmalıdır.

Okul öncesi öğretmenlerinin değerler eğitimi için en çok drama, Türkçe ve sanat etkinliklerini tercih ettikleri tespit edilmiştir. Okul öncesi dönem çocuklarına uygun, oyunlar, çoklu temsiller, tartışmalar, bibliyoterapi, öyküler, proje çalışmaları gibi farklı eğitim yöntem ve teknikleri ile değerlerin nasıl kazandırılacağına yönelik bir program veya hizmet içi eğitim tasarlanmalıdır.

Analysis of the 5th Grade Students' Perceptions Regarding April 23 Celebrations from their Drawings*

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Abstract
The purpose of this study is to determine the perceptions of the 5th grade students regarding April 23 National Sovereignty and Children's Day celebrations through their drawings. The study was prepared by using a phenomenology design within the qualitative research model. The study group of the research consists of 77 fifth grade students studying in village schools. The drawing technique was used to collect the data, and the content analysis was used in the analysis process. In this context, the drawings of the 5th grade students were analyzed under 5 conceptual categories in total. These categories are as follow; "April 23 demonstrations, April 23 competitions, April 23 slogans/decorations, World Children's Day and Independence War". The result of the study reveals that the 5th grade students associate April 23 National Sovereignty and Children's Day with demonstrations, activities and competitions and perceive April 23 as a holiday gift to all children around the world. This research can also be prepared for other national holidays such as October 29 Republic Day and May 19 Commemoration of Atatürk, Youth and Sports Day with different participant groups.

Keywords: April 23, qualitative research, phenomenology, content analysis, drawing technique

Introduction

Holidays are ceremonies that nourish and maintain the cultural values of a society (Şahin & Dönmez, 2014). They are based on the historical and national events, common lives, traditions and beliefs of societies and they are special days called by various names such as ceremonies, festivities and celebrations (Uzun, 2010). On these special days, people who are part of a culture not only support the continuity of the culture with the ceremonies they perform, but also use these ceremonies as a tool to provide validity to their activities. While ceremonies allow the past to be remembered with their repetitions, they also contribute to the shaping of the future. In other words, they give an identity to the geography and society lived in by combining the past and the present (Çelepi, 2020), and they also make important contributions to the future of societies. Holidays celebrated in all societies are shaped around the cultural characteristics of the nation, administrative structure and religious beliefs of the state (Doğaner, 2007).

Today, we have various holidays and special days that we celebrate in unity and solidarity as a nation, which have cultural significance depending on their religious and national characteristics. Among these, Ramadan and Sacrifice Feast are religious holidays that we celebrate with the principle of cooperation, solidarity and gratitude. On the other hand, April 23 National Sovereignty and Children's Day, May 19 the Commemoration of Atatürk, Youth and Sports Day, August 30 Victory Day and October 29 Republic Day are our national and official holidays that we celebrate to remember and keep alive the most important events of our National Struggle years and our Republic history. Besides, as stated in the Law No. 2449 on National Holidays and General Holidays, January 1 New Year's Day, May 1 Labor and Solidarity Day and July 15 Democracy and National Unity Day are our general holidays.

Undoubtedly, national holidays and commemoration days are the days when the feeling of unity and solidarity is most intense in a society (Tanfer, 1997). On such days, when the national consciousness in the society is strengthened, the desire to live together increases (Akbulut, 1995). In other words, national holidays and commemorations are special days that increase enthusiasm in students and the public, distract people from their daily problems, and make them feel the pride of being together (Şahin, 2013). In parallel with this, Çetinkaya & Duman (2019) stated that ceremonial signs and symbols are widely used all over the world in order to create and develop national consciousness in society from school-age children to adults. Avcı (2007) defines schools as a show stage for ceremonial events with

their social structure and as a small model of human life. He also states that the ceremonies organized on the basis of national and universal values in school life contribute to the students' discovery of their individual talents, their social and cultural development, their adoption of school culture, and recognition of the environment, country and nation in which they live. For these reasons, national holidays, religious and special days have very important features that make nations a nation.

In this context, ceremonies are held at schools on national holidays in our country to contribute to the shaping of students' national identities. It is ensured that many students participate in these ceremonies, which are held in order to create a national consciousness by developing the national feelings of the students (Yalçın, 1995). One of these holidays is April 23 National Sovereignty and Children's Day, which children look forward to celebrating and taking part in primary and secondary schools every year. From this point of view, it is very important to determine how the children, who are the subjects of the April 23 National Sovereignty and Children's Day, experience the April 23 celebrations, what feelings and thoughts they have on April 23, as well as what April 23 means to them and how they perceive April 23.

As stated on the first page of Milliyet dated April 23, 1930; April 23 is the first foundation day of the Republic of Turkey. In those dark days when the four corners of the country were under enemy occupation, the Great Leader Gazi Mustafa Kemal gathered the deputies of the nation in Ankara and opened the Grand National Assembly of Turkey on April 23, 1920. In the assembly, it was decided to fight with determination and effort until the independence of the Turkish nation is saved. At the meeting held on April 23, 1921, due to the second anniversary of the opening of the Grand National Assembly of Turkey, Saruhan Deputy Refik Şevket Bey and his friends proposed a law for April 23 to be a national holiday. The bill of law, which was discussed in the assembly on the same day, was put to the vote and as a result of the voting, April 23 was accepted as a "national holiday" (23 Nisan'ın Milli Bayram Addine Dair Kanun). From April 23, 1922, official ceremonies began to be performed. In these ceremonies, the work of the Grand National Assembly throughout the year and the process of achieving national sovereignty were revealed in all details (Mezkit Saban, 2019). Accepting the establishment of the Grand National Assembly of Turkey as a holiday not only worried about the validity of the new regime and the national will, but also gave a duty to transfer the social remembrance to future generations. The Turkish nation, which won the war with its own internal dynamics and started to build a nation-state, accepted April 23 as a holiday and aimed to remind future generations of the struggle to overcome the difficulties experienced (Çelepi, 2020).

The use of the expression "Children's Day" for April 23 and the first celebrations are based on the fundraising efforts of the Child Protection Agency of the time, the Himaye-i Etfal Society. April 23, which was started to be celebrated as "Himaye-i Etfal Day" or "Children's Day" for the first time in 1925 by the Himaye-i Etfal Society, has been celebrated as "Children's Day" since 1927 (Alkan, 2011). Through Children's Day, it is aimed to ensure that the society deals with children's problems rather than entertaining children for a few days (Özçelik, 2011). In addition, the children who were protected should be reminded of the new story of the Turkish nation, which started from the National Struggle period and continued with the nation-building process. The leading role of this new story was the children and youth who would keep it alive and raise it, as Atatürk stated (Çelepi, 2020). April 23, which has been known as "National Holiday" and "Children's Day" since the 1920s and continues to be celebrated with different programs on the same day, took its current name "April 23 National Sovereignty and Children's

Day" with the amendment made in the Law on National Holidays and General Holidays in 1981 during the National Security Council period (Akın, 1997).

When the relevant literature is reviewed, it has been determined that very few studies have been made on the April 23 National Sovereignty and Children's Day, and these are mostly studies on the history and emergence of April 23 in a historical context (Akın, 1997; Özçelik, 2011; Alkan, 2011; Temizgüney, 2019; Akoğlan Kozak & Mutlu, 2020). However, some studies have been found in which Mezkit Saban (2019) examines the effect and role of April 23 National Sovereignty and Children's Day in terms of forming the national identity of children; while Çelepi (2020) deals with the importance and functions of April 23 National Sovereignty and Children's Day in the realization of social remembrance, and Mutlu Bayın and Akoğlan Kozak (2021) examines the contributions of April 23 National Sovereignty and Children's Day to Ankara tourism.

On the other hand, it has been determined that other studies have been mostly carried out on the phenomenon of the national holidays and October 29 Republic Day, May 19 Commemoration of Atatürk, Youth and Sports Day and August 30 Victory Day. For example, it has been determined that Bolat (2007) works on Republic Day, Aslan (2011) and Ulukaya Öteleş (2020) work on the phenomenon of national holiday, Tur (2013) works on May 19 Commemoration of Atatürk, Youth and Sports Day, and Sayılır (2014) works on August 30 Victory Day. In addition, other researches about these holidays, especially with the participation of teachers or on the basis of a lesson and curriculum, were also found (Açıkel, 2010; Bozok, 2010; Sofi, 2008). Therefore, no study was found in the relevant literature in which students' perceptions of April 23 National Sovereignty and Children's Day were investigated, the drawing technique was used as a measurement tool, and especially the students were determined as the participant group. Accordingly, it is thought that the results of this research will provide remarkable and valuable information to the literature. It is considered that it is very important to collect the data in the research with the participation of children, who are the subjects of the April 23 National Sovereignty and Children's Day, and the preparation of this study will bring very qualified data to the relevant literature. This research is important in terms of revealing valuable results about how April 23 National Sovereignty and Children's Day is perceived by the 5th grade students, what it means to them and how they feel on April 23. It is hoped that the research can guide teachers by presenting suggestions for the April 23 celebrations to be held at schools in the future and contribute to the researchers doing research on the subject by presenting a data source.

The purpose of this study is to determine the perceptions of the 5th grade students regarding April 23 National Sovereignty and Children's Day Celebrations through their drawings. For this purpose, answers to the following questions were sought in the study:

1. What are the drawings of the 5th grade students regarding the April 23 National Sovereignty and Children's Day celebrations?

2. Under which conceptual categories are the pictures drawn by the 5th grade students classified according to their common characteristics?

3. What are the examples of pictures for the conceptual categories created according to the perceptions of the 5th grade students regarding the April 23 National Sovereignty and Children's Day celebrations?

4. What are the perceptions of the 5th grade students regarding the April 23 National Sovereignty and Children's Day celebrations in the pictures they draw?

Method

In this section, the model and design of the study, the source of the data (study group), data collection tools, validity and reliability studies followed in the study and the analysis of the data are given.

Model and Design of the Study

A qualitative research model, in which a process was followed to reveal perceptions and events in a realistic and holistic way in their natural environment, was used in this research (Yıldırım & Şimşek, 2016). Qualitative research allows us to identify problems from the participants' point of view and to understand the meanings and interpretations that participants attribute to behaviors, events or objects (Hennink et al., 2020). The research was prepared by using the phenomenology design, one of the qualitative research designs. The main purpose of the phenomenological design is to reveal the experiences, perceptions and meanings that individuals attribute to a phenomenon (Yıldırım & Şimşek, 2016). This research, it was tried to determine the perceptions of the 5th grade students regarding the April 23 National Sovereignty and Children's Day celebrations by using the phenomenology design.

Study Group

The study group of the research consists of 5th grade students studying in village schools in Giresun Province Central district in the first semester of the 2019-2020 academic year. 77 students participated in the research; however, a student's drawing was not included in the evaluation because it was out of scope. In phenomenological studies, the data sources of the research consist of individuals or groups who have experiences related to the phenomenon and can reflect this phenomenon (Yıldırım & Şimşek, 2016). While forming the study group of the research, it was taken into account that the students from kindergarten to the 8th grade in the village schools regularly participate and perform in the April 23 celebrations every year. On the other hand, the reason why the research was carried out at the 5th grade level is that the acquisitions related to certain days, weeks and holidays, and our national and cultural values are mostly concentrated in the 5th grade curriculum.

Data Collection Tools

In this research, an opinion-drawing form was used as a data collection tool in order to reveal the perceptions, feelings and thoughts of the 5th grade students regarding April 23 National Sovereignty and Children's Day celebrations through the pictures they draw. In the data collection form prepared by the researcher in accordance with the purpose of the research, the following instruction was given to the students: "Describe your feelings and thoughts about the celebrations of April 23 National Sovereignty and Children's Day by drawing a picture". As Batı (2012) states, painting is a common product of the child's feelings, thoughts and perceptions and is very important. Because children convey their experiences in the pictures they draw, and it is possible to find clues about their inner world in these pictures. In addition to this, Arıcı Tüzün (2006) states that children feel themselves in a playing field while they are painting, so they convey their natural and real feelings. She also states that children painting provides an opportunity to evaluate social and cultural determinants as it reflects the child's feelings, thoughts, life and conditions. In this context, it was decided that it was the most appropriate data collection tool, considering that the students could express their feelings and thoughts about April 23 celebrations more comfortably and without hesitation with this technique. The purpose here is not to evaluate the drawing abilities of the participants; it is only to determine their perceptions that they

emphasize with drawings. The paper of participant P25 is given in Figure 1 as an example of the pictures drawn by the students.

Figure 1. The picture drawn by participant P25

As seen in Figure 1, it is understood that the students made very realistic, meaningful, emotionally happy and aesthetic drawings in order to explain their feelings and thoughts about April 23 celebrations. It was seen that the students clearly reflect the enthusiasm of April 23 with the dances/performances and colorful outfits in their drawings. In addition, especially the environmental decorations, the emphasis on the Turkish flag, the harmonious clothes and diversity of the students participating in the celebrations draw a lot of attention.

Data Analysis

Content analysis method, which is one of the qualitative data analysis methods, was used in the analysis of the data. With the content analysis method, it is tried to define the data and to reveal the facts that may be hidden in the data. The basic process in content analysis is to gather similar data under certain concepts and themes and to interpret them by arranging them in an understandable way (Yıldırım & Şimşek, 2016). In phenomenological research, which is the design of this research, data analysis is aimed at revealing experiences and meanings. For this purpose, data is tried to be conceptualized and descriptive themes related to the phenomenon are tried to be created in the content analysis process. The findings are explained and interpreted within the frame of emerging themes and patterns. The results are presented with a descriptive narration and direct quotations (Yıldırım & Şimşek, 2016). In this research, the analysis and interpretation of the pictures drawn by the students in the data collection form was carried out in ten stages. These stages are as following:

1. Examining the papers,
2. Elimination of unsuitable papers,
3. Rearrangement of the papers,
4. Sorting and numbering the papers,
5. Examining the pictures,
6. Creation of categories,
7. Distribution of pictures into categories,
8. Validity and reliability,
9. Calculation of frequencies of the pictures and,
10. Interpretation of data (Ekici, 2016a; Ekici, 2016b)

By following these steps, the categories were created according to the similar and different features determined in the pictures drawn by the students. For each of these categories, the pictures that are assumed to represent them best are included in the findings section. The examples for the pictures were presented by coding as "P1, P2, P3, ..." with the number of the participant.

Validity and Reliability

Validity and reliability stage is very important in scientific studies. Some methods were used to ensure the validity and reliability of this research. First of all, the problems encountered during the pilot implementation were determined and the necessary arrangements were made by taking additional precautions in the actual implementation. Because the flexibility of the researcher is one of the important principles of validity in qualitative research. If deemed necessary during the research process, the researcher can apply different strategies. In this context, they can make additions to the interview questions and make new interviews that were not planned before or may use different data collection methods to confirm the data obtained (Yıldırım & Şimşek, 2016). Another important criterion of validity is to report the obtained data in detail and to explain how the researcher reached the results (Yıldırım & Şimşek, 2016). In this context, data coding and data analysis process are explained in detail. During the analysis of the data, examples are given from the pictures drawn by the students that are assumed to represent each of the categories best. On the other hand, the reliability of the data analysis was calculated using the formula of Miles and Huberman (1994) which is [Agreement / (Agreement + Disagreement) x 100] in order to ensure the reliability of the research. The reliability value among the coders was found to be 98%. Two experts, who are experts in qualitative research and April 23 National Sovereignty and Children's Day, worked in the study.

Ethical Permits of Research

All rules stated to be complied with within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed in this study. None of the actions mentioned under the heading of "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, have been carried out. The related study is a master's thesis, and its data were collected before 2020, as stated in the method section.

Findings

In this section, the findings regarding the perceptions of the 5th grade students about the April 23 National Sovereignty and Children's Day celebrations are given. The data were analyzed in accordance with sub-purposes.

Findings Regarding April 23 National Sovereignty and Children's Day Celebrations in the 5th Grade Students' Drawings

It has been seen that the pictures drawn by the students mainly include the demonstrations and activities (dance performances, folk dances, speeches, etc.) held during the April 23 celebrations and various slogans written for April 23. In addition, the competitions held on April 23 (sack race, egg-and-spoon race, balloon pop, etc.) and the celebrations of the children of the world are among the pictures drawn by the students. The distribution of the findings of the codes obtained from the pictures drawn by the 5th grade students regarding April 23 National Sovereignty and Children's Day celebrations is presented in Table 1.

Table 1. *The distribution of the findings of the codes obtained from the pictures drawn by the 5th grade students regarding April 23 celebrations*

Number	Most common drawings in the pictures	f
1	Balloon	169
2	Turkish flag	153
3	Audiences	151
4	Children of the world	131
5	Children	124
6	Competitors	115
7	Children performing	86
8	Heart	39
9	School	30
10	Star	29
11	Competiton	22
12	Speech stand	18
13	Stage	17
14	Presenter	13
15	World	6
16	Weapon	5
17	Soldier	5

As seen in Table 1, it was determined that the students made mostly drawings of concepts such as "balloon (f=169), Turkish flag (f=153), audience (f=151), children of the world (f=131), children (f=124), competitors (f=115), children performing (f=86), heart (f=39), school (f=30)" in the pictures they drew in the data collection form according to the instructions given. On the other hand, it was determined that the least specified concepts were listed as "world (f=6), weapon (f=5), soldier (f=5)". The visual word cloud related to the subject is as seen in Figure 2. Here, it can be seen that codes with high frequency are written in large font size, while codes with lower frequencies are written in smaller size.

Figure 2. Word cloud emphasizing the codes obtained from students' drawings regarding April 23 Celebrations

Findings of the Conceptual Categories in which the Drawings of the 5th Grade Students Were Collected in Terms of Their Common Characteristics

While analyzing the answers given by the participants to the research question, first of all, similar concepts used in the pictures were determined and categories were created considering the common characteristics of these concepts. In this context, the categories developed from the pictures drawn by the students are shown in Figure 3 according to their percentage distribution.

The Distribution of the Categories Obtained from Drawings
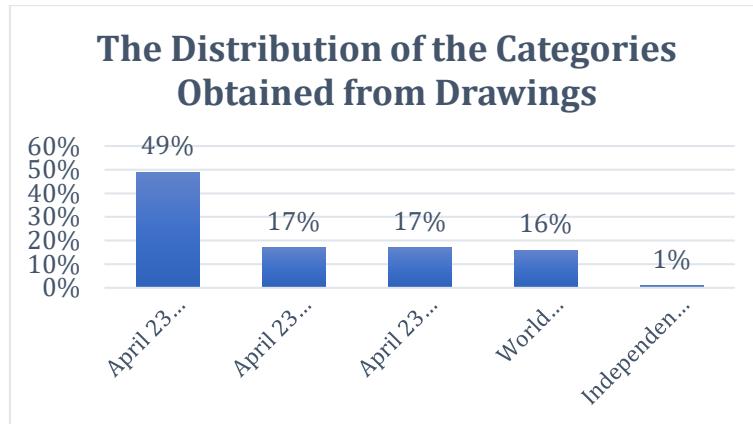
Figure 2. The distribution of the categories obtained from the drawings of the 5th grade students regarding April 23 Celebrations

As seen in Figure 3, a total of 76 pictures drawn by the students were gathered under 5 conceptual categories according to their common characteristics. Accordingly, the category of "April 23 demonstrations (49%)" emerged as the dominant category in which the students drew the most pictures. Other categories continue as "April 23 slogans/decorations (17%), April 23 competitions (17%), World Children's Day (16%) and the Independence War (1%)". Therefore, the category in which the students drew the least was determined as the category of "Independence War (1%)".

Category 1: April 23 demonstrations

"April 23 demonstrations" is the category in which students draw the most. In this category, there are pictures of 37 students in total. The rate of the pictures in this category among all pictures was determined as 49%. In this category, it was determined that the students drew different activities such as poetry reading, April 23 speeches on the stage, as well as dance performances, folk dances, parades and flag shows for the April 23 celebrations. In addition, it was seen that the concepts such as "audience, balloon, Turkish flag, children, school, stage, speech stand, and presenter" were depicted in the drawings included in this category. On the other hand, the fact that a substantial part of the students who participated in the research depicted the performances only in the garden of the school without any stage shows that the physical facilities of some schools are not sufficient to carry out ceremonial activities. The most drawn picture in this category is "audiences (f=151)". Examples of the pictures drawn by the participants in this category are given in Figure 4 and Figure 5.
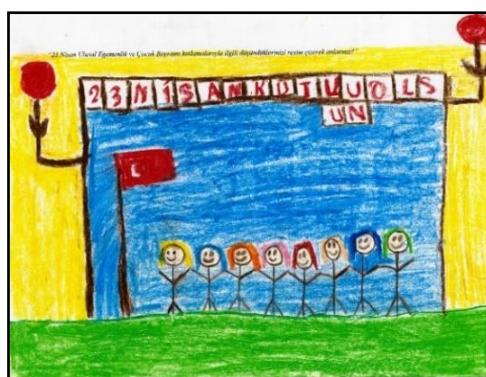
Figure 4. P2's drawing
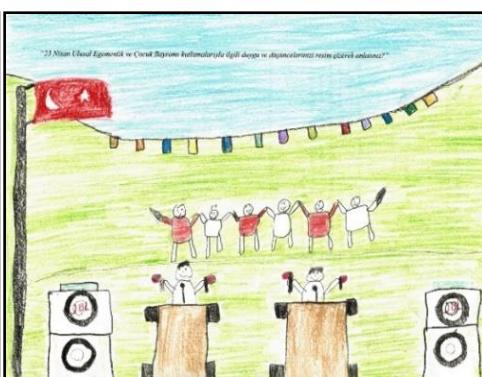
Figure 5. P46's drawing

As seen in Figure 4 and Figure 5, the participants P2 and P46 drew April 23 demonstrations on the stages decorated with flags and slogans appropriate to the meaning and importance of the day. In

these drawings, especially the happiness of children and smiling faces draw attention. As seen in most drawings, the text "23 Nisan Kutlu Olsun" (Happy April 23) is also seen in the picture drawn by P2. It is also important that these celebrations are held in an environment where the Turkish flag is in most of the drawings. It shows that students can match the emphasis of the national flag with these celebrations.

Category 2: April 23 slogans/decorations

Another category created from the pictures drawn by the 5th grade students is the category of "April 23 slogans/decorations". In this category, there are pictures of 13 students in total. The rate of the pictures in this category among all pictures was determined as 17%. In this category, it was determined that the students drew various slogans, banners and decorations hung around the school or on the stage for the April 23 celebrations, indicating the meaning and importance of the day. In addition, it was seen that the students decorated their schools in their drawings in this category with balloons, Turkish flags, a picture of Atatürk and slogans such as "23 Nisan Kutlu Olsun" (Happy April 23), "23 Nisan" (April 23), "Hoş geldin 23 Nisan" (Welcome April 23), "Atam İzindeyiz" (We Follow Your Footsteps). The most drawn picture in this category is "balloons (f=56)". Examples of the pictures drawn by the participants in this category are given in Figure 6 and Figure 7.

Figure 6. P24's drawing   *Figure 7.* P53's drawing

As seen in Figure 6 and Figure 7, the participants P24 and P53 reflect the enthusiasm of the holiday in their drawings both by drawing and writing, with the flags and balloons they hung around and the slogans they wrote.

Category 3: April 23 competitions

Another category created from the pictures drawn by the 5th grade students is the category of "April 23 competitions". In this category, there are pictures of 13 students in total. The rate of the pictures in this category among all pictures was determined as 17%. In this category, it was determined that the students drew attention to the various competitions held during the April 23 celebrations and the award ceremonies held at the end of these competitions. In addition, it was seen that various concepts such as "competitor, sack race, balloon pop, egg-and-spoon race, tug of war, footrace, and award ceremony" were depicted in the drawings included in this category. The most drawn picture in this category is "competitors (f=115)". Examples of the pictures drawn by the participants in this category are given in Figure 8 and Figure 9.

Figure 8. P4's drawing   *Figure 9.* P9's drawing
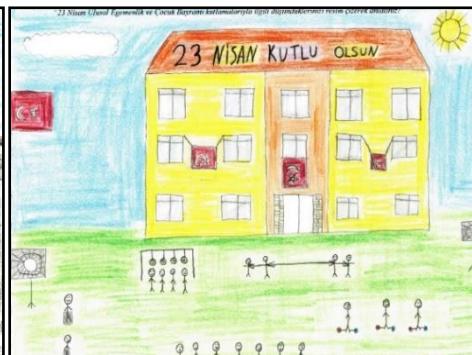
As seen in Figure 8 and Figure 9, it is understood that the participants P4 and P9 reflected the enthusiasm and excitement of the holiday in their drawings by addressing various competitions such as balloon pop, tug of war, and sack race. However, in these drawings, the fact that the competitions are depicted in an empty area in the school garden without any stage reveals the physical inadequacy of the schools for the ceremonial activities.

Category 4: World Children's Day

Another category created from the pictures drawn by the 5th grade students is the category of "World Children's Day". In this category, there are pictures of 12 students in total. The rate of the pictures in this category among all pictures was determined as 16%. In this category, it was determined that the students drew pictures showing that they celebrated April 23 National Sovereignty and Children's Day with all the children of the world. In addition, it was seen that various concepts such as "children of the world, Turkish flag, world and different country flags" were depicted in the drawings included in this category. The most drawn picture in this category is "children of the world (f=131)". Examples of the pictures drawn by the participants in this category are given in Figure 10 and Figure 11.

Figure 10. P23's drawing   *Figure 11.* P42's drawing

As seen in Figure 10 and Figure 11, the participants P23 and P42 drew attention to the international dimension of April 23 and that it is a holiday gifted to the children of the world, by emphasizing the world and different country flags in their drawings. In terms of perceiving the meaning and importance of the flag, it is very important for children to be aware of the international dimension of April 23 and to draw their perceptions in this direction together with the Turkish flag and the flags of other countries.

Category 5: Independence War

Another category created from the pictures drawn by the 5th grade students is the category of "Independence War". There is only 1 student's picture in this category. The rate of the pictures in this category among all pictures was determined as 1%. It was determined that the picture drawn in this category depicts a war scene between Turkish and Greek soldiers. In addition, it was seen that the concepts of Turkish and Greek soldiers, weapons, Turkish flag and helicopter were depicted in the drawing included in this category. The most drawn picture in this category is "weapon (f=5)". The picture drawn by participant P21 belonging to this category is given in Figure 12.

Figure 12. P21's drawing

As seen in Figure 12, the participant P21 associates April 23 National Sovereignty and Children's Day with the Independence War with a war scene s/he portrayed in the picture s/he drew. In this drawing, some emphasis such as the strength of the Turkish soldier and his victory in this war draw attention. It can be evaluated that the drawings in the form of Turkish flag hanging on the helicopter, the Greek soldier laying his gun on the ground, etc. emphasize the perceptions in this direction.

Discussion and Conclusion

The purpose of this study is to analyze the perceptions of 5th grade students regarding April 23 National Sovereignty and Children's Day celebrations through their drawings. In this context, the students expressed their feelings and thoughts about the celebrations of April 23 with the pictures they drew in the data collection form. The pictures drawn by the students were examined and the answer sheets of 76 out of 77 students participating in the research were evaluated.

49% of the students participating in the research answered the instruction in the data collection form by drawing activities and performances such as dances and podium speeches holding during the April 23 celebrations. While 17% of students drew competitions held on April 23, the other 17% drew the decorations and write slogans. It was seen that 16% of the students drew pictures describing the celebrations of the children of the world. Besides, it was determined that 1% of the students painted the Independence War. In addition, most of the pictures draw attention to the concepts such as balloon, Turkish flag, audience, children of the world, school, competition and stage.

The pictures drawn by the 5th grade students regarding April 23 National Sovereignty and Children's Day celebrations are gathered under 5 conceptual categories according to their similar and common characteristics. These categories are listed as "April 23 demonstrations, April 23 competitions, April 23 slogans/decorations, World Children's Day and Independence War".

"April 23 demonstrations" is the category in which students draw the most. In this category, there are pictures of 37 students and it was determined that the students depicted different activities such as parades, podium speeches as well as folk dances, dance and flag shows they performed in their schools during the April 23 celebrations. It is understood that the 5th grade students who made these drawings associated April 23 with various shows and activities.

Another category created from the pictures drawn by the 5th grade students is the category of "April 23 slogans/decorations". In this category, there are pictures of 13 students and it was determined that the students drew various slogans, banners and decorations hung around the school or on the stage for the April 23 celebrations to indicate the meaning and importance of the day. It is noteworthy that the slogans "23 Nisan Kutlu Olsun" (Happy April 23), "23 Nisan" (April 23), "Atam İzindeyiz" (We Follow Your Footsteps) are frequently repeated in these drawings. On the other hand, it was determined that students mostly decorate their schools with balloons and Turkish flags in their drawings. The students expressed their enthusiastic perceptions both with their decorations in their drawings and their writings.

Another category created from the pictures drawn by the 5th grade students is the category of "April 23 competitions". In this category, there are pictures of 13 students and it was determined that the students depicted various competitions held during the April 23 celebrations and the award ceremonies held at the end of these competitions. It shows that the 5th grade students who made these drawings associate April 23 with various competitions.

Another category created from the pictures drawn by the 5th grade students is the category of "World Children's Day". In this category, there are pictures of 12 students and it was determined that the students drew pictures showing that they celebrated April 23 National Sovereignty and Children's Day with the children from different countries in their drawings. It is understood that the 5th grade students who made these drawings perceived April 23 as the holiday of all children in the world.

Another category created from the pictures drawn by the 5th grade students is the category of "Independence War". There is only 1 student's picture in this category. When the picture drawn by this student was examined, it was determined that a war scene was depicted between Turkish and Greek soldiers and this war was stated as the Independence War in writing. It shows that this student associates April 23 with Independence War.

When the relevant literature is examined, it has been determined that studies with similar results with the results of this research have been conducted. In this context, Mezkit Saban (2019) stated in her study that the flag is one of the important elements that contribute to the formation of children's national identities and the development of their commitment to society. In third study (2015), it was stated that the Republic of Turkey always tried to keep the love of flag alive as a nation and a state and this love began to be instilled in children in the family and was continued increasingly in schools. In this study, it was determined that the "Turkish flag" was frequently used in the pictures drawn by the students. As emphasized in the drawings, it has been revealed that the flags hung around the environment and the demonstrations with flags contributed to the development of the love of flag and the sense of devotion to the flag in the students. In this context, the results of the research are in line with the literature. On the other hand, in the study conducted by Göğüş Tan et al. (2007), it was stated that the participants identified the Republic with the Independence War, which resulted in victory and

enabled the country to get rid of the occupation. Similarly, in Kılıç and Demir's study (2017), participants associated national holidays with past wars and victories. In this research, the pictures drawn by the 5th grade students about the Independence War support the findings emphasized in the literature.

In the studies conducted by Şiringel (2006) and Karakoç Öztürk (2014), it was stated that the physical facilities of the schools are not sufficient to carry out activities for certain days and weeks. Similar to this result, in this research in some drawings, the shows and competitions held during the April 23 celebrations were depicted only in the school garden without any stage or technological equipment (computer, speaker, etc.). It can be stated as an indication that the physical facilities of some schools are not sufficient for the conduct of ceremonial activities. In the study of Selanik Ay and Güllü (2020), in which they discussed the national holiday ceremonies from the past to the present within the scope of Social Studies course, it was stated that primary school teachers carried out activities such as reading poems, folk dances, ronduels, competitions, oratorios, classroom decorations and theatrics for the national holiday ceremonies. As a matter of fact, the activities in the "April 23 demonstrations, April 23 competitions, and April 23 slogans/decorations" categories created from the findings of this research coincide with these activities emphasized in the studies in the literature.

However, on the other hand, the findings of the study do not coincide with the findings of the study conducted by Avcı (2007). Avcı (2007) stated in his study that there is no unity in the celebration of the national holidays, the distribution of tasks is made among certain students, the official ceremonies are usually held, and therefore these ceremonies are boring for the children who are in the play age, and the ceremonies do not exactly achieve their goals. However, according to the results obtained in this research, the happiness of children in the colorful drawings in the categories of "April 23 demonstrations", "April 23 competitions" and "April 23 slogans/decorations" draws attention and indicates that the holidays are in a festive atmosphere rather than an official ceremony.

As a result, this research reveals that 5th grade students' perceptions of April 23 National Sovereignty and Children's Day focus on the shows, activities and competitions held during the celebrations, and they perceive April 23 as a holiday gifted to all children in the world. In addition, the research results reflect the originality since the research method differs from the studies in the literature with its model, design, data collection tool and data analysis dimensions.

Recommedations

In the direction of the results obtained in the research, we can give the following recommendations:

- This research can also be prepared with participant groups at different educational levels.
- This research can also be prepared by using different data collection methods such as interview and metaphor.
- This research can also be prepared for other national holidays such as October 29 Republic Day and May 19 Commemoration of Atatürk, Youth and Sports Day

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research

Genişletilmiş Türkçe Özet

5. Sınıf Öğrencilerinin Çizimlerinden 23 Nisan Kutlamalarına İlişkin Algılarının Analizi

Giriş

Bayramlar, bir toplumun sahip olduğu kültürel değerlerini besleyen ve devamlılığını sağlayan törenlerdir (Şahin & Dönmez, 2014:195). Toplumların inanç sistemlerinden ve uluslaşma süreçleri içinde yaşadıkları tarihi olaylardan, ortak yaşantılarından ve geleneklerinden ortaya çıkan bayramlar, tören, şenlik, kutlama gibi çeşitli şekillerde adlandırılan özel günlerdir (Uzun, 2010:109). Bu özel günlerde, bir kültürün parçası olan insanlar, yaptıkları törenlerle kültürün sürekliliğine destek verirken aynı zamanda bu törenleri faaliyetlerine geçerlilik sağlayacak bir alan olarak da kullanırlar. Törenler, icra tekrarlarıyla geçmişin anımsanmasına olanak tanırken geleceğin şekillenmesine de katkı sağlarlar. Başka bir deyişle, dünü ve bugünü birleştirerek yaşanılan coğrafyayı ve toplumu kimlikli kılarlar (Çelepi, 2020) ve toplumların geleceklerinde de önemli katkılar sağlarlar. Bütün toplumlarda kutlanan bayramlar, milletin kültürel özellikleri, devletin idari yapısı ve dini inanışı etrafında biçimlenmiştir. Türklerde de İslamiyet öncesi dönemde başlayan bayram olgusu Fransız ihtilali sonrası yayılan milliyetçilik düşüncesi etrafında yeniden şekillenmiştir (Doğaner, 2007:119).

Günümüzde, niteliğine göre dini ve milli olmak üzere kültürel öneme sahip, millet olarak birlik ve beraberlik içinde kutladığımız çeşitli bayramlarımız ve özel günlerimiz vardır. Bunlardan Ramazan ve Kurban Bayramı, yardımlaşma, dayanışma ve şükretme ilkesi doğrultusunda kutladığımız dini bayramlarımızdır. 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı, 19 Mayıs Atatürk'ü Anma, Gençlik ve Spor Bayramı, 30 Ağustos Zafer Bayramı ve 29 Ekim Cumhuriyet Bayramı ise Milli Mücadele yıllarımızın ve Cumhuriyet tarihimizin en önemli olaylarını hatırlamak ve yaşatmak için kutladığımız ulusal ve resmî bayramlarımızdır. Milli bayramlar ve anma törenleri, öğrencilerde ve halkta coşkuyu arttıran insanları günlük problemlerinden uzaklaştırıp ulus bilinci ve birlikte olmanın kıvancının duyulduğu özel günlerdir (Şahin, 2013). Okul çağındaki çocuklardan başlayarak yetişkin bireylere kadar toplumda

ulusal bilinci oluşturmak ve geliştirmek amacıyla bu törensel simge ve semboller tüm dünyada yaygın olarak kullanılmaktadır (Çetinkaya & Duman, 2019).

Bu araştırmada, 23 Nisan Ulusal Egemenlik ve Çocuk Bayramının özneleri olan çocukların 23 Nisan kutlamalarını ne şekilde deneyimlediklerinin, 23 Nisan'da hangi duygu ve düşünceler içinde olduklarının; aynı zamanda 23 Nisan'ın onlar için ne anlama geldiğinin ve 23 Nisan'ı nasıl algıladıklarının çizdikleri resimler yoluyla belirlenmesi amaçlanmıştır. İlgili literatür incelendiğinde, milli bayram olgusunun incelendiği ve 29 Ekim Cumhuriyet Bayramı, 19 Mayıs Atatürk'ü Anma, Gençlik ve Spor Bayramı ve 30 Ağustos Zafer Bayramı ile ilgili çalışmaların yapıldığı tespit edilmiştir. 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı'na ilişkin ise çok az sayıda çalışmanın yapıldığı; bunların da çoğunlukla 23 Nisan'ın tarihçesi ve ortaya çıkışı gibi konularda tarihsel bir bağlamda ele alındığı çalışmalar olduğu belirlenmiştir. 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı ile ilgili öğrenci algılarının araştırıldığı, çizim tekniğinin ölçme aracı olarak kullanıldığı ve özellikle öğrencilerin katılımcı grubu olarak belirlendiği bir çalışmaya rastlanmamıştır. Bu nedenle, bu araştırma sonuçlarının literatüre dikkat çekici ve değerli bilgiler kazandıracağı düşünülmektedir. 23 Nisan Ulusal Egemenlik ve Çocuk Bayramının özneleri olan çocukların katılımıyla verilerin toplanmasının ve bu yönde verilerin literatüre kazandırılmasının oldukça önemli olduğu kabul edilerek bu çalışmanın hazırlanmasının ilgili literatüre çok nitelikli veriler kazandıracağı düşünülmektedir. Bu araştırma, 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı'nın 5. sınıf öğrencileri tarafından nasıl algılandığına, 23 Nisan'ın onlar için ne ifade ettiğine ve öğrencilerin 23 Nisan'da hangi duygular içinde olduklarına ilişkin değerli sonuçlar ortaya koyması bakımından önemlidir. Araştırmanın, gelecekte okullarda yapılacak 23 Nisan kutlamalarına yönelik öneriler sunarak öğretmenlere rehberlik edebileceği ve konuya ilişkin araştırma yapan araştırmacılara veri kaynağı sunarak katkı sağlayabileceği umulmaktadır.

Yöntem

Bu araştırmada, nitel araştırma modeli kullanılmıştır. Nitel araştırmalar, katılımcıların bakış açısından sorunların tanımlamasına ve katılımcıların davranışlara, olaylara veya nesnelere yükledikleri anlamların ve yorumların anlaşılmasına olanak tanır (Hennink vd., 2020:10). Nitel araştırma kapsamında bireylerin bir olguya ilişkin sahip oldukları yaşantıları, algıları ve bunlara yükledikleri anlamları doğal ortamında ortaya çıkarmaya çalışan olgubilim (fenomenoloji) deseni kullanılmıştır (Yıldırım & Şimşek, 2016). Bu kapsamda olgubilim deseni ile 5. sınıf öğrencilerinin çizdikleri resimlerden 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarına ilişkin sahip oldukları algılar belirlenmeye çalışılmıştır. Araştırmanın çalışma grubunu, 2019-2020 eğitim öğretim yılı birinci döneminde Giresun ili Merkez ilçeye bağlı köy okullarında öğrenim gören 5. sınıf öğrencileri oluşturmaktadır. Araştırmanın çalışma grubu seçilirken amaçsal (amaçlı) örnekleme yöntemlerinden biri olan benzeşik (homojen) örnekleme yöntemi kullanılmıştır. Bu yöntem çalışmanın amacı doğrultusunda bilgi açısından zengin durumların seçilerek derinlemesine araştırma yapılmasına olanak verir (Büyüköztürk vd., 2016: 90). Araştırmaya 77 öğrenci katılmıştır ancak bir öğrencinin çizimi kapsam dışı olduğu için değerlendirmeye alınmamıştır. Araştırmanın çalışma grubu oluşturulurken köy okullarında öğrencilerin anasınıfından 8. sınıfa kadar 23 Nisan kutlamalarına her yıl düzenli olarak katılıp görev almaları ve performans göstermeleri göz önünde bulundurulmuştur.

Bu araştırmada, 5. sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarına ilişkin algılarını, duygu ve düşüncelerini çizdikleri resimler yoluyla ortaya konulması amacıyla veri toplama aracı olarak bir görüş çizim formu kullanılmıştır. Araştırmacı tarafından,

araştırmanın amacı yönünde hazırlanmış olan veri toplama formunda, öğrencilere "23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarıyla ilgili duygu ve düşüncelerinizi resim çizerek anlatınız?" sorusu yöneltilmiştir. Araştırmada verilerin analizi aşamasında, nitel veri analizi yöntemlerinden biri olan içerik analizi yöntemi kullanılmıştır. İçerik analizinde yapılan temel işlem, birbirine benzeyen verileri belirli kavramlar ve temalar altında toplamak ve bunları anlaşılabilir bir biçimde düzenleyerek yorumlamaktır. Sonuçlar ise, betimsel bir anlatım ile doğrudan alıntılara yer verilerek sunulur (Yıldırım & Şimşek, 2016). Bu kapsamda, öğrencilerin veri toplama formunda çizdikleri resimler içinde saptanan benzer ve farklı özelliklere göre kategoriler oluşturulmuştur. Bu kategorilerin her biri için onu en iyi temsil ettiği varsayılan öğrencilerin çizdikleri resimlere bulgular bölümünde yer verilmiştir.

Bulgular

Araştırmaya katılan öğrencilere veri toplama formunda "23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarıyla ilgili duygu ve düşüncelerinizi resim çizerek anlatınız" sorusu yöneltilmiştir. Katılımcıların %49'u bu soruya, 23 Nisan kutlamaları sırasında yapılan danslar, halk oyunları ve kürsü konuşmaları gibi etkinlik ve gösterileri çizerek cevap vermişlerdir. Öğrencilerin %17'si 23 Nisan'da düzenlenen çuval yarışı, yumurta taşıma, halat çekme, balon patlatma vb. yarışmaları çizerken; diğer %17'si ise bayram için yapılan süslemeler ile okula asılan slogan ve pankartları çizmişlerdir. Öğrencilerin %16'sının dünya çocuklarının yaptığı kutlamaları anlatan resimler çizdiği görülmüştür. Bunların yanında, öğrencilerin %1'inin ise Kurtuluş Savaş'ını resmettiği belirlenmiştir. Ayrıca, resimlerin çoğunda *balon, Türk bayrağı, seyirci, dünya çocukları, çocuk, okul, yarışma, kürsü ve sahne* gibi kavramlara ait çizimler dikkat çekmektedir. Veri toplama formunda 5.sınıf öğrencilerinin çizdikleri resimlerde kullanılan benzer kavramlar belirlenmiş ve bu kavramların ortak özellikleri dikkate alınarak kategoriler oluşturulmuştur. Bu kategoriler, "23 Nisan gösterileri, 23 Nisan yarışmaları, 23 Nisan sloganları/süslemeleri, Dünya çocuk bayramı ve Kurtuluş Savaşı" şeklinde sıralanmaktadır. Öğrencilerin en çok resim çizdiği "23 Nisan gösterileri (%49)" kategorisi baskın kategori olarak ortaya çıkmıştır. Diğer bir yandan, öğrencilerin en az resim çizdiği kategori ise "Kurtuluş Savaşı (%1)" kategorisi olarak belirlenmiştir.

Tartışma ve Sonuç

Bu çalışmanın amacı, 5.sınıf öğrencilerinin çizdikleri resimlerden hareketle 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarına ilişkin algılarını analiz etmektir. Bu kapsamda öğrenciler, 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarıyla ilgili duygu ve düşüncelerini veri toplama formunda çizdikleri resimlerle belirtmişlerdir. Öğrencilerin çizdikleri resimler incelenmiş ve araştırmaya katılan 77 öğrenciden 76'sının cevap kağıdı değerlendirmeye alınmıştır.

Araştırmaya katılan öğrencilerin %49'u "23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarıyla ilgili duygu ve düşüncelerinizi resim çizerek anlatınız." sorusuna, 23 Nisan kutlamaları kapsamında yapılan gösterileri ve etkinlikleri (dans gösterileri, halk oyunları, kürsü konuşmaları, vs.) çizerek cevap vermişlerdir. Öğrencilerin %17'si 23 Nisan'da düzenlenen yarışmaları (çuval yarışı, kaşıkta yumurta taşıma, balon patlatma, halat çekme, vs.) çizerken; diğer %17'si ise bayram için yapılan süslemeler ile okula asılan slogan ve pankartları çizmişlerdir. Öğrencilerin %16'sının dünya çocuklarının yaptığı kutlamaları anlatan resimler çizdiği görülmüştür. Bunların yanında, öğrencilerin %1'inin ise Türk ve Yunan askerleri arasında geçen bir savaş sahnesini resmettiği belirlenmiştir. Ayrıca,

resimlerin çoğunda *balon, Türk bayrağı, seyirci, dünya çocukları, çocuk, okul, yarışma, kürsü ve sahne* gibi kavramlara ait çizimler dikkat çekmektedir.

5.sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarına ilişkin çizdikleri resimler benzer ve ortak özelliklerine göre toplam 5 kavramsal kategori altında toplanmıştır. Bu kategoriler şu şekilde sıralanmaktadır; "23 Nisan gösterileri, 23 Nisan yarışmaları, 23 Nisan sloganları/süslemeleri, Dünya çocuk bayramı ve Kurtuluş Savaşı" dır.

"23 Nisan gösterileri" kategorisi, 5.sınıf öğrencilerinin en çok çizim yaptığı kategoridir. Bu kategoride toplam 37 öğrencinin resmi bulunmaktadır. Bu kategoride öğrencilerin resimlerinde okullarında 23 Nisan kutlamaları için yaptıkları dans gösterileri, halk oyunları, geçit töreni ve bayrak gösterilerinin yanında kürsüde yapılan 23 Nisan konuşmaları gibi farklı gösterileri resmettikleri belirlenmiştir. Bu resimleri çizen 5.sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramını yapılan çeşitli gösterilerle ilişkilendirdikleri anlaşılmaktadır.

5. sınıf öğrencilerinin çizdikleri resimler doğrultusunda geliştirilen diğer bir kategori "Dünya Çocuk Bayramı" kategorisidir. Bu kategoride toplam 12 öğrencinin resmi bulunmaktadır. Bu kapsamda öğrencilerin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramını bütün dünya çocukları ile birlikte kutladıkları resimler yaptıkları görülmüştür. Bu resimleri çizen 5.sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramını dünyadaki bütün çocukların bayramı olarak algıladıkları anlaşılmaktadır.

5. sınıf öğrencilerinin çizdikleri resimler doğrultusunda geliştirilen diğer bir kategori "23 Nisan yarışmaları" kategorisidir. Bu kategoride toplam 13 öğrencinin resmi bulunmaktadır. Bu kapsamda öğrencilerin resimlerinde 23 Nisan kutlamaları sırasında düzenlenen çeşitli yarışmaları ve bu yarışmalar sonucunda yapılan ödül törenlerini resmettikleri belirlenmiştir. Bu resimleri çizen 5.sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramını yapılan çeşitli yarışmalarla ilişkilendirdikleri anlaşılmaktadır.

5. sınıf öğrencilerinin çizdikleri resimler doğrultusunda geliştirilen diğer bir kategori "23 Nisan sloganları/süslemeleri" kategorisidir. Bu kategoride toplam 13 öğrencinin resmi bulunmaktadır. Bu kapsamda öğrencilerin resimlerinde 23 Nisan kutlamaları için okul çevresi ya da sahneye asılan günün anlam ve önemini belirten çeşitli ifadelerden oluşan slogan ve pankartlar ile süslemelere yer verdiği tespit edilmiştir. Bununla birlikte, öğrencilerin resimlerinde okullarını en çok balonlar ve Türk bayrakları ile süsledikleri belirlenmiştir. Bu çizimlerde slogan olarak *23 Nisan Kutlu Olsun, 23 Nisan, Atam İzindeyiz* yazılarının sık sık tekrar edildiği dikkat çekmektedir. Öğrenciler hem çizimlerindeki süslemeleriyle hem de yazımlarıyla coşkulu algılarını dile getirmişlerdir.

5. sınıf öğrencilerinin çizdikleri resimler doğrultusunda geliştirilen diğer bir kategori ise "Kurtuluş Savaşı" kategorisidir. Bu kategoride yalnızca 1 öğrencinin resmi bulunmaktadır. Bu öğrencinin çizdiği resim incelendiğinde; Türk ve Yunan askerleri arasında geçen bir savaş sahnesini resmettiği belirlenmiştir. Bu durum, bu öğrencinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramını Kurtuluş Savaşı ile ilişkilendirdiğini göstermektedir.

İlgili literatür incelendiğinde; bu araştırma sonuçlarıyla benzer sonuçlar tespit edilen çalışmaların yapıldığı belirlenmiştir. Bu kapsamda; Mezkit Saban (2019:223) çalışmasında, çocukların millî kimliğini şekillendiren ve ait olduğu topluma bağlılık hissini geliştirmesini sağlayan araçlardan birinin *bayrak* olduğunu ifade etmiştir. Üçüncü (2015:528) tarafından yapılan çalışmada ise, Türkiye

Cumhuriyeti'nin millet ve devlet olarak bayrak sevgisini daima canlı tutmaya çalıştığı; bu sevginin de çocuklara ailede aşılanmaya başladığı ve okullarda artırılarak devam ettirildiği belirtilmiştir. Bu araştırmada da öğrenciler tarafından çizilen resimlerde sıklıkla "Türk bayrağı"nın çizilmesi, 23 Nisan kutlamaları sırasında çevreye asılan bayrakların ve bayrak gösterilerinin milli kimlik unsurlarından biri olan bayrağa bağlılık duygusunun ve bayrak sevgisinin gelişmesine katkı sağladığını göstermektedir. Diğer bir yandan, Göğüş Tan vd. (2007:89) tarafından yapılan çalışmada katılımcıların Kurtuluş Savaşı'nın başarıyla sonuçlanıp ülkenin işgalden kurtulmuş olmasıyla Cumhuriyet'i özdeşleştirdikleri belirtilmiştir. Bununla benzer şekilde Kılıç ve Demir (2017:173)'in çalışmasında ise, katılımcılar Milli Bayramları geçmişte yapılan savaş ve kazanılan zaferlerle ilişkilendirmişlerdir. Bu araştırmada elde edilen 5. sınıf öğrencilerinin Kurtuluş Savaşı ile ilgili çizdiği resimler literatürde vurgulanan bulguları destekler niteliktedir. Şiringel (2006:80) ve Karakoç Öztürk (2014:18) tarafından yapılan araştırmalarda belirli gün ve haftalara yönelik faaliyetlerin yürütülmesi için okulların fiziki olanaklarının yeterli olmadığı ifade edilmiştir. Bu araştırmada da bu sonuca benzer nitelikte, bazı çizimlerde 23 Nisan kutlamaları kapsamında yapılan gösteri ve yarışmaların herhangi bir sahne, teknolojik araç-gereç (bilgisayar, hoparlör vb.) olmadan yalnızca okul bahçesinde resmedilmesi bazı okulların fiziki olanaklarının tören faaliyetlerinin yürütülmesi açısından yeterli olmadığının bir göstergesi olarak belirtilebilir. Bu çizimler öğrencilerin 23 Nisan kutlamalarının okullardaki hangi ortamlarda yapıldığını detaylarıyla ve açıklıkla resmedebildiklerini vurgulamaktadır. Selanik Ay ve Güllü (2020:160)'nün geçmişten bugüne milli bayram törenlerini Sosyal Bilgiler dersi kapsamında ele aldıkları çalışmada sınıf öğretmenlerinin günümüzde milli bayram törenlerine yönelik şiir okuma, halk oyunları, ront çalışmaları, yarışmalar, oratoryolar, tören komisyonlarında görev alma, sınıf süsleme ve piyes sergileme gibi etkinlikler gerçekleştirdikleri belirtilmiştir. Nitekim bu araştırmanın bulgularından oluşturulan "23 Nisan gösterileri, 23 Nisan yarışmaları ve 23 Nisan sloganları/süslemeleri" kategorilerinde yer alan etkinlikler literatürde yer alan çalışmalarda vurgulanan bu etkinliklerle örtüşmektedir. Selanik Ay ve Güllü (2020:157)'nün çalışmasında, bir diğer bulgu olarak milli bayramların kültür aktarımındaki rolü hakkında sınıf öğretmenlerinin görüşleri arasında Atatürk'ün kültürel bir değer olarak görülmesi, halk oyunları, marşlar ve türküler, geleneksel oyunlar, yöresel kıyafetler, ülkemizin tarihi ve geçmişte yaşanan zorlukların anlaşılması, kazanılan zaferlerden duyulan gurur ve geleneklerin aktarılması yer almaktadır. Bu noktada, araştırma sonuçlarının birbiri ile uyumlu olduğunu söylemek mümkündür.

Fakat öte yandan, araştırmada elde edilen bulgular Avcı (2007) tarafından yapılan çalışmanın bulgularıyla örtüşmemektedir. Avcı (2007:85), çalışmasında ulusal bayram günlerinin kutlanmasında birliğin olmadığını, görev dağılımının belli başlı öğrenciler arasında yapıldığını, genellikle resmi törenlerle yetinildiğini ve bu sebeple oyun çağında olan çocuklara bu törenlerin sıkıcı geldiğini, ayrıca düzenlenen törenlerin amaçlarına tam olarak ulaşamadığını ifade etmiştir. Ancak bu araştırmada elde edilen sonuçlara göre ise, "23 Nisan gösterileri", "23 Nisan yarışmaları" ve "23 Nisan sloganları/süslemeleri" kategorilerinde yer alan renkli çizimlerde çocukların mutlulukları oldukça dikkat çekmektedir ve bayramların resmi bir törenden çok festival havasında geçtiğine işaret etmektedir. Bu araştırma kapsamında çizimlerden 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı kutlamalarının öğrenciler tarafında mutluluk, düzen, keyifli faaliyetler vb. olarak algılandığını göstermektedir.

Sonuç olarak bu araştırma, 5.sınıf öğrencilerinin 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı'na ilişkin algılarının bayramda yapılan gösteri, etkinlik ve yarışmalar üzerine yoğunlaştığını ve

23 Nisan'ı dünyadaki bütün çocuklara armağan edilmiş bir bayram olarak algıladıklarını ortaya koymaktadır. Ayrıca, araştırmanın yöntemi literatürde yer alan çalışmalardan modeli-deseni, veri toplama aracı ve veri analizi boyutlarıyla farklılık göstermesi sebebiyle araştırma sonuçları orijinalliğini yansıtmaktadır.

Öneriler

Araştırmada elde edilen sonuçlar yönünde aşağıdaki önerileri verebiliriz:

- Bu araştırma farklı eğitim kademelerindeki katılımcı gruplarıyla da hazırlanabilir.
- Bu araştırma görüşme ve metafor gibi farklı veri toplama yöntemleri kullanılarak da hazırlanabilir.
- Bu araştırma karma model kullanılarak hazırlanabilir.
- Bu araştırma farklı yıllarda basında yer alan 23 Nisan Ulusal Egemenlik ve Çocuk Bayramı'nın kutlamalarına ilişkin haberlerin analizi şeklinde hazırlanabilir.
- Bu araştırma 29 Ekim Cumhuriyet Bayramı ve 19 Mayıs Atatürk'ü Anma, Gençlik ve Spor Bayramı gibi diğer milli bayramlarımıza ilişkin olarak da hazırlanabilir.

A Comparative Analysis of The Elementary and Branch Teachers' Lifelong Learning Competences and Their Individual Innovativeness Levels According to Certain Variables*

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Abstract

The purpose of this study is to investigate lifelong learning competencies and individual innovativeness levels of elementary teachers and teachers in various fields applying a comparative analysis. Teachers' lifelong learning competencies and individual innovativeness levels have also been examined in terms of gender, marital status and seniority variables. The study is conducted in a city from five different districts in Turkey and the study is a survey model. The sample consists of 718 teachers, 350 classroom teachers and 368 teachers in other realms. The data of the research have been collected by using the "Key Competencies Scale in Lifelong Learning" and the "Individual Innovation Scale". The data of the research have been collected through using the "Key Competencies Scale in Lifelong Learning" and the "Individual Innovation Scale". SPSS program has been used for the analysis of the data collected in the study. The findings show that the lifelong learning competency perceptions of all teachers are above the average and at a sufficient level, and both groups are in the moderately innovative and early majority category. It is concluded that there was no significant difference between the individual innovativeness levels and lifelong learning competencies regarding all teachers.

Keywords: Lifelong learning, individual innovativeness, teachers

Introduction

Humanity, which continues to improve itself continuously, has now transitioned from an information society to a "super smart society" with the effect of artificial intelligence supported by applications, technologies and digitalization, and therefore, the skills expected from individuals have changed considerably when compared to previous periods (Karataş, 2021). These dynamic transformations in the modern world, the rapid development of innovative technologies and the accumulation of knowledge have led to the adoption of the concept of "lifelong education" instead of the traditional "limited" education that has existed for centuries (Rybakina, 2018). Information that is incessantly out of date has urged the need for learning in individuals, causing the existing skills to be questioned (Akkoyunlu, 2008; Aksoy, 2008). Moreover, with globalization, it has been realized that education cannot be limited to a certain place or period and that individuals have the opportunity to learn and keep up with the changes constantly. Therefore, a lifelong learning approach has emerged that requires innovative transfers in education as well as the inclusion of the people from all walks of society (Belousova et al.,2017; Erdamar Koç, 2011; Göğebakan Yıldız, 2017).

The concept of lifelong learning, which is thought to date back to John Dewey, actually goes back much further, and Aristotle and Plato defined learning as a lifelong process (Bosco, 2007). The European Commission (2002) defined the benchmarks of lifelong learning as the individuals' participation in all activities to develop their knowledge, skills, and competences as long as they continue their life to fulfill their personal, social or professional goals. It is emphasized that countries adopting the philosophy of lifelong learning in education develop in terms of innovation and progress (Organisation for Economic Co-operation and Development,2012). Furthermore, it is seen that innovations mitigate the inequalities among individuals and equalize their economic values by creating new employment settings (Mercik, 2015). Like innovativeness, lifelong learning leads to the improvement and equality of opportunities (Manea, 2015). Equality of opportunity in education is possible by ensuring that all members of the society access innovation and information equally (Callinicos, 2014; Mercik, 2015).

Developed societies aspire to enhance the quality of education and raise creative, entrepreneurial, innovative, and confident individuals (Coolahan, 2002). In addition, individuals who

make up the society are expected to have lifelong learning skills, be open to new ideas and demonstrate innovative skills (Partnership for 21st Century Skills, 2003; Rogers, 1995). Lifelong learners were identified as ones who were curious, open to new developments and innovations (Collins, 2009). The concept of "innovation", defined as "the desire for innovation and change, the ability to adapt" (Rogers, 1995; p. 242), is among the lifelong learning skills expected from people in the 21st century. It is found that there is a strong relationship among innovativeness and learning, creativity and innovativeness. Innovativeness refers to a construct emerged from the concept including interaction of learning, creativity, and innovativeness (Palazzo, 2005). On the other hand, individual innovativeness refers to the individual's willingness to be open to innovativeness, its adoption, development, and exploitation with a positive perspective towards it (Kılıçer, 2011; Yuan & Woodman 2010). In order to raise innovative individuals, it is crucial to introduce individuals with the concepts such as innovativeness, entrepreneurship, and creativity at an early age and sustain their inclusion at every stage of education (Elçi, 2006). In this context, since living, learning, working styles, and qualifications are constantly changing, ongoing learning and following innovations are seen as qualities that individuals should have. Moreover, it becomes a necessity to organize educational institutions and programs accordingly and enhance teacher qualifications to ensure that individuals grow up with the determined qualifications. Schools are a part of the society that has a high potential for its development (Lasser & Fite, 2011). Educational practitioners, who are at the center of change, need to constantly keep up with innovations, in that there is a strong relationship between teacher development and innovativeness (Fullan & Pomfret, 1977).

In education, it is of great importance to adopt emerging innovations in accordance with the community's cultural and social circumstances. And also, during implementation, it is vital to develop existing approaches, accelerate the development and ground them on innovative ideas. The term innovativeness in education includes behavioral changes in teachers, families, students, and administrators (Demir-Başaran & Keleş, 2015). The success of a new method in education depends on the competence of the personnel responsible for education, having an insight into the learning competence of learners, and the appropriate use of innovative technology. They all help learners overcome the process of acquiring knowledge and become lifelong learners (Margaret, Kavitha, Amrutha, 2015). When innovativeness is evaluated in terms of the use of information and communication technologies during education, it is closely related to teachers' competencies in how to incorporate innovative technologies into the teaching process (Uşun, 2006). In this sense, while technologies and materials are supportive tools in the learning-teaching process, benefitting from them in the elementary environment has become an asset that teachers should acquire by following the rapid changes in technology (Kaya, 2006). The role of the teacher, who is seen as the representative of change, becomes more evident than ever before in the 21st century and the value of teachers is emphasized because the quality of teaching is very important (UNESCO, 1996). In today's world, the roles of teachers are becoming more and more critical and multifaceted. Because teachers are seen in a position to combine social, behavioral, civic, economic and technological dimensions (European Commission Study Group, 1997, p. 131, cited in Coolahan, 2002). The role of the teacher has now evolved from the role of teaching assistant to the role of developer (Dzhurylo, Shparyk, 2019). However, all this is possible only if teachers are innovative, encouraging, and lifelong learners (Coolahan, 2002). Teachers will gain new knowledge and experience through lifelong learning (Kusner, 2018). Considering the interaction between teachers and students, –for students who keep their teachers under constant observation

seeing teachers who can adopt innovations and apply them to their lives is a very good example of promoting lifelong learning (Fullan & Pomfret, 1977).

Lifelong learning is a mainstream view that will guide future educational developments (You & Li, 2010). When this phenomenon is examined in the context of Turkey, studies reveal that individuals' awareness and participation in lifelong learning are low, and they draw attention to the weakness of the learning culture in Turkey (MEB, 2014). Some studies conducted in Turkey exhibit that lifelong learning (Diker Coşkun 2009; Gökyer, 2019; Güloğlu-Demir, 2022; Tunca et al.,2015) and innovativeness (Atalay Altaş, 2021; Beşkaya, Çelik & Yılmaz, 2015; Demir & Demir, 2023; Kılıç, 2015; Yenice & Alpak-Tunç, 2019; Yılmaz 2013) levels of teachers, prospective teachers, and administrators are inadequate. In addition, there are some studies conducted in which participants' lifelong learning (Adabaş, 2016; Akçay, 2021; Altıntaş, 2022; Aydın & İflazaoğlu Saban, 2021; Gök, 2022; Gökbulut, 2021; Karakuş, 2013; Kazu & Erten, 2016; Özgür, 2016, Pınarcık et al. 2016, Yavuz Konakman & Yanpar Yelken, 2014; Yıldırım, 2021) and innovativeness levels (Akgün, 2017; Atılgan & Tükel, 2021; Beşkaya, Çelik & Yılmaz, 2015; Bitkin, 2012; Demir Başaran & Keleş, 2015;Keskin, 2021; Kılıç, 2015; Mülhim, 2018;Yıldırım, 2021) were determined at high or moderate levels. The inconsistency of the results and the scarcity of studies on the relationship between lifelong learning and innovativeness (Kılıç, 2015; Yenice & Alpak Tunç, 2019, Yıldırım, 2021) indicate the necessity of new research that will cover this topic. Teachers' incorporation of educational practices into their lessons is instrumental in the formation of societies with lifelong learning and innovativeness mindset (Evin Gencel, 2013; Xu & Chen, 2010). For this reason, teachers should be open to innovation and change and have lifelong learning competencies. In this context, this research aims to unfold the lifelong learning competences and innovativeness levels of teachers who play a key role in the formation of a sophisticated society. To this end, teachers' lifelong learning competences and innovativeness levels have been investigated in terms of gender, seniority, educational and marital status variables and comparative analysis of the elementary and branch teachers'. As Rogers (2003) stated, individuals' perspectives on innovation and their levels of acceptance differ. There is an important relationship between lifelong learning and innovation; the indisputable role of teachers in being innovative and life-long learning societies and for students who take their teachers as role models from an early age; It is considered important to compare the branch teachers that they would continue to take as an example in applying or internalizing the situations they took as an example in their next education life. Because, it is thought that it will be valuable in terms of Turkish literature, that the research in question will provide clues in determining the lifelong learning and innovation levels of both teacher groups and in making measures or improvements in this context. For this reason, primary school teachers and branch teachers have been compared in the study. In this sense, the research findings are significant in terms of improving teachers' lifelong learning skills and unfolding their innovative capacity. Moreover, this study elaborates on the importance of teacher education in the creation of a contemporary and innovative society that fosters lifelong learning. It is also significant in terms of determining the needs and creating a research area for in-service training and higher education. Thus, the following questions were asked to be answered.

1.   What are elementary teachers' individual innovativeness levels and lifelong learning competences?

2.   Do elementary teachers' individual innovativeness levels and lifelong learning competences differ in terms of gender, seniority, and marital status?

3.   What are the individual innovativeness levels and lifelong learning competences of branch teachers?

4.   Do branch teachers' individual innovativeness levels and lifelong learning competences differ in terms of gender, seniority, and marital status?

5.   Do elementary and branch teachers differ in terms of individual innovativeness levels and lifelong learning competences?

Method

Research Design

In this study, surveys have been used to examine the lifelong learning competences and individual innovativeness levels of elementary and branch teachers. Using surveys is an approach that aims to describe the past or present situation of the research subject. In addition, in the survey model, it is concerned with how the views and characteristics are distributed in terms of the individuals in the sample, rather than why they originate (Fraenkel & Wallen, 2006; Karasar, 2002). In this context, teachers' lifelong learning competences and individual innovativeness levels have been tried to be revealed in the study.

Participants and Procedure

The universe of this research consists of 3967 classroom teachers and 8581 branch teachers working in the central districts of Kayseri. (Melikgazi, Kocasinan, Talas, Hacılar, & İncesu). The stratified random sampling technique was preferred in this study because the research population is large and it is easy to divide into sub-populations in terms of variables. The stratified random sampling technique is a method used in cases where the scope is very large and difficult to reach the whole population. Besides, certain subgroups or strata are selected at the same rate as in the population (Fraenkel & Wallen, 2006). In order to determine the sample in this study, the participants were divided into two sub-strata according to the class and branch teachers working in the central districts. The number of samples selected from the general population was determined as 718, with a reliability range of .95 and a margin of error of 5% according to the number of populations.

As a result, 368 branch teachers and 350 elementary teachers were included in the sample. According to the statistical information obtained from the Provincial Directorate of National Education in these central districts in the 2016-2017 academic year, the number of branch teachers (secondary and high school) working in Melikgazi is 4532, in Kocasinan 2948, in Talas 776, in İncesu 189, in Hacılar 136 and 8581 in total. Since the stratified random sampling method was used in the study, the proportional and numerical distribution of branch teachers by districts was determined as follows: Melikgazi 53% (195), Kocasinan 34% (125), Talas 9% (33), Hacılar 2% (7), İncesu 2% (7). The total number of elementary teachers working in the central districts is 3967; 1871 in Melikgazi, 1484 in Kocasinan, 431 in Talas, 110 in İncesu, 71 in Hacılar. It has been calculated that the total number of elementary teacher samples from these districts, which are thought to represent the population, should be 350. Proportional and numerical distribution of elementary teachers by districts was determined as Melikgazi 47% (165), Kocasinan 37% (130), Talas 11% (39%), İncesu 3% (11), and Hacılar 2% (7).

Table 1. *Demographic characteristics of the participating elementary and other teachers.*

Variables	Categories	N	%
Gender	Female	360	50,1
	Male	358	49,9
Seniority	1-5 years	91	12,7
	6-10 years	123	17,1
	11-15 years	122	17,0
	16-20 years	179	24,9
	21 years and over	203	28,3
Marital Status	Married	626	87,2
	Single	92	12,8
Education Level	Bachelor's Degree	637	88,7
	Postgraduate	81	11,3
Total		718	100

Data Collection Tools

The Scale of Key Competences for Lifelong Learning (SKCLLL)

In the study, two different scales were used. *The Scale of Key Competences for Lifelong Learning (SKCLLL)* with eight sub-dimensions and 23 items of the five-point Likert scale, developed by Şahin, Akbaşlı, and Yanpar Yelken (2010) was utilized. The sub-dimensions of the scale consist of eight dimensions including communicative competence in mother tongue, proficiency in foreign languages/languages, mathematical and basic competences in science and technology, digital competence, competence in learning to learn, language proficiency, social citizenship awareness, taking initiative, competence in entrepreneurship, and competence in cultural awareness and expression. The lowest score that can be obtained from the scale is 23, and the highest score is 115. The Cronbach Alpha reliability coefficient of the scale was calculated as .75. However, the reliability of the scale was recalculated in this study and the Cronbach Alpha reliability coefficient was calculated as .83.

Individual Innovation Scale

Another scale used in the study is the 5-point Likert-type Individual Innovativeness Scale, which consists of 20 items developed by Hurt, Joseph, and Cook and adapted into Turkish by Kılıçer and Odabaşı (2010). The reliability coefficient of the scale was found as .88, the internal consistency coefficient as 0.82, and the test-retest reliability was 0.87. 12 of the items that make up the scale are positive (1, 2, 3, 5, 8, 9, 11, 12, 14, 16, 18, and 19 items), and 8 of them are negative items (4, 6, 7, 10), 13, 15, 17, and 20). However, the reliability of the scale was recalculated in this study and the Cronbach Alpha reliability coefficient was calculated as .83. With the help of the scale, the innovativeness score is calculated by adding 42 points to the score obtained by subtracting the total score from the negative items taken from the total score obtained from the positive items. According to this formula, the lowest 14 and the highest 94 points can be obtained.

Table 2. *Evaluation criteria of teachers' individual innovativeness levels*

Evaluation Range	Evaluation Criteria
81 and over	Innovator
Between 69 and 80	Early Adopters
Between 57 and 68	Early Majority
Between 47 and 56	Late Majority
46 and under	Laggards

Table 2 presents the evaluation criteria according to the scores of the participants. In addition, if the individual innovativeness score of the participants is higher than 68 points, they are considered

highly innovative, between 68 and 64 points as moderately innovative, and below 64 points as low innovative (Hurt, Joseph, & Cook, 1977).

Data Collection and Analysis Process

For the scales used in the research to be applied at schools, after the necessary permissions were obtained by applying to the Kayseri Provincial Directorate of National Education, the first researcher went to the designated schools, then distributed and collected the forms by hand. 740 teachers were involved in the research, but during the analysis of the collected data, 22 forms were deemed invalid as the participants did not respond to all questions and the random answers given to the control question were noticed. As a result of this situation, 718 forms were included in the evaluation process and analyzes were carried out on this number of data.

In data analysis the SPSS program was used. To find the differences among the variables, t-test for Independent Groups and One-Way Analysis of Variance (ANOVA) were used for parametric data while Mann Whitney U Test, Kruskal Wallis Test, and TUKEY test were applied for independent groups for nonparametric data, and descriptive statistics were also used.

Research Ethics

This research was carried out with the approval of Kayseri Provincial Directorate of National Education, Ethics Committee for Researches with the decision numbered "94025929-605-E.12465993" in the session dated 04.11.2016.

Findings

After analyzing the data collected from the participants within the scope of the research, tables and findings are included within each research question in this section.

Findings related to individual innovativeness levels and lifelong learning competences of elementary teachers

The first question of the research *What are the individual innovativeness levels and lifelong learning competences of elementary teachers?* was formulated. Firstly, the general results of the elementary teachers' innovativeness levels and lifelong learning competences, and then the descriptive statistical results of the sub-dimensions of both scales are included.

Table 3. *Scores of elementary teachers' individual innovativeness levels and their lifelong learning competences*

Variables	N	$\overline{X}$	Min.	Max.	SD
Individual Innovativeness	350	67,33	30	93	9,965
Lifelong learning competences	350	87,67	44	114	10,284

Table 3 shows that the highest score of the elementary teachers on the individual innovativeness scale is 93 and the lowest score is 30. The elementary teachers are in the "moderate innovator" category with their $\overline{X}$= 67.33 individual innovativeness point averages and "early majority" category within the individual innovativeness categories. On the other hand, the lowest score of the elementary teachers on the lifelong learning competences scale is 44.00 and the highest score is 114.00. The score they obtain from the general average is $\overline{X}$= 87.67. Elementary teachers' lifelong learning competences are at an *"adequate"* level.

Table 4. *Elementary teachers' scores regarding innovativeness categories*

Innovativeness Categories	N	(%)	Min.	Max.	$\overline{X}$	SD
Innovators	28	8,00	81	93	85,39	4,425
Early Adopters	135	38,571	69	80	73,73	3,591
Early Majority	139	39,714	57	68	62,93	3,546
Late Majority	42	12,00	47	56	53,10	3,106
Laggards	6	1,714	30	46	40,83	6,014
Total	350	100	30	93	67,33	9,965

Table 4 illustrates 28 (8.00%) of elementary teachers are in *the innovator* category, 135 (38.571%) are in *the early adopter* category, 139 (39.714%) are in *the early majority* category, and 42 (12.00%) are in *the late majority* category, and 6 (1,714%) are in *the laggards* category. When evaluated in general, it can be said that the majority of elementary teachers are in the early majority category.

Table 5. *Elementary teachers' scores regarding the sub-dimensions of lifelong learning competences*

Sub dimensions of Lifelong Learning Competences	N	Min.	Max.	$\overline{X}$	SD
The Communicative Competence in the Native Language	350	4	20	17,95	2,715
The Communicative Competence in a Foreign Language	350	4	20	8,47	4,365
The Mathematical and Basic Competences in Science and Technology	350	3	15	12,21	1,912
Digital Competence	350	2	10	8,00	1,524
The Competence of Learning to Learn	350	2	10	8,26	1,297
The Competence of Social Citizenship Awareness	350	3	15	12,61	1,937
The Competence of the Sense of Initiative and Entrepreneurship	350	4	20	16,36	2,561
The Competence of Cultural Awareness and Expression.	350	1	5	3,82	,876
Total	350	23	115	87,67	10,284

Table 5 shows elementary teachers' lifelong learning competences, the average communicative competence in the native language is *very sufficient* with $\overline{X}$=17.95, the average competence in a foreign language is *not sufficient* with $\overline{X}$= 8.47, the average mathematical and basic competences in science and technology is *sufficient* with $\overline{X}$=12.21, the digital competence average is *very sufficient* with $\overline{X}$=8.00, the competence of learning to learn is *very sufficient* with an average of $\overline{X}$=8.26, the average of social citizenship awareness is *sufficient* with $\overline{X}$=12.61, the average of competence of the sense of initiative and entrepreneurship is *sufficient* with $\overline{X}$=16.36, and the average of competence of cultural awareness and expression is at a *sufficient* level with $\overline{X}$=3.82.

Findings on elementary teachers' individual innovativeness levels and their lifelong learning competences, gender, seniority, and marital status

The second question of the study focused on whether elementary teachers' individual innovativeness levels and lifelong learning competences differ in terms of gender, seniority, and marital status. The evidence obtained as a result of the analysis is presented in Tables 6, 7, 8, 9, and 10.

Table 6. *T-test results of elementary teachers' individual innovativeness levels and lifelong learning competences in terms of gender*

	Gender	N	X̄	SD	df	t	p
Innovativeness	Female	167	66,62	10,710	348	-1,288	,199
	Male	183	67,99	9,214			
Lifelong Learning Competences	Female	167	88,04	10,242	345,648	,653	,514
	Male	183	87,32	10,338			

When Table 6 is examined, there is no significant difference (p>.05) between male and female teachers. The average score of female elementary teachers on the individual innovativeness scale is X̄=66.62, the average score of male elementary teachers is X̄=67.99, and both gender groups are *moderate innovators* in terms of individual innovativeness levels. On the other hand, the average score of female elementary teachers in the lifelong learning competence category was X̄=88.04 while male elementary teachers' average score was X̄=87.32. And, it was determined that both gender groups saw themselves at a *sufficient* level in the lifelong learning competences category.

Table 7. *Descriptive statistical results for elementary teachers' individual innovativeness levels and lifelong learning competences according to their seniority level*

	Seniority	N	X̄	SD
Individual Innovativeness	Up to 5 years	32	65,63	10,533
	6-10 years	48	67,88	9,421
	11-15 years	66	66,61	11,522
	16-20 years	79	65,89	9,445
	21 years and over	125	68,86	9,357
	Total	350	67,33	9,965
Lifelong Learning Competences	Up to 5 years	32	90,13	8,750
	6-10 years	48	87,85	8,087
	11-15 years	66	88,62	10,376
	16-20 years	79	87,05	11,569
	21 years and over	125	86,85	10,495
	Total	350	87,67	10,284

According to Table 7, the average score of 350 elementary teachers in the seniority category up to 5 years is X̄=65.63. Teachers with a seniority of 6-10 years were found to have an average score of X̄=67.88. While those with 11-15 years of seniority had an average score of X̄=66.61, the average score of the 16-20 years seniority group was X̄=65.89. The elementary teachers, who constitute the majority of the group, have the highest average score with X̄=68.86 in the seniority group of 21 years and above. Again, according to the lifelong learning competence scale of elementary teachers, the average of teachers with seniority of up to 5 years is X̄=90.13, which is at the same time the highest average. The average of those in the 6-10 years group is X̄=87.85, and the average of those in the 11-15 years seniority group is X̄=88.62. While the average of teachers with 16-20 years of seniority was X̄=87.05, the average score of elementary teachers in the group of 21 years and above was X̄=86.85.

Table 8. *ANOVA results of elementary teachers' individual innovativeness levels and lifelong learning competences regarding the seniority variable*

	Source of Variance	KT	SD	KO	F	p
Innovativeness	Between Groups	600,718	4	150,180	1,521	,195
	In groups	34055,170	345	98,711		
	Total	34655,889	349			
Lifelong Learning Competences	Between Groups	368,970	4	92,242	,871	,482
	In groups	36542,919	345	105,922		
	Total	36911,889	349			

p>0.05

As shown on the Table 8, there is no difference among the groups (F=1.521;p>0.05).

Table 9. *The t-test results of the marital status variable of the individual innovativeness levels and lifelong learning competences of elementary teachers*

	Marital status	N	Average	SD	df	t	p
Innovativeness	Married	317	67,61	9,455	348	1,620	,106
	Single	33	64,67	13,860			
Lifelong Learning Competencies	Married	317	87,43	10,349	40,372	-1,454	,154
	Single	33	89,97	9,479			

According to Table 9, there is no statistical difference between the groups (t=1,620;-1,454; p>.05) based on the t-test.The individual innovativeness average score of 317 married elementary teachers is X̄=67.61 and the average score for the lifelong learning competence is X̄=87.43. The individual innovativeness score averages of 33 single elementary teachers are X̄=64.67, and the lifelong learning competence scores are X̄=89.97. It has been found that both married and single elementary teachers are *"moderate innovators"* and *"sufficient"*at the level of lifelong learning competence.

Findings related to individual innovativeness levels and lifelong learning competences of branch teachers.

In the third sub-problem of the research, to seek an answer to the question *what are the individual innovativeness levels and lifelong learning competences of branch teachers?* First of all, general descriptive statistical values for branch teachers' individual innovativeness levels and lifelong learning competences have been presented. Then, analysis has been made according to sub-dimensions of scales.

Table 10. *Descriptive statistical values of branch teachers' individual innovativeness levels and lifelong learning competences*

Variable	N	X̄	Min.	Max.	SD
Individual Innovativeness	368	67,85	40,00	92,00	10,175
Lifelong Learning Competences	368	89,13	31,00	113,00	11,743

The highest score obtained by branch teachers from the individual innovativeness scale is 92.00 and the lowest score is 40.00 in table 10. The point averages of the branch teachers in the individual innovativeness category are X̄=67.85 and they are *moderate innovators* with this average, and they are in the early majority category. They got the highest score of 113,00 and the lowest score of X̄=31.00 on

the lifelong learning competences scale of branch teachers. It can be indicated that the general average of lifelong learning competence of branch teachers is X̄=89.13 and they are at a *sufficient* level.

Table 11. *Descriptive statistical values of branch teachers based on innovativeness*

Innovativeness Categories	N	(%)	Min.	Max.	X̄	SD
Innovators	48	13,043	81,	92	85,29	3,591
Early Adopters	118	32,065	69	80	73,09	3,292
Early Majority	161	43,75	57	68	63,22	3,286
Late Majority	35	9,510	47	56	51,86	3,050
Laggards	6	1,630	40	45	42,67	1,966
Total	368	100	40	92	67,85	10,175

When the innovativeness categories are examined in Table 11, it is found that 48 (13,043%) of 368 branch teachers are innovators, 118 (32,065%) are early adopters, 161 (43.75%) are the early majority, 35 (9,510%) are the late majority, and 6 (1,630) are in the *laggards* category. Findings display the majority of the branch teachers are in the *early majority* category.

Table 12**.** *Descriptive statistical scores of branch teachers' lifelong learning competences*

Sub-Dimensions of Lifelong Learning Competences	N	Min.	Max.	X̄	SD
The Communicative Competence in the Native Language	368	4	20	18,33	2,487
The Communicative Competence in a Foreign Language	368	4	20	10,02	5,352
The Mathematical and Basic Competences in Science and Technology	368	3	15	11,73	2,495
Digital Competence	368	2	10	8,04	1,692
The Competence of Learning to Learn	368	2	10	8,33	1,379
The Competence of Social Citizenship Awareness	368	3	15	12,42	2,181
The Competence of the Sense of Initiative and Entrepreneurship	368	4	20	16,40	2,799
The Competence of Cultural Awareness and Expression.	368	1	5	3,86	1,059
Total	368	23	115	89,13	11,743

It is seen in table 12 that the average communicative competence in the native language of branch teachers is *very sufficient* with X̄=18.33, the average communicative competence in a foreign language is *moderately sufficient* with X̄=10.02, the average of the mathematical and basic competences in science and technology is *sufficient* with X̄=11.73, the average of digital competence is sufficient with X̄=8,04, the average of the competence of learning to learn average is *very sufficient* with X̄=8.33, the average of the competence of social citizenship awareness is *sufficient* with X̄=12.42, the average of the competence of the sense of initiative and entrepreneurship is *sufficient* with X̄=16.40, and cultural awareness and expression competence average *sufficient* with X̄=3.86 scores.

Findings related to gender, seniority, and marital status variable of branch teachers' individual innovativeness levels and lifelong learning competences.

The fourth question of the study aims to reveal whether branch teachers' individual innovativeness levels and lifelong learning competences differ significantly in terms of gender, seniority and marital status. The findings are presented in Tables 14, 15, 16, 17, and 18.

Table 13. *T-test results of branch teachers' individual innovativeness levels and lifelong learning competences based on the gender variable*

	Gender	N	$\bar{X}$	SD	df	t	p
Innovativeness	Female	194	68,03	9,904	356,112	,363	,717
	Male	174	67,64	10,494			
Lifelong Learning Competencies	Female	194	90,72	11,163	352,880	2,753*	,006
	Male	174	87,36	12,146			

As shown on table 13, there is no significant difference regarding gender in the individual innovativeness scale (t=2.753, p<.05) in terms of lifelong learning competences, and this difference has been found to be in favor of female teachers. While the average score of 194 female teachers on the individual innovativeness scale by gender is $\bar{X}$=68.03, it was seen that the average score of 174 male teachers is $\bar{X}$=67.64, and it has been determined that both gender groups were *moderate innovators.* As for their lifelong learning competences, it has been found that the average score of female branch teachers on the scale is $\bar{X}$=90.72, while the average score of male teachers is $\bar{X}$=87.36 and they have *sufficient* lifelong learning competence.

Table 14. *Descriptive statistics results of teachers with different seniority years in terms of individual innovativeness levels and lifelong learning competences of branch teachers*

	Seniority	N	$\bar{X}$	SD
Individual Innovativeness	Up to 5 years	64	68,27	9,087
	6-10 years	71	68,07	10,537
	11-15 years	56	67,93	10,898
	16-20 years	100	67,76	10,641
	21 years and over	77	67,35	9,763
	Total	368	67,85	10,175
Lifelong Learning Competences	Up to 5 years	64	88,31	11,410
	6-10 years	71	92,17	11,010
	11-15 years	56	92,23	10,908
	16-20 years	100	88,70	13,019
	21 years and over	77	85,30	10,394
	Total	368	89,13	11,743

When Table 14 is examined, the average of teachers up to 5 years is $\bar{X}$=68.27, the average of those in the 6-10 years seniority group is $\bar{X}$=68.07, and the average score of the branch teachers in the 11-15 years seniority group is $\bar{X}$=67.93. While the average score of teachers in the 16-20 years seniority group is $\bar{X}$=67.76, the average of the teachers in the seniority group of 21 years and above is $\bar{X}$=67.35. Again, branch teachers of lifelong learning competence, the average score of those up to 5 years is $\bar{X}$=88.31, the average score of those with 6-10 years is $\bar{X}$=92.17, the average score of those in the 11-15 years seniority group is $\bar{X}$=92.23, While the average score of seniority levels of teachers with 2 years is $\bar{X}$=88.70, the average score of those with 21 years and above is $\bar{X}$=85.30.

Table 15. *ANOVA results of the seniority variable of branch teachers' individual innovativeness levels and lifelong learning competences*

	Source of Variance	KT	SD	KO	F	p	Significant Difference
Innovativeness	Between groups	34,859	4	8,715	,083	,988	
	Ingroups	37960,619	363	104,575			
	Total	37995,478	367				
Lifelong Learning Competences	Between groups	2386,163	4	596,541	4,490*	,001	6-10>21 and over
	Ingroups	48222,834	363	132,845			11-15>21 and over
	Total	50608,997	367				

p<.05

As shown on table 15, there is no significant difference among the groups on the individual innovativeness scale. Another finding has shown there is a significant difference between the groups (F=4.490, p<.05) based on the lifelong learning competences scale and TUKEY multiple comparison test has been conducted to ascertain between which seniority groups the significant difference is. Based on the average scores obtained from the TUKEY test the lifelong learning competences scale, the teachers with 6-10 years ($\bar{X}$=92.17) and 11-15 years ($\bar{X}$=92.33) seniority levels have a higher average score than the teachers with a seniority of 21 years or more ($\bar{X}$= 85,30) and the difference is in favor of the teachers in the 6-10 and 11-15-years group.

Table 16. *The t-test results of the marital status variable of the individual innovativeness levels and lifelong learning competences of the branch teachers*

	Marital Status	N	$\bar{X}$	SD	df	t	p
Innovativeness	Married	305	67,53	10,229	91,816	-1,349	,181
	Single	63	69,38	9,843			
Lifelong Learning Competencies	Married	305	88,83	11,959	97,487	-1,160	,249
	Single	63	90,57	10,604			

According to table 16, there is no significant difference between the groups (t=-1,349;-1,160; p>.05). The average score of individual innovativeness of married branch teachers is $\bar{X}$= 67.53, while the average score of single branch teachers is $\bar{X}$=69.38. While married branch teachers are *moderate innovators* and in the early majority group according to innovativeness adoption categories, single branch teachers are in the category of *highly innovators* and *early adopters*. On the other hand, it has been found that the average lifelong learning competence score of married branch teachers is $\bar{X}$=88.83, and single branch teachers are $\bar{X}$=90.57. Both groups have a *sufficient* level of lifelong learning.

Findings on the elementary and branch teachers' individual innovativeness levels and lifelong learning competences

This question of the research has been created to find out whether the two groups of teachers differ in terms of individual innovativeness levels and lifelong learning competences. The findings obtained as a result of the analyzes are presented in Table 17.

Table 17. *The t-test results on whether the individual innovativeness levels and lifelong learning competences of elementary teachers and branch teachers differ*

	Branch	N	$\overline{X}$	SD	df	t	p
Innovativeness	Class	350	67,33	9,965	715,383	-,683	,495
	Branch	368	67,85	10,175			
Lifelong Learning Competences	Class	350	87,67	10,284	711,212	-1,777	,076
	Branch	368	89,13	11,743			

As can be seen in Table 17, There is no significant difference between both branch and elementary teachers in terms of individual innovativeness and lifelong learning competence (t=-,683;-1,777; p>.05). The mean scores of the elementary teachers on the individual innovativeness scale are X̄=67.33, and that of the branch teachers is X̄=67.85. According to the scale of lifelong learning competences, the average score of class teachers is X̄=87.67, and the average score of branch teachers is X̄=89.13. In terms of individual innovativeness levels, teachers have been found to be *moderate innovators*. Although the average score of the branch teachers is higher than that of the elementary teachers, it has been found that both groups have *sufficient* lifelong learning competence.

Discussion and Conclusion

The results of this study reveal that both elementary and branch teachers are *moderate innovators* and are in the *early majority* category in terms of adopting innovativeness. As a result of the literature study, many researchers reported that pre-service teachers and teachers in Turkey are *moderate innovators*, and in line with the findings of this study, most of them are in the *early majority* category in adopting innovativeness (Adıgüzel, 2012; Atalay Altaş, 2021;Demir Başaran & Keleş, 2015; Demir &Demir, 2023; Deniz, 2016; Kert & Tekdal, 2012; Keskinkılıç Kara & Yoz, 2021; Kılıçer, 2011; Korucu & Olpak, 2015; Özgür, 2013; Şahin İzmirli & Gürbüz, 2017; Şahin & Thampson, 2006). However, among the related studies in the literature in Turkey, there are studies with low and high individual innovativeness levels. For instance, while Yılmaz (2013), Kılıç (2015) Yenice Alpak and Tunç (2019) reached innovativeness of the participants were *low* in their master's thesis studies, some researchers determined *high* individual innovativeness levels (Akgün, 2017; Atılgan & Tükel, 2021; Keskin, 2021; Kılıçer, 2011; Yılmaz Öztürk & Summak, 2014). The early majority group who are in the middle of the innovativeness adoption categories are those who are more cautious in terms of adopting an innovation, have a longer time to adopt it. In addition, the individuals in this group do not take risks and they are at the middle level in terms of education and socio-economic status.Furthermore, individuals in this category are regarded as having a common sense and good command of communication in society (Kılıçer, 2011; Özgür, 2013; Rogers, 1995). On the other hand, Kılıç and Ayvaz Tuncel (2015) emphasized that people in the early majority category show resistance to innovation, and therefore its adoption process is prolonged. Besides, Rogers (1983) points out that individuals in the early majority are active in society but they rarely become leader. Thus, their acceptance status is longer than the other categories, and they may be both the first and last to try something innovative. Based on Rogers (1983), we can contend that the teachers in the study play a significant role in adopting innovativeness and disseminating it to society though they abstain from being the first to attempt. In this regard, various factors may cause this attitude of teachers who evaluate the innovativeness and developments in the Turkish education system with a questioning perspective. However, in the Turkish Education system in 2005-2006, the curricula were prepared on the basis of the constructivist education philosophy, and it was determined that the teachers were similarly cautious in internalizing this new approach and putting

it into practice (Bayrakdar Çiftçi, Akgün, Deniz, 2013; Karagöz & Doğan, 2016). In particular, making another change without waiting for the results of the changes made in the system may be the cause of the teachers' attitude in embracing innovation.

However, the second category in which both groups of teachers showed the highest concentration is the early adopters. This finding reveals that although the majority of teachers are not in the innovator category, they are intertwined with those in the *early adopter* category, who are role models in adopting innovativeness. This can help reduce the time needed to adopt the innovations. Because, early adopters are role models and opinion leaders in adopting innovations compared to the early majority (Beal & Bohlen, 1956; Özgür, 2013; Rogers, 1995). Kayasandık (2017) and Çoklar and Özbek (2017) reported in their research that the majority of teachers see themselves in both early adopters and early majority categories. Yılmaz and Bayraktar (2014), Akgün (2017), Atılgan and Tükel (2021), Keskin (2021), concluded that teachers and instructors are in the early adopter category.

Another result of this research is that both elementary and branch teachers perceive themselves as *"sufficient"* in terms of lifelong learning competences. Studies in the literature on lifelong learning competences (Adabaş, 2016; Akçay, 2021; Altıntaş, 2022; Aykaç, Köğce & Aslandağ, 2021; Evin Gencel, 2013; Gök, 2022; Gökbulut, 2021; İncik Yalçın, 2020; Kazu & Erten, 2016; Pilli, Sönmezler, & Göktan, 2017; Şahin & Arcagök, 2014; Yavuz Konakman & Yanpar Yelken, 2014; Yenice Alpak & Tunç, 2019; Yıldırım, 2021) reported teachers' *competence* level as *high*. While elementary teachers saw themselves as *insufficient* only in the sub-dimension of foreign language communicative competence, branch teachers saw themselves as *moderately sufficient* in the same sub-dimension. However, in the literature, there are also similar studies in which the participants found themselves insufficient in the communicative proficiency sub-dimension in a foreign language and sufficient in the communicative proficiency in the native language sub-dimension. (Adabaş, 2016; Babanlı & Akçay, 2018; Evin Gencel, 2013; Karakuş, 2013; Pınarcık et al.; 2016; Şahin et al., 2010;). It can be interpreted that the teachers' perception of themselves as insufficient in foreign language communicative competence may be due to the fact that they cannot receive the necessary education, or they may have some prejudices about the education. They are expected to receive in this direction, or they cannot find the necessary financial support. It can be said that these key competencies, which are seen as basic life skills (Bilasa & Taşpınar, 2017) for the human resources, are of great importance in terms of the transformation of the education system and the goals of our lifelong learning education policies. At this point, there are various developments in Turkey regarding foreign language education. Because each of the lifelong learning competences is crucial in terms of the contemporary educational goals that are desired to be attained. In this context, educators, as well as learners, should benefit from certain educational reforms. Information age societies need individuals who have acquired lifelong learning skills, who can constantly renew themselves, update what they know, and seek innovation (Atkin, 2000; Şahin et al.). In this context, it can be considered a very important and positive result that both elementary and branch teachers consider themselves competent in lifelong learning competences based on the result of the research.

In the study, it was examined whether the individual innovativeness levels of both elementary and branch teachers differed according to the gender variable, and the results of both teacher groups were discussed together. The findings show that the individual innovativeness levels of female and male teachers did not differ significantly for both elemantaryand branch teachers. This finding is similar to

the research findings in the literature in Turkey, the USA, and the Netherlands (Çuhadar, Bülbül, & Ilgaz, 2013; Demir Başaran & Keleş, 2015;Demir & Demir, 2023; Könings, Gruwel, & Merrienboer, 2007; Özgür, 2013; Rogers & Wallace, 2011; Yıldırım, 2021). The fact that the number of participants is close to each other according to gender, and female and male teachers are in the same social and economic structure having equal conditions can be counted among the reasons for this situation.

While the gender of the teachers did not significantly change their lifelong learning levels in the elementary teachers, it was determined that it caused a difference in the branch teachers. Lifelong learning competences of female branch teachers were found to be significantly different from males. As in the aforementioned study, studies have been found indicating that gender is not very effective on the lifelong learning levels of elementary teachers. Aykaç, Köğce & Aslandağ, 2021, Kirby, Knapper, Lamon & Egnatoff, 2010; Kozikoglu, 2014; Neighbor, 2015; Şahin & Arcagök, 2014; Yıldırım's work in 2021 can be cited among them. On the other hand, gender affected the lifelong learning competence of branch teachers, and the result was in favor of female branch teachers. According to the results obtained, there are similar studies in the literature with results in favor of female teachers or teacher candidates (Akçay, 2021; Altıntaş, 2022; Arcuria, 2011; Diker Coşkun, 2009; Evin Gencel, 2013; Goodrich, 2015; İncik Yalçın, 2020; Özçifçi & Çakır, 2015Yavuz Konakman & Yanpar Yelken, 2014). According to Jenkins (2004), because women take on many responsibilities throughout their lives (being a wife and mother, etc.) and these responsibilities expose them to situations such as changing jobs, interrupting work, or quitting, women inevitably strive to adapt to change and this affects their lifelong learning skills more positively than men. This situation pointed out by Jenkins (2004) can be explained by the fact that women are more prone to learning although there is a contrary result to the research finding in the literature that male teachers have a high perception of lifelong learning efficacy (Erdener & Gül, 2017). The European Union, which states that the duration of education has been getting longer in the last thirty years, emphasizes that women's participation in education has increased compared to men among the young population, and their success is higher than men's (EU Council, 2005). In addition, the European Union has indicated that lifelong learning is gaining significance in societies, the rate of continuing education after compulsory education is gradually accumulating and the participation in lifelong learning is higher among women than men (EU Council, 2005).

There is no difference among elementary and branch teachers in terms of their innovativeness based on their seniority. These findings are also supported by most of the studies in the literature (Atalay Altaş, 2021; Çetin & Bülbül, 2017; Demir Başaran & Keleş, 2015, Kılıç, 2015, Yıldırım, 2021). However, Kayasandık (2017), Yılmaz, and Beşkaya (2018), Yüksel (2020) reported that individual innovativeness scores increased due to the experience of teachers with more than one senior year. Although seniority, which can be defined as the time spent in the profession, did not cause a significant difference among elementary teachers, it led to a significant difference in branch teachers in terms of life long learning competencies. The significant difference between the seniority groups is between the teachers with 6-10 years of seniority and the teachers with 21 years and above, and the difference is in favor of the teachers in the 6-10 years and 11-15 years seniority groups. There are studies that overlap with the research findings (Kazu & Erten, 2016; Pınarcık et al.,2016; Şahin & Arcagök, 2014; Yaman & Yazar, 2015; Yüksel, 2020). On the other hand, there are similar studies supporting the research finding that the seniority variable does not have an effect on the lifelong learning competence of elementary teachers (Ayaz, 2016; Özçifçi & Çakır; Torun & Güvercin Seçkin, 2021; Yılmaz & Beşkaya, 2018,). The fact that the lifelong learning competences of the teachers whose seniority group is young may be due

to their being in the generation that can adapt more to the innovativeness and opportunities of the current age.

It was determined that there was no significant difference between the scales used in the study and the marital status of the participants. Married and single elementary teachers and married branch teachers are in the category of moderate innovators and early adopters. Single branch teachers are in the highly innovative and early adopter category. In the literature, it was concluded that the results of the studies related to innovativeness and conducted in different institutions where the marital status variable was used (Işık & Meriç 2015; Kayasandık, 2017; Pekdoğan, 2017) were similar to the results of the research. The reason for this is that individuals, regardless of whether they are married or single, may perceive being innovative as a need and may have adopted innovativeness at the same rate. On the other hand, when the lifelong learning competences of elementary and branch teachers were examined in terms of marital status variable, It was determined that both groups are sufficient in terms of lifelong learning. Çam and Üstün (2016), Özkorkmaz (2016) and Yüksel (2020) concluded in their studies on lifelong learning that marital status does not affect lifelong learning. The results of these studies were similar. As a matter of fact, it can be interpreted that this may be due to the fact that both single teachers and married teachers believe in the continuity of learning and strive for it.

As a result, no significant difference was found between the two scales and the teachers' levels. Both groups are in the *moderate innovator* and *early majority* categories. Findings of the study are in line with the available literature (Atılgan & Tükel, 2021; Demir & Demir, 2023; Keskinkılıç Kara & Yoz, 2021; Kılıç, 2015; Yılmaz & Beşkaya, 2018). In addition, according to the research conducted by Znidarsic and Jereb (2011) in Slovenia, a positive relationship was found between the investments made in lifelong learning and innovation in the development of societies and the innovativeness level of individuals. Moreover, it was found that teachers scored above the average on the lifelong learning competence scale and had sufficient lifelong learning competences. The fact that teachers are innovative, willing to adopt innovativeness, and open to change has been a promising result for the future. Their innovative characteristics in this direction can positively affect teachers' willingness to learn, their lifelong learning attitudes, their level of being open to change, and having key competences.

Recommedations

In this context, the following recommendations can be suggested for future researches:

Programs and projects can be developed to improve teachers' lifelong learning competencies and innovativeness levels.

Teachers can be offered in-service training to improve their lifelong learning competencies and innovativeness levels.

Training on lifelong learning and innovation can be given to preservice teachers in education faculties.Quantitative or qualitative studies can be conducted by examining and comparing the lifelong learning and innovativeness levels of teachers in Turkey and other countries.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Sınıf ve Branş Öğretmenlerinin Yaşam Boyu Öğrenme Yeterlikleri ve Bireysel Yenilikçilik Düzeylerinin Çeşitli Değişkenlere Göre Karşılaştırmalı Olarak İncelenmesi

Giriş

Bilginin hızlı bir şekilde üretilip ve aynı hızla sürekli güncelliğini yitirip yerini yeni bilgilere bıraktığı bilgi çağı olarak adlandırlan içinde yaşadığımız yüzyıl birçok anlamda diğer dönemlerden oldukça farklıdır. Çağın getirdiği farklılıklar ve değişimler bireyler için de değişimi zorunlu kılmakta ve özellikle bilginin en önemli güç olarak kabul edildiği bu dönemde bilgiye nasıl ve ne şekilde ulaşılıp bilginin yenileneceği önem kazanmaktadır. Nitekim yaşanılan yüzyılda insanoğlunun tüm değişimlerle ve yeniliklerle baş edip uyum içerisinde yaşayabilmesi için birtakım niteliklere sahip olması gerekmektedir. Sahip olması gereken nitelikleri fark eden insanoğlu için öğrenmenin sürekliliğine ve yeniliğe karşı olan tutumu da değişmiştir. Öyleki ortaya çıkan probleme, ihtiyaca çözüm olabilecek bir takım yeni anlayışlar ortaya çıkmıştır. Bu anlayışlardan bir tanesi de tarihi oldukça eskiye Plato'ya Aristo'ya kadar dayandığı iddia edilen öğrenmenin beşikten mezara kadar sürdüğünü belirten yaşam boyu öğrenme anlayışıdır. Küreselleşme ile birlikte mekâna ve zamana bağlı kalmaksızın eğitimin devamlı olabileceği anlaşılmış ve bireylere kendilerini sürekli güncelleme fırsatı sunan yaşam boyu öğrenme yaklaşımı ortaya çıkmıştır. Bu kapsamda değişen çağ ile uyum içerisinde olabilmenin ön koşulları arasında yeniliklere açık ve yaşam boyu öğrenme becerilerine sahip olmak sayılabilir. Nitekim bilginin artan bir hızla güncelliğini yitirdiği yirmi birinci yüzyılda, bireyleri eğitip topluma yön vermekle görevli okullara ve öğretmenlere önemli sorumluluklar düşmekte sürekli eğitime yön veren yeni yaklaşımlar ortaya çıkmaktadır. İçinde bulunulan her çağın sahip olduğu bireylerde bazı özelliklerin olması gerektiği ifade edilmekte ve bireylerinde bu doğrultuda eğitilmesi için eğitim sistemlerinde değişiklikler yapılmaktadır. 21. yüzyıl insanında da teknolojik yeterlik, öğrenmeyi sürdürme, yeniliklere açık olma, yaratıcı, eleştirel düşünme gibi bir takım özelliklerin olması beklenmektedir. Bu noktada

bireylerin, toplumun ihtiyaç duyduğu nitelikte yetişerek ülkelerini modern dünyanın gerisinde bırakmayacak özelliklere sahip olmalarında eğitim kurumlarının düzenlenmesine ve öğretmen niteliklerinin artırılmasına ihtiyaç vardır. Özellikle yaşam boyu öğrenme yaklaşımı bireylere kendi öğrenmelerinin sorumluğunu vermesi, öğrenmenin devamlılığını savunması açısından gelişimsel bir zorunluluk da yüklemektedir. Nitekim yenilikçi anlayışlar da bu bağlamda yaşam boyu öğrenme ile iç içedir. Çünkü toplumda, dünyada meydana gelen değişimlere uyum sağlamak bireylerin yenilikçi olma özellikleri ile ilgili iken, değişim sonucu ortaya çıkan yeni olan her şeyi gerçek hayat içerisinde uygulayabilmek ise bireyin öğrenmeye karşı olan algısı ve tutumu ile ilgilidir.

Son yıllarda Türkiye'de yaşam boyu öğrenme ile ilgili birçok eğitim politikası geliştirilmiş ve eğitim sistemleri içerisine söz konusu anlayışı dahil etme çabaları da sürmektedir. Özellikle cumhuriyetin ilanından sonra eğitim alanında yapılan birçok yeniliğin aslında yaşam boyu öğrenme anlayışı ile ilgili olduğu görülsede özellikle iki binli yıllardan sonra daha resmi ve bilinçli bir şekilde eğitim sistemimizde hayat boyu öğrenme ile ilgili eğitim politikalarının geliştirilmeye başlandığı görülmektedir. Hayat boyu öğrenme stratejileri geliştirilmiş ve yayınlanmış, kalkınma planlarına hayat boyu öğrenme felsefesi dahil edilmiş ve bu kapsamda birtakım gelişmeler yaşanmış ve yaşanmaya da devam etmektedir. İlkokuldan yükseköğretime kadar eğitim sistemimizin her kademesinde hayat boyu öğrenmeyi içeren gelişmeler son yıllarda hızla devam etmektedir.

Bu süreçte eğitimin topluma yansımasındaki en önemli paydaş olarak öğretmenler görülmekte ve öğretmenlere yönelik birtakım çalışmalar devam etmektedir. Öyleki bir toplumda değişim aracı olarak da görülen öğretmenin rolü yirmi birinci yüzyılda daha önce hiç olmadığı kadar belirgin hale gelmekte, öğretimin kalitesi ve öğretmenlerin önemi sürekli vurgulanmaktadır. Bu yüzyılda birçok alanda yeterliği yüksek öğretmenlere sahip olmak oldukça önemli hale gelmiştir. Türkiye'de bu kapsamda öğretmenler ve öğretmen adaylarına yönelik yaşam boyu öğrenme ile ilgili bilimsel çalışmalar yapılmış ve yapılmaya devam etmektedir. Özellikle nüfusunun çoğunluğu genç bir ülke olan Türkiye'de öğretmenler ile öğrenciler arasında çağın getirdiği değişimleri ve gelişmeleri takip etme açısından çok büyük farkların olmaması gerekmektedir. Bu noktada alan yazın incelendiğinde daha çok öğretmen ve öğretmen adaylarının sadece yaşam boyu öğrenme eğilimleri ya da yeterliklerinin incelendiği görülmektedir. Dolayısıyla yaşam boyu öğrenmeyle birbirini destekleyecek yaklaşımların birlikte incelenmediği tespit edilmiştir. Ayrıca alan yazın incelendiğinde öğretmenlerin ya da öğretmen adaylarının bireysel yenilikçilik düzeylerinin incelendiği araştırmaların azlığı da dikkat çekmektedir. Bu nedenle araştırma sonuçları öğretmenlerin yaşam boyu öğrenmeye yönelik yeterliklerinin geliştirilmesi, yenilikçi özelliklerinin ortaya çıkarılması açısından oldukça önemlidir. Ayrıca çağın gerektirdiği bir toplum haline gelebilmek için öğretmen eğitiminin önemini ortaya koyarak bu doğrultuda geliştirilecek eğitim politikalarına, yükseköğretime konu oluşturması açısından da araştırma sonuçları önem arz etmektedir. Bu doğrultuda araştırmada nitelikli bir toplumun ortaya çıkmasında belirleyici roldeki öğretmenlerin mesleki gelişimlerini artıracak yaşam boyu öğrenme yeterliklerini ve yenilikçilik düzeylerini ortaya çıkarmak amaçlanmıştır. Sınıf ve branş öğretmenlerinin yaşam boyu öğrenme yeterlikleri ile bireysel yenilikçilik düzeyleri araştırmada incelenerek iki yeterlik açısından gruplar arasında anlamlı fark olup olmadığı araştırılmıştır. Ayrıca araştırmada öğretmenlerin yaşam boyu öğrenme yeterlikleri ve bireysel yenilikçilik düzeyleri cinsiyet, medeni durum ve kıdem değişkenleri açısından da incelenmiştir.

Yöntem

Araştırma Kayseri ilinde görev yapan sınıf ve branş öğretmenlerinin yaşam boyu öğrenme yeterlikleri ile bireysel yenilikçilik düzeylerini incelemeyi amaçlayan tarama modelindedir. Araştırmanın çalışma grubunu Kayseri ili merkez ilçelerinde tabakalı örnekleme yöntemi ile ulaşılan 368 branş, 350 sınıf öğretmeni olmak üzere toplam 718 öğretmen oluşturmaktadır. Araştırmanın verileri kişisel bilgi formu ile birlikte sekiz alt boyuttan 23 maddeden oluşan beşli likert tipinde *Yaşam Boyu Öğrenmede Anahtar Yeterlikler Ölçeği* (Şahin, Akbaşlı ve Yanpar Yelken, 2010) ve Türkçe'ye uyarlaması yapılan yine beşli likert tipinde 20 maddeden oluşan *Bireysel Yenilikçilik Ölçeği* (Kılıçer ve Odabaşaı, 2010)' nden oluşan veri toplama aracı ile bizzat araştırmacı tarafından okullar ziyaret edilerek toplanmıştır. Tabakalara ayrılan beş merkez ilçeden araştırmanın verileri toplanmıştır. Araştırmada toplanan verilerin analizi için SPSS programı kullanılmıştır. Araştırmanın verileri analiz edilirleken parametrik veriler için Bağımsız Gruplar İçin t testi ve Tek Yönlü Varyans analizi (ANOVA), nonparametrik veriler için de bağımsız gruplar için Mann Whitney U Testi, Kruskal Wallis Testi ve TUKEY testi kullanılmış, ayrıca betimsel istatistiklerden yararlanılmıştır. Bununla birlikte araştırmada kullanılan ölçeklerin alt boyutlarında değişkenler açısından farklılık olup olmadığını belirlemek için cinsiyet ve medeni durum değişkenlerine ilişkin olarak bağımsız gruplar için t testi ve Mann Whitney U testi, kıdem değişkeni için Kruskal Wallis Testi, tek yönlü varyans analizi (ANOVA) testi TUKEY testi kullanılmıştır.

Bulgular

Araştırmada istatistiksel analizler sonucunda ortaya çıkan bulgular incelendiğinde hem sınıf hem de branş öğretmenlerinin yaşam boyu öğrenme ile ilgili yeterlilik algılarının ölçek ortalamasının üstünde ve yeterli düzeyde olduğu tespit edilmiştir. Ayrıca her iki öğretmen grubunun da yenilikçilik açısından orta düzeyde yenilikçi ve yenilikçiliği benimseme kategorileri içerisinde de sorgulayıcı kategoride yer aldıkları belirlenmiştir. Branş öğretmenlerinin yaşam boyu öğrenme yeterlik algıları cinsiyet değişkeni açısından incelenmiş kadın ve erkek öğretmenler arasında anlamlı farklılık tespit edilmiştir. Analizler sonucunda kadın branş öğretmenlerinin yaşam boyu öğrenme yeterlik algılarının erkek branş öğretmenlerinden daha yüksek olduğu sonucuna ulaşılmıştır. Ayrıca öğretmenlerin yaşam boyu öğrenme yeterliğine yönelik algılarının medeni durum değişkenine göre değişmediği; kıdem yılı açısından ise gruplar arasında farklılık olduğu tespit edilmiştir. Sonuç olarak 6-10 yıl ($\bar{X}$=**92.17**) ve 11-15 yıl ($\bar{X}$=**92, 33**) kıdeme sahip öğretmenlerin 21 yıl ve üzeri kıdeme sahip öğretmenlerden ($\bar{X}$=**85,30**) daha yüksek puan ortalamasına yani yeterliğe sahip olduğu ve farklılığın 6-10 yıl ve 11-15 yıl grubundaki öğretmenlerin avantajına olduğu bulgusuna ulaşılmıştır. Öte yandan sınıf öğretmenlerinin ve branş öğretmenlerinin bireysel yenilikçilik düzeylerinin cinsiyet, medeni durum ve kıdem yılı açısından gruplar arasında herhangi bir değişimin olmadığı sonucuna ulaşılmıştır. Ancak bekar branş öğretmenlerinin bireysel yenilikçilik düzeyleri evli olanlardan daha yüksek olarak belirlenmiştir. Ayrıca araştırmanın son alt problemi dâhilinde her iki öğretmen grubunun bireysel yenilikçilik düzeyleri ve yaşam boyu öğrenme yeterlikleri incelenmiş ve aralarında anlamlı fark olmadığı sonucuna ulaşılmıştır.

Tartışma ve Sonuç

Araştırmada toplanan verilerin alt problemlere ilişkin olarak istatistiksel analizi sonucunda elde edilen bulgular tartışılmış ve ilgili alan yazın ışığında yorumlanmıştır. Öğretmenlerin yaşam boyu öğrenme yeterliklerinin ve bireysel yenilikçilik düzeylerinin karşılaştırmalı olarak incelendiği

araştırmanın sonuçları hem sınıf hem de branş öğretmenlerinin *orta düzeyde yenilikçi* ve yenilikçiliği benimseme açısından *sorgulayıcı* kategoride yer aldıklarını ortaya koymaktadır. Alan yazında Türkiye'de öğretmen adayları ve öğretmenlerle ilgili yürütülen çok sayıda araştırma sonuçlarının söz konusu araştırma sonuçları ile benzerlik gösterdiği tespit edilmiştir. Öğretmenlerin genel olarak büyük bir çoğunluğunun "sorgulayıcı" kategoride ve orta düzeyde yenilikçi olması ile ilgili olarak yeniliğe karşı tedbirli oldukları yeniliği benimseme konusunda belirli bir zamana ihtiyaç duydukları ifade edilebilir. Bu bağlamda yapılan araştırmanın sonucu dahilinde bu durumun nedeni olarak son yıllarda eğitim sistemimizde yaşanılan değişimler öğretmenlerin yenilikleri benimsemelerine karşı direnç oluşturmalarına veya bir yeniliği daha uzun süre içerisinde benimseme ihtiyacı duymalarına neden olmuş olabilir. Eğitim sisteminde meydana gelen değişimlerin hızla hayata geçmesi öğretmenlerin uygulama konusunda yetersiz kalmalarına bu nedenle de yenilikleri sorgulamalarına, daha az risk almalarına sebep olmuş olabilir. Diğer taraftan öğretmenlerin yaşam boyu öğrenme yeterlik düzeylerinin yüksek olması gelecek açısından kendilerini geliştirmeye istekli, öğrenmenin devamlılığına inanmaları açısından umut verici bir sonuç olmuştur. Bu bağlamda bilginin sürekli değişip geliştiği, geçerliliğini çok çabuk yitirdiği, teknolojinin sürekli yenilendiği çağımızda; yaşam boyu öğrenme yeterliklerine sahip ve yaşam boyu öğrenmenin farkında olan öğretmenlerin olması eğitimin geleceği açısından büyük önem taşımaktadır. Bu sayede toplumun rol modeli olan öğretmenler, erken yaşlardan itibaren öğrencilerini yaşam boyu öğrenme becerileri ile yetiştirecek, yetiştirdikleri nesillerin çağa ayak uydurmasına, bilgi toplumunun oluşmasına, toplumsal kalkınmaya en büyük katkıyı sağlayacaklardır. Nitekim ülkemizde yaşam boyu öğrenme konusunda atılan önemli adımların, geliştirilen projelerin, öğretmenlerin bu bağlamda bilgilendirilmesinin araştırmadan elde edilen sonucu desteklediği ifade edilebilir.

Araştırma kapsamında ele alınan ölçeklerden yaşam boyu öğrenmede anahtar yeterlikler ölçeğine göre genel olarak hem sınıf hemde branş öğretmenleri kendilerini yabancı dilde iletişim yeterliği alt boyutunda yeterli görmediklerini belirtmişlerdir. Türkiye'de, eğitim sisteminde yabancı dil eğitimi ile ilgili birçok reform yapılmaktadır. Yabancı dil eğitimine ilkokul ikinci sınıfta başlanmakta ve tüm eğitim kademelerinde yabancı dil ders sayısının önceki yıllara göre arttığı görülmektedir. Ancak yapılan reformların daha çok eğitilen kesime olup eğitimden sorumlu olan kesimin bu anlamda çok fazla yeniliklere dâhil edilmediği dikkat çekmektedir. Ülkemizde eğitim sistemi içerisinde yaşam boyu öğrenmenin son yirmi yıldır ağırlık kazandığı görülmekte ve bu yönde önemli adımlar atılmaktadır. Öğretmenlerin yabancı dilde kendilerini yeterli görememeleri yabancı dil reformlarına eğitim sisteminde yeni yeni yer verilmesi yani geçmişte bu tür yeniliklerin ve imkanların olmamasından dolayı şu an görev yapan öğretmenlerin bu alanda yeterli düzeyde eğitim alamamış olmalarından kaynaklanmış olabilir. Ancak yaşam boyu öğrenme yeterliklerinin her biri ulaşılmak istenilen çağdaş eğitim hedefleri açısından önemlidir ve anahtar niteliğindedir. Bu bağlamda öğreniciler kadar öğreticilerin de belirli eğitim reformlarından faydalanması gerektiği yorumu yapılabilir.

Sınıf öğretmenlerinin hem bireysel yenilikçilik hem de yaşam boyu öğrenme yeterlikleri açısından araştırmada ele alınan değişkenlere göre gruplar arasında herhangi anlamlı farklılık olmadığı sonucuna ulaşılmıştır. İlgili alan yazın incelendiğinde araştırma sonuçlarını destekleyen çalışmalar mevcuttur. Branş öğretmenlerinin ise bireysel yenilikçilik ölçeği açısından cinsiyet değişkeninde gruplar arasında anlamı farklılık görülmezken yaşam boyu öğrenme yeterlikleri açısından kadın branş öğretmenlerinin ortalamaları erkeklerden yüksek bulunmuş ve cinsiyet grupları arasında anlamlı farklılık tespit edilmiştir. Alan yazında araştırma sonuçları ile benzerlik gösteren araştırmalar

mevcuttur. Bu durum kadınların yaşamları boyunca birçok sorumlulukla baş edebilmelerinden kaynaklı olabilir. Kıdem değişkeni açısından da brans öğretmenleri arasında yaşam boyu öğrenme yeterlikleri açısından anlamlı farklılık tespit edilmiştir. Bu farklılık ise 6-10 yıl ile 11-15 yıl kıdeme sahip öğretmenler arasındadır ve 21 yıl üzeri kıdem yılına sahip öğretmenlerin yaşam boyu öğrenme yeterlik düzeyleri yüksek bulunmuştur. Kıdem grubu genç olan öğretmenlerin yaşam boyu öğrenme yeterliklerinin yüksek çıkması, yaşanılan çağın yeniliklerine ve imkanlarına daha çok uyum gösterebilen kuşak içerisinde yer almalarından kaynaklamış olabilir. Ayrıca öğretmenlerin bireysel yenilikçilik düzeyleri ile yaşam boyu öğrenme yeterlikleri arasında anlamlı fark tespit edilmemiştir. Genel olarak değerlendirildiğine branş öğretmenlerinin bireysel yenilikçilik puanları sınıf öğretmenlerinden çok az yüksektir, fakat her iki grupta orta düzeyde yenilikçi ve sorgulayıcı kategoride yer almaktadır.

Sonuç olarak öğretmenlerin yenilikçi olmaya hevesli, yeniliği benimseme konsunda istekli ve değişime karşı açık olmaları gelecek açısından umut verici ve olumlu olmuştur. Bununla birlikte öğretmenlerin yenilikçilik özelliklerinin de benzer yönde olmasının onların öğrenme isteklerini, yaşam boyu öğrenmeye karşı tutumlarını, değişime açık olmalarını olumlu anlamda etkileyeceği ifade edilebilir.

Öneriler

Araştırma sonuçları ışığında şu şekilde araştırmacılara bir takım öneriler verilebilir:

Öğretmenlerin yaşam boyu öğrenme yeterliliklerini ve yenilikçilik düzeylerini geliştirmeye yönelik program ve projeler geliştirilebilir.

Öğretmenlere yenilikçi sınıf ve öğretim ortamları yaratmaları konusunda hizmet içi eğitimler verilebilir.

Öğretmenlerin çalışma şartları incelenip yenilikçi olmaları veya yaşam boyu öğrenme açısından beklenen seviyeye ulaşmalarına engel olarak görülen durumlar ortaya çıkarılabilir.

Öğretmenlerin yaşam boyu öğrenme yeterliklerini ve yenilikçi olma durumlarını etkileyebilecek yönetici, aile, sosyal çevre, öğretim elemanları gibi farklı değişkenlere yönelik çalışmalar yapılabilir.

Araştırma sonucunda hem sınıf hem de branş öğretmenlerinin yabancı dil yeterliğinin düşük düzeyde olduğu tespit edilmiştir Bu konuda öğretmen yetiştiren eğitim fakültelerinin her öğretmenlik programına zorunlu hazırlık sınıfı dahil edilebilir. Ayrıca Milli Eğitim Bakanlığı yabancı dil konusunda eksiği olan öğretmenlere yönelik yabancı dil kursları ve isteyen öğretmenleri yurt dışı eğitim programlarına yönlendirilebilir.

Türkiye ile Avrupa ülkelerinde bulunan öğretmenlerin yaşam boyu öğrenme ve bireysel yenilikçilik düzeyleri incelenip karşılaştırılarak nicel veya nitel çalışmalar yapılabilir.

Examining The Lifelong Learning Levels Of Prospective Special Education Teachers

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Abstract
This research aims to examine the lifelong learning levels of prospective pecial education teachers in means of various variables. 132 prospective special education teachers, 82 females and 50 males studying at Bolu Abant İzzet Baysal University joined the research. The study has been designed with a single survey model and data were gathered with the Lifelong Learning Scale. To decide on the tests to analyze the lifelong learning characteristics of the participants, the kurtosis and skewness values and the normalcy of the scale scores were examined with the Kolmogorov-Smirnov Test. As a conclusion, participants' scores were found to be high in general. No significant differences were observed in participants' scores by gender, secondary school graduated and the grade level. However lifelong learning levels of the participants diverged significantly by their age and the age had a wide effect on the prospective special education teachers' lifelong learning levels. The lifelong learning level of those aged 18-22 is more than those aged 28-32 and those aged 33 and over. Suggestions for practice and further research were included.
Keywords: Lifelong learning, pre-service teacher, pre-service special education teacher.

Introduction

In today's rapidly developing world, individuals tend to improve themselves and increase their knowledge, skills, and social and cultural levels. This is a lifelong process. The fact that individuals need to constantly renew their knowledge and themselves and need to use their skills and knowledge in all areas of life has been effective on the disclosure of the concept of lifelong learning (Lambeir, 2005). In the 1800s, the concept of lifelong learning was newly used. While lifelong learning was shaped as adult education in the first years and was considered a process in which the importance of vocational education was emphasized (Koç, et al., 2009), it has recently been considered a process that covers all segments of society and all stages of education (Uysal, 2009). Lifelong learning is one of the key skills for people to adjust and accomplish in labor markets and societies shaped by longer life expectancy, high-speed technological developments, globalization, and change in population, as well as sudden crisis such as the COVID-19 pandemic. Lifelong learning is a process that begins in childhood and youth and continues throughout lifetime. Lifelong learning includes formal learning in environments such as schools and education centers, all kinds of learning from colleagues and trainers, and spontaneous learning resulting from social communications (Organisation for Economic Co-operation and Development, 2021). According to MoNE (2019), lifelong learning is decribed as all learning facilities people participate to enhance their knowledge, competences, interests, and abilities related to personal, social, community, and occupation.

The demands of a changing working life require workers to know more and more. Therefore, lifelong learning is an essential skill for building the future of our societies. Lifelong learning is explained as a mindset and habit that people need to acquire, rather than a classical adult education. Therefore, in today's world, educational institutions need to be transformed in a way that allows people to gain comprehension, skills, and abilities to adapt to various changes and developments (Demiralay & Karadeniz, 2008).

The pandemic has caused major disorganizations in tertiary education programs and the provision of occupational education, creating problems during the transition from compulsory education to adulthood, thereby reducing participation in adult learning (OECD, 2021). Undoubtedly, universities have a crucial role in promoting lifelong learning. Accrued the ongoing process of

globalization, demographic changes, and the technological progress, higher education institutions need to expand access to lifelong learning opportunities. It is through continuity of learning and lifelong learning that individuals can adapt to constant differentiation (Borat, 2012). Wider access to higher education should not be restricted to the continuous occupational development required by a rapidly changing labor market. It should also meet the growing demand for the opportunities for personal development and cultural enrichment that higher education offers. Tertiary education organizations' part in encouraging lifelong learning is not restricted to what they provide to students. Continuing education opportunities for teachers, lifelong learning research, and community learning opportunities are also seen as crucial (Yang et al., 2015).

Lifelong learning aims to keep up with the information society in which the individual lives and to actively join in all phases of both economic and social life to control his/her life. Teachers play a crucial role in the lifelong learning perspective. As the teachers' task is to educate students at all levels and ages (Aleandri & Refrigeri, 2014). Teachers need to guide students on where to get information and how to access information. In a rapidly changing information society, teachers need to acquire new knowledge, become more qualified, develop and enrich their skills, and transfer them to their students in a good way (Yurdabakan, 2002). Teachers ought constantly to update their knowledge in the face of constantly changing and renewed information. For this reason, higher education institutions are expected to create contexts that support teachers' and prospective teachers' lifelong learning habits and include regulations for this purpose.

To be effective teachers, teachers, and prospective teachers must first take responsibility for their learning. In particular, individuals with special needs need effective teachers to achieve the desired results in their lives after school. It is important to train prospective special education teachers to take responsibility for their learning when they enter the classroom (Brownell, 2021). Working with students with special needs requires teachers to use many skills and requires continuous training. The fact that the special education process is teamwork requiring the cooperation of families, teachers, psychologists, doctors, and other professionals related to people with special needs increases the training needs of teachers (Tamášová, 2015). In ensuring active learning for students with special needs, teachers should have the skills to use different strategies, critical thinking, high-level problem-solving, and self-regulation skills (Koç, 2007). It should not be forgotten that the fact that teachers who implement education programs have these qualities and data and successfully fulfill their duties as facilitators of learning are related to their lifelong learning skills (Evin- Gencel, 2013).

As the lifelong learning literature was investigated, studies conducted with teachers to determine their lifelong learning levels (Kılıç, 2014; Şahin & Arcagök, 2014; Yaman & Yazar, 2015; Ayaz & Ünal, 2016; İleri, 2017; Çam, 2017; Aydın, 2020), and many studies conducted with prospective teachers were found (Coşkun & Demirel, 2012; Evin Gencel, 2013; Beytekin & Kadı, 2014; Gür Erdoğan, 2014; Karaduman, 2015; Oral, 2015; Özçiftçi & Çakır 2015; Yıldırım, 2015; Tunca, Şahin, & Aydın, 2015; Ayra, Kösterelioğlu, & Çelen, 2016; Ergün & Cömert-Özata, 2016; Akran & Özdemir, 2018; Boztepe & Demirtaş, 2018; Kozikoğlu & Altunova, 2018; Aykaç & Aslandağ, 2019; Bulaç, 2019;Satıroğlu, 2019; Çavuşoğlu & Acar, 2020; Erdoğan, 2020; Kaya, 2022). However, no study was found with prospective special education teachers. It should not be forgotten that determining the extent of teacher candidates' lifelong learning skills is important in planning the next steps and taking the necessary measures (Evin-Gencel, 2013). Furthermore, knowing the lifelong learning levels of prospective special education

teachers and the variables that affect them will help to make inferences about enriching lifelong learning opportunities for prospective special education teachers in higher education. Based on these considerations, this research in general aims to examine prospective special education teachers' lifelong learning levels. The sub-objectives determined in line with this general purpose are as follows:

1. What are the lifelong learning levels of prospective special education teachers?

2. Is there a difference among the lifelong learning levels of prospective special education teachers by age, gender, graduated secondary school type, and grade level?

Method

Research Model

This research was designed with the single survey model. Research models applied to determine the occurrence of variables individually, in terms of kind or extent are called single survey models. In single survey models, the variables belonging to the event, item, individual, group, etc. unit, and situation are described separately (Karasar, 2002). Since the lifelong learning levels of prospective special education teachers were examined concerning various variables and the results affiliated to each variable were described separately, it can be said that it is suitable for the functioning of the single survey model.

Population and Sample

The population of this study consisted of prospective special education teachers studying in Special Education Departments in Turkey, and the sample consisted of 132 prospective special education teachers studying in Bolu Abant İzzet Baysal University Special Education Department, which was reached by convenient sampling technique. The convenience sampling technique is one of the non-probability sampling techniques are frequently appropriate to population studies and clinical research. Convenience sampling is based on multiple forms of prejudice and allows for statistical evaluation of sampler error. Analysis of convenience sampling results can only be applied to the study group (Stratton, 2021). The profile of participants is given in Table 1.

Table 1. *The profile of the participants*

		N	%
Age	18-22	84	63,6
	23-27	27	20,5
	28-32	14	10,6
	33 and above	7	5,3
Gender	F	82	62,1
	M	50	37,9
Graduation	Anatolian Secondary School (ASS)	79	59,8
	Anatolian Imam Hatip Secondary School (AIHSS)	10	7,6
	Science Secondary School (SSS)	5	3,8
	Social Sciences Secondary School (SSSS)	8	6,1
	Vocational and Technical Anatolian Secondary School (VTASS)	17	12,9
	Other	13	9,8
Grade	1	22	16,7
	2	40	30,3
	3	30	22,7
	4	40	30,3

According to Table 1, 84 of the participants were between the ages of 18-22 (63.6%), 27 were between the ages of 23-27 (20.5%), 14 were between the ages of 28-32 (10.6%), and 7 were 33 years and older (5.3%). Of the respondents, 82 were female (62.1%), 50 were male (37.9%). The secondary school that 79 of the respondents graduated was AHS (59.8%), 10 graduated from AIHSS (7.6%), 5 graduated from SSS (3.8%), 8 graduated from SSSS (6.1%), 17 graduated from VTASS (12.9%) and 13 participants graduated from other types of secondary schools (9.8%). Of the respondents, 22 were in the 1st grade (16.7%), 40 in the 2nd grade (30.3%), 30 in the 3rd grade (22.7%), 40 in the 4th grade (30.3%).

Data Collection Tools

Demographic Information Questionnaire (DIQ) and Lifelong Learning Scale (LLS) were used for data collection.

DIQ: The Demographic Information Questionnaire consisted of questions asking variables such as age, gender, type of secondary school graduated from, and grade level of the prospective special education teachers.

LLS: Originally designed by Wielkiewicz and Meuwissen (2014) to assess the lifelong learning of several groups of people, the standardization of the scale under Turkish conditions was applied by Engin et al. (2017). The Turkish adaptation study of the scale, which originally consisted of 16 items and one dimension, was applied to 727 university students, 346 of whom were female and 381 of whom were male. By the factor analysis, a scale form including 15 items and a single dimension was acquired by removing item 1, which had a value below .30. According the confirmatory factor analysis, the model and data fit was found to be high. The Cronbach's Alpha reliability coefficient of the scale was found to be 0.936. The scale scores vary between 15 and 75.

Data Collection

DIQ and LLS, which were organized on the online survey form, were delivered to the participants through mobile sharing groups and asked to fill them in.

Data Analysis

To decide on the tests to analyze the lifelong learning characteristics of the participants, the kurtosis and skewness values and the normalcy of the scale scores were examined with the Kolmogorov-Smirnov Test (Can, 2017), which is applied when the group size is greater than 30, and the results are below in Table 2.

Table 2. *Kolmogorov smirnov test*

	Z	Kurtosis	Skewness	p
LLS Scale	,984	,536	-,762	,284

As seen in Table 2, when we look at the data collected with the LLS Scale [(Z=0.984; kurtosis=-0.536, Standard error=.419; skewness=--0.762, Standard error=.211); p>.05], although the Z statistic satisfies the normality condition, the kurtosis and skewness values do not. The data indicate negative skewness as seen in the histogram graph below.
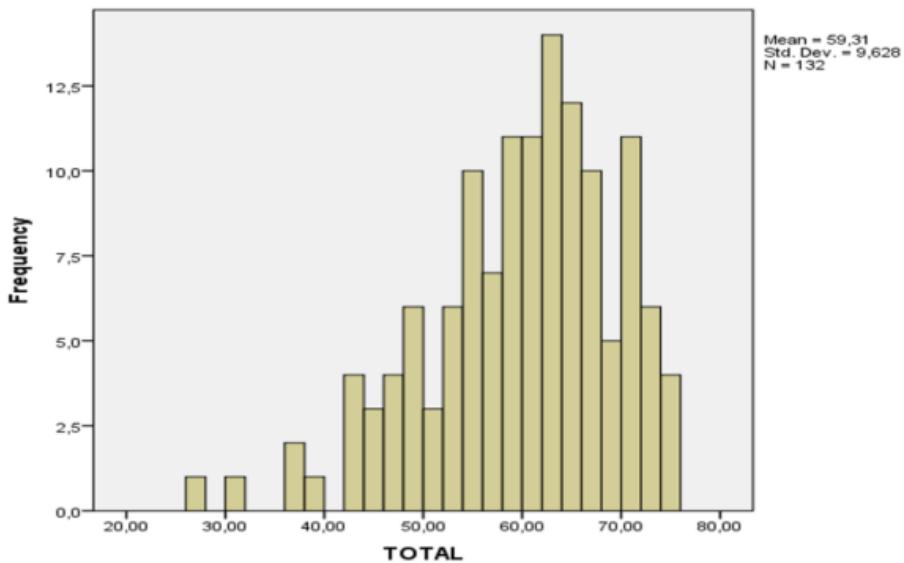
Figure 1. The histogram graph

Accordingly, the square root transformation process, which is one of the data transformation processes applied for negative skewness in the data, was applied. The outcomes of the Kolmogorov-Smirnov Test applied after the square root transformation process are given in Table 4.

Table 3. *Kolmogorov smirnov test after square root transformation*

Scale	Kolmogorov Smirnov Z	Kurtosis	Skewness	p
LLS Scale	,499	-,162	-,066	,964
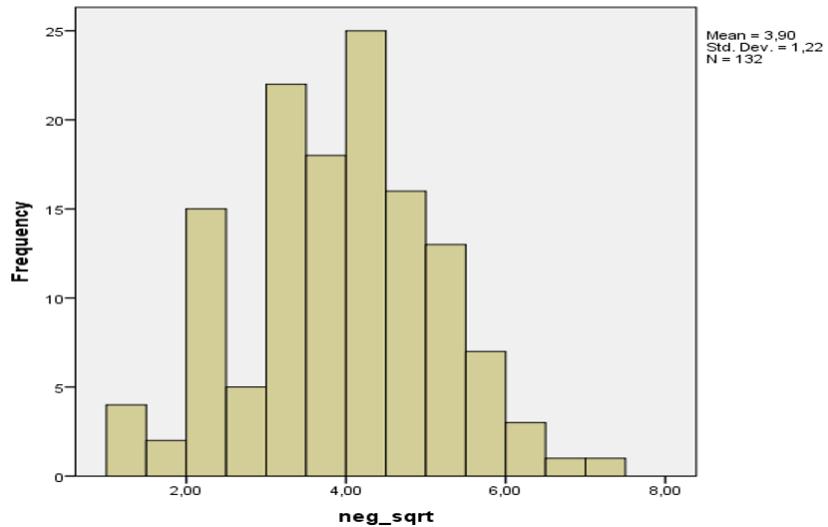
Figure 2. The histogram graph

Subject to Table 3 and reported by the results of the Kolmogorov Smirnov Test applied after square root transformation, it is seen that the normality condition is met when looking at the data collected with the LLS Scale [(Z=,499; kurtosis= -,162, Standard error=.419; skewness=--,066, Standard error=.211); p>.05]. The normalcy of the data is confirmed by the histogram above.

Accordingly, the Independent Sample t-Test has been applied when the distribution is normal and the number of groups are two, and Analysis of Variance (ANOVA) has been applied when there are

more than two groups. Statistical significance level .05 was accepted. The eta squared (η2) value calculated for the effect size analysis was calculated with the formula $\eta2=t^2/(t^2+(n_1+n_2-2))$ for the t-test and $\eta2$=sum of squares (between groups)/sum of squares (total) for the analysis of variance, and the effect size was interpreted as "small" at $\eta2=0.01$, "medium" at $\eta2=0.06$, and "large" at $\eta2=0.14$ (Büyüköztürk, 2011).

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Bolu Abant İzzet Baysal University Social Sciences Human Research Ethics Committee.

Date of ethical review decision= 27.05.2022

Ethics assessment document issue number= 2022/06

Findings

This section presents the findings acquired in line with the objectives.

What are the lifelong learning levels of prospective special education teachers?

Table 4. *Mean and standard deviation of participants' scores*

	X̄	S
LLS Scale	59,31	9,62

According to Table 4, the average score of participants on the LLS Scale is 59.31. Considering that the scale scores vary between 15 and 75, it can be said that the participants' scores are above the average score that can be obtained from the scale and their lifelong learning levels are high.

Is there a difference among the lifelong learning levels of prospective special education teachers by age, gender, graduated secondary school type, and grade level?

Table 5. *Analysis of variance results of prospective special education teachers' scores by age*

	Age	N	X̄	S	F	p
LLS Scale	18-22	84	4,23	1,16	8,888	,000
	23-27	27	3,65	0,95		
	28-32	14	3,03	1,03		
	33 and above	7	2,57	1,44		

According to Table 5, as a consequence of variance analysis, there was significant difference ([F: 8,888] p<.05) in the scores of respondents by age. According to the effect size analysis, it is seen that age has a large effect on the lifelong learning levels of respondents ($\eta2=0.21$).

Upon this result, the outcomes of the Levene test were evaluated for the post hoc test to be performed to identify which groups differ between the averages, and since it was seen that the variances were equal (Levene statistic: 1.363; p=0.257), the Scheffe Test, which is recommended in cases where the variances are equal and do not require the number of observations to be equal, was applied (Güriş & Astar, 2019). The outcomes are introduced below.

Table 6. *Scheffe test results of the LLS scale scores by age*

	(I) Age	(J) Age	Average Difference (I-J)	Standard Error	P
LLS Scale	18-22	23-27	,57851	,25	,149
		28-32	1,19610*	,32	,005
		33 and above	1,65551*	,44	,004
	23-27	18-22	-,57851	,25	,149
		28-32	,61759	,37	,428
		33 and above	1,07699	,48	,169
	28-32	18-22	-1,19610*	,32	,005
		23-27	-,61759	,37	,428
		33 and above	,45941	,52	,854
	33 and above	18-22	-1,65551*	,44	,004
		23-27	-1,07699	,48	,169
		28-32	-,45941	,52	,854

There was significant difference in the scores between those aged 18-22 and those aged 28-32 [Standard error: .32] and those aged 33 and over [Standard error: .44] in favor of those aged 18-22. Accordingly, the lifelong learning level of those aged 18-22 ($\bar{X}$=4.23) was higher than those aged 28-32 ($\bar{X}$=3.03) and those aged 33 and over ($\bar{X}$=2.57).

Table 7. *T-test results of prospective special education teachers' lifelong learning scale scores by gender*

	Gender	N	$\bar{X}$	S	Sd	t	p
LLS Scale	F	82	3,88	1,19	130	-0,194	0,847
	M	50	3,92	1,28			

According to Table 7, no significant difference was noticed among respondents' scores by gender [t(130)= -0.194, p>.05].

Table 8. *Analysis of variance results of the scores of prospective special education teachers by the secondary school type*

	Secondary School Type	N	$\bar{X}$	S	F	p
LLS Scale	AHS	79	4,03	1,25	1,962	,089
	AIHHS	10	4,30	0,90		
	SHS	5	4,30	0,93		
	SSHS	8	3,94	1,24		
	VTAHS	17	3,50	0,91		
	Other	13	3,13	1,44		

Based on the variance analysis results on Table 8, was no significant difference ([F: 1,962] p>.05) was noticed in the lifelong learning scores of participants by secondary school they graduated.

Table 9. *Variance analysis results of the scores of prospective special education teachers by grade level*

	Grade Level	N	$\bar{X}$	S	F	p
LLS scale	1	22	3,83	1,22	,740	,530
	2	40	3,85	1,34		
	3	30	4,19	1,27		
	4	40	3,78	1,06		

Based on the variance analysis results on Table 9, no significant difference ([F: ,740] p>.05) was observed in the lifelong learning levels of participants by their grade level.

Discussion and Conclusion

This study examined prospective special education teachers' the lifelong learning levels and whether the lifelong learning levels of the participants differed by age, gender, secondary school type, and grade level. Based on findings, the lifelong learning levels of participants were generally found to be high. When analyzed according to various variables, it is clear that the participants' lifelong learning levels did not differ by gender, kind of secondary school graduated from, and current grade level. Instead, the scores of the participants differed by age. Accordingly age had a wide effect on the lifelong learning levels of the participants. Besides the lifelong learning level of those between the ages of 18-22 was higher than those between the ages of 28-32 and those aged 33 and over.

When we examined the findings related to the first sub-objective, it was concluded that the respondents' lifelong learning was at a high level. It is clear that the research result coincides with many studies in which lifelong learning levels are determined. In the studies conducted with school administrators, teachers, and prospective teachers, it was found that their lifelong learning levels were high (Aydın, 2020; Ayanoğlu, 2020; Erdoğan, 2020; Şahin, Sarıtaş, & Çatalbaş, 2020, Bahadır, 2019; Bulaç, 2019; Gedik, 2019; Kabal, 2019; Korkmaz, 2019; Satıroğlu, 2019; Çam 2017, İleri 2017; Ayaz & Ünal, 2016; Ergün & Cömert Özata, 2016; Ayra, et al. 2015; Gür Erdoğan, 2014; Özçiftçi & Çakır 2015; Yıldırım, 2015 and Kılıç 2015). As a result, pre-service special education teachers obviously tend to lifelong learning; they are open and predisposed to learning to help their personal and professional development. In actual fact prospective special education teachers have lifelong learning skills and qualifications. In addition to these, the high level of lifelong learning shows that teachers and pre-service teachers should update their knowledge and keep up with the developing age and modernization (Kaya, 2022). However, some studies have concluded that lifelong learning levels are low (Tunca et al., 2015; Demir-Başaran & Sesli, 2019). Increasing the number of qualitative studies to be conducted to determine the reasons for this result is thought to give direction to other studies to be conducted on lifelong learning.

When the findings related to the other sub-problem of the research were analyzed, it was concluded that lifelong learning levels of the participants differed by age. In line with the findings, age has a great effect on the participants' lifelong learning levels and the scores of those between the ages of 18-22 is higher than those between the ages of 28-32 and 33 and above. Prospective teachers in this age group can accept the benefits of lifelong learning for personal and social development and direct themselves toward it. In addition, they may have a positive viewpoint to learning and accessing information with an open approach to self-improvement. The finding is supported bu recent research. In research applied with police officers and prospective teachers in which lifelong learning levels were determined, a significant difference by age was determined (Demirel, 2019; Polat & Abaslı, 2018). In contrast to this study, some studies have found that lifelong learning dispositions do not have a significant difference by age. (Çavuşoğlu & Acar, 2020; Adabaş 2019; Aykaç & Aslandağ, 2019; Yılmaz & Beşkaya, 2018; Sarıgöz, 2015). Seminars are suggested to be organized by professionals to encourage the lifelong learning perspectives of prospective teachers who are open to new ideas and innovations.

It was concluded that there was no significant difference in the lifelong learning levels of pre-service special education teachers according to gender. In other words, the lifelong learning levels of male and female pre-service special education teachers were similar. Recent studies support this finding of the research. Boztepe and Demirtaş (2019), Adabaş (2019), Yasa (2018), Akran and Özdemir

(2018), Kozikoğlu and Altunova (2018), Oral (2015), Tunca et al. (2015), Beytekin and Kadı (2014) and Kılıç (2014) also found no difference in lifelong learning levels by gender in their studies with teacher candidates. According to Boztepe and Demirtaş (2019), the cause of this situation is interpreted as that the studies in the education processes given by the faculties of education contribute to the awareness of prospective teachers in lifelong learning. Understanding lifelong learning is extremely important, especially for prospective teachers with regard to catching up with age and contributing to their individual development at the same time. The adoption and implementation of lifelong learning are among the main qualities of people in knowledge societies (Demiralay & Karadeniz, 2008). However, some studies have found out significant difference in lifelong learning level by gender (Yazıcı, 2020; Doğan, 2019; Kabal, 2019; Yılmaz & Beşkaya 2018; İleri, 2017; Horuz, 2017; Özgür, 2016; Karaduman, 2015; Ayra et al., 2015; Gür-Erdoğan, 2014; Evin Gencel, 2013; Özçiftçi & Çakır 2015; Demiralay & Karadeniz, 2008). In most of these research results, it was observed that lifelong learning levels were higher in favor of women. In general, it is clear that women's lifelong learning levels are high because they see themselves as prone and competent to learning. According to Jenkins (2004), women frequently encounter job changes, interruptions, or quitting jobs due to their responsibilities and make efforts to adapt and adapt to these changes, and thus women's lifelong learning competencies are positively affected.

When the findings concerning the other sub-problem were investigated, no significant difference was observed in the scores of participants by secondary school type they graduated. According to this finding, it is clear that prospective teachers show similar lifelong learning levels despite the secondary school they graduated.

The analysis conducted to examine the differentiation of prospective special education teachers' lifelong learning levels by grade level concluded that there was no significant difference by grade level. When this finding of the research is compared with the the literature, there are both similarities and differences. In some studies conducted in parallel with this research, no significant difference among lifelong learning by grade level variable was determined (Asiloğulları, 2020; Oran, 2020; Bahadır, 2019; Altay-Yorulmaz, 2019; Tatlısu, 2016; Selçuk, 2016). In contrast to these results, there was a difference among lifelong learning levels and grade levels (Coşkun & Demirel, 2012; Tunca et al., 2015; Karakuş, 2013). When the research were reviewed, it was interpreted that the reason why the prospective teachers' lifelong learning levels in upper grades were high was that intensive theoretical and practical courses related to the professional field improved their lifelong learning levels (Boztepe & Demirtaş, 2018). It is foreseen that as education level rises, prospective teachers will have positive contributions such as expanding their horizons and improving and updating themselves.

Recommedations

On a practical level, it is recommended to create inclusive education environments in tertiary level to ensure the encouragement of young adults' lifelong learning skills. To make education environments inclusive and support lifelong learning in tertiary education, the following types of practices can be implemented: (1) building on person-centered learning and providing differentiated learning opportunities where students can make choices, (2) harnessing the power of technology to foster motivation for lifelong learning and to acquire the basic skills needed to navigate the changing labor market and life circumstances, and (3) fostering partnerships between different stakeholders in developing high-quality and inclusive learning environments (OECD, 2021). It is also recommended that

seminars should be organized by relevant experts for pre-service teachers to develop and change their perspectives on lifelong learning.

For further research, examining comparatively the lifelong learning levels of students of teaching department studying in several disciplines and examination of the lifelong learning levels of special education teachers are suggested. The study was carried out with prospective special education teachers studying at Bolu Abant İzzet Baysal University Faculty of Education. For the generalizability of the research, the research can be applied with prospective special education teachers studying in more than one university in the future.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no financial or individual organic link with the person or institution involved in the research.

Genişletilmiş Türkçe Özet

Özel Eğitim Öğretmen Adaylarının Yaşam Boyu Öğrenme Düzeylerinin İncelenmesi

Giriş

Hızla gelişen günümüz dünyasında bireyler kendilerini geliştirme, bilgi, beceri, sosyal ve kültür seviyelerini artırma eğilimindedir. Bu yaşam boyu devam eden bir süreçtir. Bireylerin, bilgilerini ve kendilerini devamlı yenileme ihtiyacında olması ve yaşamın bütün alanlarında beceri ve bilgilerini kullanmaya gerek duyması yaşam boyu öğrenme kavramının ortaya çıkmasında etkili olmuştur (Lambeir, 2005). Yaşam boyu öğrenmede amaç bireyin yaşadığı bilgi toplumuna ayak uydurmak, hayatını kontrol etmek için hem ekonomik hem de sosyal hayatın bütün aşamasında aktif olarak katılım göstermektir.

Değişen çalışma hayatının talepleri çalışanların giderek daha fazla şeyi bilmesini gerektirmektedir. Bu nedenle, yaşam boyu öğrenme, toplumlarımızın geleceğini inşa etmek için önemli bir beceridir. Yaşam boyu öğrenme klasik bir yetişkin eğitiminden ziyade, insanların edinmesi gereken bir zihniyet ve alışkanlık olarak açıklanmaktadır.

Yaşam boyu öğrenmede amaç bireyin yaşadığı bilgi toplumuna ayak uydurmak, hayatını kontrol etmek için hem ekonomik hem de sosyal hayatın bütün aşamasında aktif olarak katılım göstermektir. Öğretmenler yaşam boyu öğrenme perspektifinde kilit bir role sahiptir. Çünkü öğretmenlerin görevi her seviyede ve yaştaki öğrencileri eğitmektir (Aleandri ve Refrigeri, 2014). Öğretmenlerin öğrencilere bilgiyi nereden elde edeceği ve bilgiye nasıl ulaşacakları konusunda rehberlik etmesi son derece önemlidir. Hızla değişen bilgi toplumunda öğretmenlerin yeni bilgileri kazanması, daha nitelikli olması, becerilerini geliştirmesi ve zenginleştirmesi ve bunları da öğrencilerine iyi bir şeklide aktarması gerekmektedir (Yurdabakan, 2002). Öğretmen, sürekli değişen ve yenilenen bilgiler karşısında, bilgilerini sürekli güncellemelidir. Bu nedenle yükseköğretim kurumlarının öğretmenlerin ve öğretmen

adaylarının yaşam boyu öğrenme alışkanlarını destekleyici bağlamlar oluşturması ve buna yönelik düzenlemeler içermesi beklenmektedir.

Etkili birer öğretmen olabilmek için, özel eğitim öğretmen adaylarının, sınıfa girdiklerinde kendi öğrenmelerinin sorumluluğunu üstlenecek şekilde yetiştirilmeleri önemli görülmektedir (Brownell, 2021). Eğitim programlarını uygulayan öğretmenlerin bu sayılan nitelik ve verileri taşımları ve öğrenmeyi kolaylaştırıcı görevlerini başarılı bir şekilde yerine getirmeleri, yaşam boyu öğrenme becerileriyle ilişkili olduğu unutulmamalıdır (Evin- Gencel, 2013). Özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeylerinin ve hangi değişkenlerden etkilendiğinin bilinmesinin, özel eğitim öğretmen adaylarının yükseköğretimde yaşam boyu öğrenme fırsatlarının zenginleştirilmesine yönelik çıkarımlarda bulunmaya yardımcı olacağı düşünülmektedir. Bu düşüncelerden hareketle bu çalışmanın temel amacı, özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeylerinin incelenmesi olarak belirlenmiştir.

Yöntem

Bu araştırma genel tarama modellerinden tekil tarama modeliyle desenlenmiştir. Bu araştırmanın evrenini Türkiye'deki Özel Eğitim Bölümlerinde okuyan özel eğitim öğretmeni adayları, örneklemini ise uygun örnekleme tekniği ile ulaşılan Bolu Abant İzzet Baysal Üniversitesi Özel Eğitim Bölümünde okuyan 132 özel eğitim öğretmeni adayı oluşturmaktadır. Araştırma verileri toplanırken hazırlanan Demografik Bilgi Formu ile Yaşam Boyu Öğrenme Ölçeğinden yararlanılmıştır. Yaşam Boyu Öğrenme Ölçeği: Orijinali Wielkiewicz ve Meuwissen (2014) tarafından öğrenci ve diğer gruptaki insanların yaşam boyu öğrenmelerini değerlendirmek amacıyla geliştirilen ölçeğin Türkiye koşullarında geçerlik ve güvenirlik çalışması Engin vd. (2017) tarafından yapılmıştır. Ölçeğin Cronbach Alfa güvenirlik katsayısı 0,936 bulunmuştur. Ölçekten alınabilecek en düşük puan 15 iken alınabilecek en yüksek puan 75'tir.

Verilerin toplanmasında Google Formlar uygulaması kullanılmış olup çevrimiçi anket formu üzerinde düzenlenen Demografik Bilgi Formu ve Yaşam Boyu Öğrenme Ölçeği katılımcılara mobil paylaşım grupları aracılığıyla ulaştırılmış ve doldurmaları istenmiştir.

Kolmogorov Smirnov testi[(Z=0.984; basıklık=-0.536, Standart hata=.419; çarpıklık=--0.762, Standart hata=.211); p>.05] sonucunda elde edilen verileri incelediğimizde Z istatistiği normallik koşulunu sağlamasına rağmen basıklık ve çarpıklık değerleri normallik koşulunu sağlamamaktadır. Verilerdeki negatif çarpıklık için uygulanan veri dönüştürme işlemlerinden biri olan karekök dönüşümü uygulanmıştır. Karekök dönüşümü sonrasında uygulanan Kolmgorov Smirnov Testi sonuçlarına göre LLS Ölçeği ile toplanan veriler [(Z=,499; basıklık= -,162, Standart hata=.419; çarpıklık=--,066, Standart hata=.211); p>.05] analiz edildiğinde normallik koşulunun sağlandığı görülmektedir. Buna göre dağılımın normal ve grup sayısının iki olduğu durumlarda Bağımsız Örneklem t-Testi, ikiden fazla grup olduğu durumlarda ise Varyans Analizi (ANOVA) uygulanmıştır.

Bulgular

Özel eğitim öğretmen adaylarının YBÖ Ölçeği'nden aldıkları ortalama puan 59,31'dir. Katılımcıların puanlarının ölçekten alınabilecek ortalama puanın üzerinde olduğu ve yaşam boyu öğrenme düzeylerinin yüksek olduğu söylenebilir. Çeşitli değişkenlere göre yapılan analizde katılımcıların yaşam boyu öğrenme düzeylerinin cinsiyete, mezun olunan lise türüne ve mevcut sınıf düzeyine göre anlamlı bir farklılık göstermediği tespit edilmiştir. Ancak katılımcıların yaşam boyu

öğrenme düzeylerinin katılımcıların yaşlarına göre anlamlı bir şekilde farklılaştığı; yaşın özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeyleri üzerinde geniş bir etkiye sahip olduğu ve 18-22 yaş aralığındakilerin yaşam boyu öğrenme düzeyinin 28-32 yaş aralığındakiler ile 33 yaş ve üzerindekilere göre daha yüksek olduğu tespit edilmiştir.

Tartışma ve Sonuç

Araştırmanın birinci alt amacına yöenlik bulguları incelediğimizde özel eğitim öğretmen adaylarının Yaşam Boyu Öğrenme ölçeğinden aldıkları puan ortalamalarında yaşam boyu öğrenmelerinin yüksek düzeyde olduğu sonucuna ulaşılmıştır. Araştırma sonucunun yaşam boyu öğrenme düzeylerinin belirlendiği birçok araştırmayla örtüştüğü görülmektedir. Okul yöneticileri, öğretmenler ve öğretmen adaylarıyla yapılan araştırmalarda da yaşam boyu öğrenme düzeylerinin yüksek olduğu bulunmuştur (Aydın, 2020; Ayanoğlu, 2020; Erdoğan, 2020; Şahin, Sarıtaş ve Çatalbaş, 2020, Bahadır, 2019; Bulaç, 2019; Gedik, 2019; Kabal, 2019; Korkmaz, 2019; Satıroğlu, 2019; Çam 2017, İleri 2017; Ayaz ve Ünal, 2016; Ergün ve Cömert Özata, 2016; Ayra, vd 2015; Gür Erdoğan, 2014; Özçiftçi ve Çakır 2015; Yıldırım, 2015 ve Kılıç 2015).

Araştırmanın diğer alt problemine ilişkin bulgular incelendiğinde, özel eğitim öğretmen adaylarının yaşına göre yaşam boyu öğrenme düzeyleri arasında anlamlı fark olduğu sonucuna ulaşılmıştır. Yaşın özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeyleri üzerinde geniş bir etkiye sahip olduğu ve 18-22 yaş aralığında olanların yaşam boyu öğrenme düzeyinin 28-32 yaş aralığında olanlar ile yaşı 33 ve üstü olanlardan daha fazla olduğu bulunmuştur. Bu yaş grubundaki öğretmen adaylarının yaşam boyu öğrenmenin kişisel ve toplumsal gelişimine faydasını kabul ederek kendisini buna yönlendirebilir. Ayrıca kendisini geliştirmeye açık bir yaklaşım ile öğrenmeye ve bilgiye ulaşmada olumlu bir tutuma sahip olabilir. Araştırmanın bulgusu alanyazındaki bazı araştırmaları destekler niteliktedir.

Araştırmaya katılan özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeylerinde cinsiyete göre anlamlı bir farklılık görülmediği sonucuna ulaşılmıştır. Başka bir ifadeyle belirtmek gerekirse erkek ve kadın özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeyleri benzer çıkmıştır. Alanyazın incelendiğinde çalışmanın sonucunu destekleyen başka araştırmaların da olduğu görülmektedir (Boztepe ve Demirtaş, 2019; Adabaş 2019; Yasa, 2018, Akran ve Özdemir, 201, Kozikoğlu ve Altunova, 2018 ve Oral, 2015). Yaşam boyu öğrenme anlayışının özellikle öğretmen adayları için çağı yakalamak ve aynı zamanda bireysel gelişimine katkıda bulunmak açısından son derece önemli olduğu düşünülmektedir. Yaşam boyu öğrenmenin benimsenmesi ve uygulanması bilgi toplumlarındaki bireylerin önemli nitelikleri arasındadır (Demiralay ve Karadeniz, 2008).

Özel eğitim öğretmen adaylarının yaşam boyu öğrenme düzeylerinin sınıf düzeyi değişkenine göre farklılaşma durumunu incelemek amacıyla yapılan analizlerin sonucunda bulunulan sınıf düzeyine göre anlamlı farklılaşma olmadığı bulunmuştur. Araştırmanın bu bulgusu alanyazındaki araştırma sonuçlarıyla karşılaştırıldığı zaman benzerlikler ve farklılıklar olduğu görülmektedir.

Öneriler

Uygulamaya yönelik olarak, genç yetişkinliklerin yaşam boyu öğrenme becerilerinin geliştirilmesini sağlamak amacıyla yükseköğretimde de kapsayıcı öğrenme ortamlarının oluşturulması önerilmektedir. Yükseköğretimde kapsayıcı öğrenme ortamlarının oluşturulması ve yaşam boyu öğrenmenin desteklenmesi için şu türde uygulamalar gerçekleştirilebilir: (1) birey merkezli

öğrenmenin temel alınması ve öğrencilerin seçimler yapabileceği farklılaştırılmış öğrenme fırsatlarının sunulması, (2) değişen iş gücü piyasası ve yaşam koşullarını yönlendirebilmek için gerekli temel becerileri edinmede ve yaşam boyu öğrenme motivasyonunu teşvik etmede teknolojinin gücünden yararlanılması, (3) yüksek kaliteli ve kapsayıcı öğrenme ortamlarını geliştirmede farklı paydaşlar arasındaki ortaklıkların teşvik edilmesi (OECD, 2021). Ayrıca öğretmen adaylarına yaşam boyu öğrenmeyle ilgili bakış açılarını geliştirmek ve değiştirmek amacıyla ilgili uzmanlar tarafından seminerlerin düzenlenmesi önerilebilir.

İleri araştırmalara yönelik olarak, farklı branşlarda okuyan öğretmen adayların yaşam boyu öğrenme düzeylerinin karşılaştırmalı olarak incelenmesi ve özel eğitim öğretmenlerinin yaşam boyu öğrenme düzeylerinin incelenmesi önerilmektedir.

Investigation of Attitudes towards Solid Waste and Recycling from a Social Perspective*

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Abstract
Today, where the amount of consumption is increasing rapidly, waste management, which gains importance as recycling, recovery and reuse, is important how it is evaluated by the individuals who make up the social structure. Based on this idea, it was aimed to determine the attitudes of individuals from different sociocultural and socioeconomic levels towards solid waste and recycling in terms of various variables and to bring a social perspective to this issue. Scanning model was used in the research. "Attitude Scale Towards Solid Waste and Recycling" was used as a data collection tool. The sample of the research consists of 558 participants from different socioeconomic and sociocultural structures in line with the principle of voluntary participation. As a result of the research, it is seen that the attitudes of the participants towards solid waste and recycling are at a high level. In addition, it has been determined that various variables have an effect on the attitudes of the participants towards solid waste and recycling. Solid waste and recycling are subjects related to every aspect of life. From this point of view, it should be ensured that all individuals in the society develop their knowledge, behaviors and attitudes about solid waste and recycling.

Keywords: Solid waste, recycling, attitude, society.

Introduction

The natural environment in which we live, influence and are affected; It has been among the important agenda items of the world in the first quarter of the 21st century, as it was in the last quarter of the 20th century. The reason for this is that the relationship between man and the environment constantly develops against the environment and therefore people are faced with great problems. The environment can be defined as environmental problems that arise as a result of human interaction, and events that directly or indirectly affect the balance in the lives of living beings in nature (Güney, 1992, p. 3). It is possible to examine environmental problems under different main headings: problems arising from natural, human, economic, climate, hydrography, soil and vegetation characteristics (Özey, 2011). At first, societies did not pay much attention to the environmental problems mentioned above. However, environmental problems have begun to be noticed when situations such as global diseases, nutrition problems, radiation, and the decrease in natural resources have begun to affect them negatively (Çimen and Yılmaz, 2012). Therefore, cooperative actions between countries were needed to find solutions to global environmental problems (Hoel, 1991). Environmental issues were brought to the agenda for the first time at the international conference held in Stockholm in 1972 and attended by 113 countries. After this conference, environmental problems started to be discussed widely. the establishment of the United Nations Environment Program in 1974; It was the first meeting of the United Nations on sustainable development in Rio in 1993, the meeting of the World Conservation Union in 1994, the signing of the Kyoto Protocol in 1997, and the meeting of the 2002 United Nations World Sustainable Development Summit (Akıncı, 1996; Savaşçın, 2000; Özsoy, 2012). Although there are many important developments that deal with environmental problems, a definite solution to these problems has not been found and these problems have continued to increase.

Today, one of the important environmental problems is waste. Waste is constantly increasing for reasons such as economic growth, industrialization, urbanization and population growth. Wastes affect the environment and people directly or indirectly. These effects can be in biological, chemical and physical properties. Waste diseases such as plague, cholera, dysentery, tuberculosis, rabies, malaria; leakage in landfills causes water and gases. Therefore, wastes have some physical, biological and chemical damages to humans and other living things (Palabıyık, 2001). In order to prevent these

damages, waste management aiming at production and consumption without or with the least waste should be implemented effectively (Altınışık, 2014). Recycling, which is the most important element of waste management, is the recycling of recyclable wastes into secondary raw materials with various physical or chemical methods and reintegrating them into the production process (Ak and Genç, 2018). Solid waste management, which is one of the waste management, is the proper accumulation, collection and evaluation of urban wastes. Solid wastes constitute a major problem for human health and the environment (Cici, Şahin, Görgen and Deniz, 2005; Sharholy, Ahmad, Mahmood and Trivedi, 2008). Therefore, solid waste management is important for the living conditions of all living things, especially on a national and international scale. For this reason, it can be said that it is necessary to examine the solid waste management that comes with the increasing environmental problems of the 21st century in a social context in order to solve the solid waste problem.

For the solution of environmental problems, it is necessary to develop different perspectives in individuals by examining the concepts, ideas, experiences, values and lifestyles that lead individuals to establish a wrong relationship with the environment (Ünder, 1996). This can undoubtedly be achieved with an effective, life-oriented environmental education. With environmental education, it is aimed to provide individuals with positive and permanent behavioral changes and to ensure the active participation of individuals in the solution of problems (Şimşekli, 2004). When these goals are realized, it will be possible to talk about the existence of individuals who are environmentally conscious, who behave towards environmental protection, who produce less waste by reducing their consumption, and who know the importance of recycling for the environment. Therefore, environmental education should be included in the education process for the development of environmentally sensitive and responsible societies (Sauvé, 1996). According to Eryılmaz (2017, p. 171), with the increasing acceptance of environmental problems in the 20th century in the society and in the international arena, the environmental issue has begun to find a wider place in social sciences. Because, educational, psychological, sociological, economic, ideological, political, management, participation and cultural factors are effective and determinant in the behavior of individuals in environmental issues (Uzunoğlu, 1996; Karaca, 2018). Man is a product of the environment he lives in because he is a social being. The sociocultural environment constitutes the memory, behavior and personality of individuals (Ünal, 2010). Therefore, the way societies perceive the environmental problem, their reactions and sensitivities to the problems differ in terms of the cultural and economic development level, shape and degree of the society they live in. Therefore, environmental problems should be examined in the context of environmental sociology by considering social variables (Özdemir, 1988; Konak, 2010). As a matter of fact, the social roles and social status of individuals affect their routines, habits, daily behaviors such as shopping and consumption. Therefore, it can be said that individuals' environmental protection or non-environmental behaviors are affected by their social roles and status.

According to the cultural characteristics of social life, factors such as gender, age, education level, occupation, which determine the social role and status of individuals as well as their individual identity and personality, are important social variables. While gender, one of these factors, affects the identity and personality of individuals, their social roles and statuses, and their attitudes towards events, the age factor is an important variable that affects individuals' personal and social behaviors, perceptions and attitudes. Educational status, which is another factor, affects every aspect of individuals' lives by determining their role and status in the society they live in. The occupational factor, on the other hand, affects the perceptions, attitudes and expectations of individuals as a phenomenon that determines their

place in society (Akyüz, 1991; Karakaş, 2003; Keskin Gürel, 2008). In short, social stratification and the positions of people are very effective and decisive in their daily lives (Çelik, 2015). This is also true for environmental behavior. For example, the possibilities and abilities of coping with, avoiding or compensating for the risk situation related to environmental problems differ between different vocational and educational levels (Beck, 2010 as cited in Karaboğa, 2016).

Sociologists find it important to understand and explain society through professions, since they include many social indicators in their body (Aytaç, 2003, p. 16). Therefore, occupation is one of the important elements of social classification (Laroque, 1969). Occupation primarily affects the social status and income level of the individual and his/her family. In addition, the profession determines who and how the individual spends his/her daily life. It also affects the mental and physical health of the individual. In addition to these, the profession has the power to change the ideas, values, measures and behaviors of the individual (Eke, 1987). In addition, it can be said that it affects many factors such as individuals' habits, behaviors, thoughts, skills, values, child-rearing techniques, nutrition, and speech (Ergün, 1994).

In industrialized countries, professional groups such as doctors, lawyers, engineers and teachers, who have completed their organization, participate much more actively in political, economic and cultural activities (Cirhinlioğlu, 1996, p. 7). The leaders of the professions, like the aforementioned occupational groups, are generally aware of their social identity (Goode, 1996). In this respect, having a job and a profession has positive effects on one's life and character. In this sense, the work of the individual determines the daily life of the individual and the general flow of them life (Ergün, 1994). In this context, the applications to be made in the solution of environmental problems may vary according to demographic differences (Baldassare & Katz, 1992). Therefore, it can be said that factors such as education, profession, age have an impact on the way individuals perceive environmental problems and their sensitivity to environmental problems.

When the literature on the subject is searched; Ebreo, Hershey and Vining (1999) examined the relationship between individuals' beliefs about environmentally conscious consumerism regarding solid waste issues and environmental attitudes, motivations and recycling behaviors; Cici, Şahin, Görgen and Deniz (2005) examined the environmental awareness and knowledge levels of teacher candidates in the context of solid waste pollution in terms of teacher candidates studying at different universities; Akdoğan and Güleç (2007) examined the attitudes and thoughts on solid waste management in terms of municipal administrators; Çimen and Yılmaz (2012) examined primary school students' knowledge and recycling behaviors in terms of different grade levels and gender; Demirbağ and Güngörmüş (2012) examined the knowledge and behaviors of individuals regarding domestic solid waste management in terms of age, marital status, education and socioeconomic status, occupation, social security and the number of people living at home; Karatekin and Merey (2015) examined the attitudes of social studies teacher candidates towards solid waste and recycling in terms of various variables; It is seen that Ak and Genç (2018) examined the recycling perception and recycling behaviors of university students.

In this study, in order to determine the attitudes of individuals towards waste and recycling, gender, age, education level, occupation (housewife, worker, farmer, civil servant, student, teacher, academician, tradesman, youth, religious officer), income status, environmental problems. The variables of interest about the environmental protection association and membership status are discussed. How solid waste and recycling are perceived by various layers of society is a matter of curiosity both within

the framework of environmental sociology and environmental education. Based on the hypothesis that individuals may show different attitudes in different socio-demographic variables, this study aims to measure how individuals perceive solid waste and recycling. In this direction, the general aim of this research is to determine the attitudes of individuals with different sociocultural and socioeconomic levels towards solid waste and recycling in terms of various variables. For this purpose, answers to the following questions are sought:

1. What is the level of individuals' attitudes towards solid waste and recycling?

2. Do individuals' attitudes towards solid waste and recycling differ according to their gender?

3. Do individuals' attitudes towards solid waste and recycling differ according to their age?

4. Do individuals' attitudes towards solid waste and recycling differ according to their education level?

5. Do individuals' attitudes towards solid waste and recycling differ according to their occupations?

6. Do individuals' attitudes towards solid waste and recycling differ according to their income?

7. Do individuals' attitudes towards solid waste and recycling differ according to their level of interest in environmental problems?

8. Do individuals' attitudes towards solid waste and recycling differ according to their membership in the environmental protection association?

Method

The Research Method

In the research, scanning model was used in order to reveal the attitudes of individuals from different sociocultural and socioeconomic levels towards solid waste and recycling. The scanning model is the description of a situation that existed in the past or still exists by the researcher, without changing the event, object, or individuals, without having an experimental effect on them (Karasar, 2012). Since this research aims to describe the attitudes of individuals towards solid waste and recycling, and to examine how some variables that may be effective on these attitudes differentiate individuals' attitudes, the research was designed with a survey model.

Participant Group

The population of the research consists of individuals over the age of 18 living in Turkey. Maximum variation sampling method, one of the purposive sampling methods, was used to determine the sample of the study. For this reason, individuals with different sociocultural and economic lives were chosen as the sample of the research. Maximum diversity sampling was chosen in the research to determine what kind of similarities there are between the situations that show diversity (Yıldırım and Şimşek, 2016). In this context, the sample of the research consists of a total of 558 individuals from different socio-cultural and economic life levels, in line with the principle of voluntary participation. Information about the sample of the study is given in Table 1.

Table 1. *Distribution of the individuals participating in the study according to the variables*

Gender	f	%	Occupation	f	%
Female	268	48,0	Religious comissary	73	13,1
Male	290	52,0	Teacher	72	12,9
Age			Housewife	62	11,1
18-25 years old	135	24,2	Officer	56	10,0
26-40 years old	292	52,3	Employee	55	9,9
41-55 years old	108	19,4	Not working (young group)	50	9,0
56 years and older	23	4,1	Small business	49	8,8
Educational level			Academician	49	8,8
Primary school	20	3,6	Student	48	8,6
Middle school	27	4,8	Farmer	44	7,9
High school	96	17,2	Income status		
Associate degree	97	17,4	No income	91	16,3
Licence	222	39,8	1000 and below	45	8,1
Graduate	96	17,2	Between 1001-2000	33	5,9
State of interest in environmental issues			Between 2001-3000	81	14,5
Yes (Related)	523	93,7	Between 3001-5000	185	33,2
No (Not relevant)	35	6,3	5001 and above	123	22,0
Environmental protection association membership status			Total	558	100
Member	29	5,2			
Not a member	529	94,8			
Total	558	100			

The Data Collection

"Attitude Scale Towards Solid Waste and Recycling" developed by Karatekin (2013) was used as a data collection tool in the research. The measurement tool consists of 33 items in total. The scale has a five-point Likert-type feature as strongly agree (5), agree (4), undecided (3), disagree (2), strongly disagree (1). The scale consists of three dimensions. These dimensions are "Entrepreneurship and participation", "Belief" and "Interest and sensitivity". The Cronbach alpha reliability coefficient calculated to determine the reliability of the scale was determined as .882 for the first factor, .882 for the second factor and .877 for the third factor. The Cronbach alpha reliability coefficient of these three dimensions is over 0.70 (Karatekin, 2013). A "Personal Information Form" was added to the data collection tool by the researchers. In this form, questions about the demographic information of the participants (gender, age, educational status, occupation, income status, interest in environmental problems, membership in environmental protection association) were included.

Data Collection Process

The collection process of the research data was carried out through a questionnaire consisting of personal information and an attitude scale towards solid waste and recycling. As the data was collected during the pandemic process, the questionnaire was collected both face-to-face and online, taking into account the relevant conditions. The scale items were transferred to Google Form by the researchers and the online link link was shared with the participants. Simultaneously, the scale form was applied face-to-face by the researchers within the conditions of accessibility to the participants. Participation in the research was based on volunteerism and the consent of the participants was obtained. The application time of the form is approximately 5-10 minutes. The period of obtaining all the data of the study is 60 (2 months) days.

The Data Analysis

The data collected in the research were analyzed with the SPSS program regarding the sub-problems determined. First of all, negative items (1, 4, 5, 6, 8, 9, 10, 15, 16, 17, 20, 25, 31, 32) in the data collection tool were recoded, and total scores were calculated and analyzes were made on these scores. The t test (Independent Sample t Test) was used to determine whether the total scores differ in terms of gender, interest in environmental problems, and environmental protection association membership status variables; Analysis of ANOVA (one-way analysis of variance) was conducted to determine whether there was a difference in age, occupation, education and income status variables. The level of significance in the analyzes was determined as 0.05. Evaluation intervals were determined in order to determine the level of attitudes of the participants towards solid waste and recycling. These:

1	1.80 is too low
1.81	low between 2.60
2.61	between 3.40 medium
3.41	between 4.20 high
Between 4.21	5.00 was determined as a very high level.

Ethical Permits of Research

All rules stated to be complied with within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were followed in this study. None of the actions mentioned under the heading of "Actions Against Scientific Research and Publication Ethics", which is the second part of the directive, have been carried out.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Kastamonu Universit, Social and Human Sciences Research and Publication Ethics Commission

Date of ethical review decision= 25.03.2021

Ethics assessment document issue number= 1/49

Findings

Findings on Solid Waste and Recycling Levels of Individuals

The levels of individuals regarding the scores they got from the Attitudes Towards Solid Waste and Recycling Scale are given in Table 2.

Table 2. *Levels of individuals regarding solid waste and recycling*

Waste and Recycling	N	$\overline{X}$	S
Entrepreneurship and Participation	558	3,65	7,74
Belief	558	3,86	3,78
Interest and Sensitivity	558	4,02	5,16
Total	558	3,82	13,91

As seen in Table 2, the average score of the answers given by the participants to the Attitude Scale towards Solid Waste and Recycling is $\overline{X}$ =3.82. The average score for the answers to the Entrepreneurship and Participation dimension is $\overline{X}$=3.65, the average score for the Belief dimension is $\overline{X}$=3.86, and the average score for the Interest and Sensitivity dimension is $\overline{X}$=4.02. According to these results, it can be said that the attitudes of the participants towards solid waste and recycling are high.

When the solid waste and recycling dimensions are examined, it is seen that the solid waste and recycling attitudes of the participants are high for each dimension. The dimension with the lowest average is entrepreneurship and participation.

Findings and Interpretations on the Difference of Individuals' Attitudes towards Solid Waste and Recycling Scale Scores by Gender

Table 3 shows the results of the t-test performed to determine whether there is a significant difference in the Attitudes Scale towards Solid Waste and Recycling Scale scores of individuals according to the gender variable.

Table 3. *T-Test Results for differences in individuals' attitudes towards solid waste and recycling scale scores by gender*

	Dimensions	Gender	N	$\overline{X}$	S	sd	T	p
Solid Waste and Recycling	Entrepreneurship and Participation	Female	268	52,07	7,19	556	2,515	,012
		Male	290	50,43	8,16			
	Belief	Female	268	31,08	3,78	556	1,213	,226
		Male	290	30,69	3,78			
	Interest and Sensitivity	Female	268	44,51	5,12	556	1,058	,291
		Male	290	44,04	5,20			
	Total	Female	268	127,67	13,56	556	2,123	,034
		Male	290	125,17	14,15			

In the entrepreneurship and participation sub-dimension, the average of female participants was calculated as $\overline{X}$=52.07, and the average of male participants was calculated as $\overline{X}$=50.43. A significant difference was found in entrepreneurship and participation sub-dimension scores according to gender [$t_{(556)}$ = 2,515; p<0,05]. This difference is in favor of female participants. According to this finding, it can be said that female participants are more sensitive than male participants in taking action and behaving towards solid waste and recycling.

In the belief sub-dimension, the average of female participants was calculated as $\overline{X}$=31,08, and the average of male participants was calculated as $\overline{X}$=30.69. There was no significant difference in belief sub-dimension scores according to gender [$t_{(556)}$ = 1,213; p>0,05].

In the sub-dimension of interest and sensitivity, the average of female participants was calculated as $\overline{X}$=44.51, and the average of male participants was calculated as $\overline{X}$=44.04. There was no significant difference according to gender in the scores of interest and sensitivity sub-dimensions [$t_{(556)}$ = 1,058; p>0,05].

The average of the scores of the female participants in the solid waste and recycling scale was calculated as $\overline{X}$=127.67, and the average of the male participants was calculated as $\overline{X}$=125.17. Solid waste and recycling scale scores show a significant difference according to the gender of the participants [$t_{(556)}$ = 2,123; p<0,05]. This difference is in favor of female participants. According to these findings, it can be said that female participants have more positive attitudes towards solid waste and recycling than male participants.

Findings and Interpretations on the Differences in Individuals' Attitudes Towards Solid Waste and Recycling Scale Scores by Age Level

The results of the ANOVA analysis performed to determine whether there is a significant difference in the scores of the Attitudes towards Solid Waste and Recycling Scale of the individuals according to the age level are given in Table 4.

Table 4. *One-Way analysis of variance for age differences in individuals' attitudes towards solid waste and recycling scale scores*

Dimensions	Source of Variance	KT	sd	KO	F	P	Significant Difference
Entrepreneurship and Participation	Between groups	180,725	3	60,242	1,003	,391	-
	Within groups	33263,162	554	60,042			
	Total	33443,887	557				
Belief	Between groups	126,304	3	42,101	2,965	,032	2-4
	Within groups	7867,125	554	14,201			
	Total	7993,428	557				
Interest and Sensitivity	Between groups	359,244	3	119,748	4,574	,004	2-1
	Within groups	14504,894	554	26,182			
	Total	14864,138	557				
Total	Between groups	1580,797	3	526,932	2,746	,042	2-4
	Within groups	106301,922	554	191,881			3-4
	Total	107882,719	557				

Entrepreneurship and participation sub-dimension scores of the participants did not differ significantly by age [$F_{(3-554)=}$ 1,003; p>0,05].

The belief sub-dimension scores of the participants showed a significant difference according to age level [$F_{(3-554)=}$ 2,965; p<0,05]. According to the results of the Bonferroni test, which was conducted to determine between which groups the difference was, the average belief score of the participants aged between 26-40 ($\bar{X}$=31,18) and the average of belief score of the participants aged 56 and over ($\bar{X}$=29.00) were found to be between the ages of 26-40. in favor of the participants. According to this finding, it can be said that the participants aged between 26-40 have higher beliefs about reducing waste and the benefits of recycling.

Participants' interest and sensitivity sub-dimension scores showed a significant difference according to age level [$F_{(3-554)=}$ 4,574; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the mean interest and sensitivity score of the participants aged between 18-25 ($\bar{X}$=43.27) and the mean score of interest and sensitivity of the participants aged between 26-40 ($\bar{X}$=44.91) in favor of the participants aged between 26-40.

The scores of the participants from the solid waste and recycling scale in general showed a significant difference according to the age level [$F_{(3-554)=}$ 2,746; p<0,05]. According to the results of the LSD test, which was conducted to determine between which groups the difference was, the mean score of the participants aged between 26-40 ($\bar{X}$=127,35) and the mean score of the participants over the age of 56 ($\bar{X}$=120.60) were in favor of the participants aged between 26-40. There is a significant difference. A significant difference was found between the mean score of the participants aged 41-55 ($\bar{X}$=127,35)

and the mean score of the participants aged 56 and over ($\bar{X}$=120.60) in favor of the participants aged 41-55.

When the average scores of both the overall total and sub-dimensions of the scale are examined, it is seen that the younger and older participants have lower attitudes towards solid waste and recycling.

Findings and Comments on the Differences in Individuals' Attitudes towards Solid Waste and Recycling Scale Scores by Education Level

The results of the ANOVA analysis performed to determine whether there is a significant difference in the scores of the Attitudes towards Solid Waste and Recycling Scale of the individuals according to the level of education are given in Table 5.

Table 5. *One-Way analysis of variance for the differences in ındividuals' attitudes towards solid waste and recycling scale scores by education level*

Dimensions	Source of Variance	KT	Sd	KO	F	P	Significant Difference
Entrepreneurship and Participation	Between groups	730,827	5	146,165	2,466	,032	1-4, 1-6 2-4, 2-6 3-4, 3-6
	Within groups	32713,060	552	59,263			
	Total	33443,887	557				
Belief	Between groups	126,304	5	112,018	8,318	,000	1-4, 1-5 1-6, 2-4
	Within groups	7867,125	552	13,466			
	Total	7993,428	557				
Interest and Sensitivity	Between groups	359,244	5	161,624	6,347	,000	1-4, 1-5 1-6
	Within groups	14504,894	552	25,464			
	Total	14864,138	557				
Total	Between groups	1580,797	5	1165,779	6,306	,000	1-4, 1-6 2-6
	Within groups	106301,922	552	184,880			
	Total	107882,719	557				

The entrepreneurship and participation sub-dimension scores of the participants showed a significant difference according to the education level [$F_{(5-552)=}$ 2,466; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the average score of the participants at the postgraduate level ($\bar{X}$=51.89), the average score of the participants at the primary school education level ($\bar{X}$=47.50), and the average score of the participants at the high school education level($\bar{X}$=49.60) in favor of the participants who are at the postgraduate level; The average score of the participants at the undergraduate education level ($\bar{X}$=51.81) and the average score of the participants at the high school education level($\bar{X}$=49.60) and the average score of the participants at the primary education level ($\bar{X}$=47.50) in favor of the participants at the undergraduate education level; The average score of the participants with associate degree education ($\bar{X}$=51,88) and the average score of the participants with high school education ($\bar{X}$=49.60) and the participants with primary education level ($\bar{X}$=47.50) in favor of the participants with associate degree education significant difference was found.

The belief sub-dimension scores of the participants showed a significant difference according to the education level [$F_{(3-552)=}$8,318; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the average score of the participants at the graduate level ($\bar{X}$=32.13) and the average score of the participants at the high school education level ($\bar{X}$=29.51), the average score of the participants at the secondary education level ($\bar{X}$=29.40) and the average score of the participants at the primary school education level ($\bar{X}$=28.60) in favor of the

participants at the graduate education level; A significant difference was found between the mean score of the participants at the undergraduate education level ($\bar{X}$=31.40) and the average score of the participants at the high school education level ($\bar{X}$=29.51) in favor of the participants at the undergraduate education level. This finding can be interpreted as the higher the education level of individuals, the more they believe in solid waste and recycling.

Participants' interest and sensitivity sub-dimension scores showed a significant difference according to education level [$F_{(3-552)=}$ 6,347; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the average score of the participants at the graduate level ($\bar{X}$=46.08) and the average score of the participants at the high school education level ($\bar{X}$=43.09), the average score of the participants at the secondary education level ($\bar{X}$=43.09) a significant difference was found between the mean score ($\bar{X}$=40.75) of the participants at the primary school education level ($\bar{X}$=42.37) and the participants at the graduate education level in favor of the participants. This finding can be interpreted as the higher the education level, the more interested and sensitive individuals are towards solid waste and recycling.

The scores of the participants from the solid waste and recycling scale in general showed a significant difference according to the education level [$F_{(3-552)=}$ 6,306; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the average score of the participants at the postgraduate level ($\bar{X}$=130.11), the average score of the participants at the high school education level ($\bar{X}$=122.20), and the average score of the participants at the primary school education level ($\bar{X}$=116.85) in favor of the participants who are at the postgraduate level; A significant difference was found between the mean score of the participants at the undergraduate education level ($\bar{X}$=127.74) and the average score of the participants at the primary school education level ($\bar{X}$=116.85) in favor of the participants at the undergraduate education level.

According to these findings, when all dimensions of the scale are evaluated together, it is seen that one of the most important factors affecting the sensitivity of the participants about solid waste and recycling is the level of education. This finding can be interpreted as the higher the education level, the more positive attitudes the participants have towards solid waste and recycling.

Findings and Comments on the Differences in Individuals' Attitudes Towards Solid Waste and Recycling Scale Scores by Occupation

The results of the ANOVA analysis performed to determine whether there is a significant difference in the scores of the Attitude Scale towards Solid Waste and Recycling of the individuals according to the occupational variable are given in Table 6.

Table 6. *One-Way analysis of variance for the differences in ındividuals' attitudes towards solid waste and recycling scale scores by occupation*

Dimensions	Source of Variance	KT	sd	KO	F	P	Significant Difference
Entrepreneurship and Participation	Between groups	1697,366	9	188,596			2-5
	Within groups	31746,521	548	57,932	3,255	,001	9-5
	Total	33443,887	557				
Belief	Between groups	561,276	9	62,364			
	Within groups	7432,152	548	13,562	4,598	,000	2-7
	Total	7993,428	557				
Interest and Sensitivity	Between groups	1023,782	9	113,754			
	Within groups	13840,356	548	25,256	4,504	,000	2-10
	Total	14864,138	557				
Total	Between groups	7357,744	9	817,527			2-5
	Within groups	100524,975	548	183,440	4,457	,000	
	Total	107882,719	557				

As a result of the analysis, from the solid waste and recycling scale sub-dimensions; The entrepreneurship and participation sub-dimension scores of the participants showed a significant difference according to their occupations [$F_{(9-548)=}$ 3,255; p<0,05]. According to the results of the Tukey test, which was conducted to determine between which groups the difference was, a significant difference was found between the mean score of the participants who were teachers ($\bar{X}$=53.27) and the mean score of the participants who were workers ($\bar{X}$=47.92) in favor of the participants who were teachers. A significant difference was found between the mean score of the participants who were religious officials ($\bar{X}$=53.35) and the mean scores of the participants who were workers ($\bar{X}$=47.92) in favor of the participants who were religious officials.

The belief sub-dimension scores of the participants showed a significant difference according to their occupations [$F_{(9-548)=}$ 4,598; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, a significant difference was found between the mean score of the participants who were teachers ($\bar{X}$=32,30) and the mean score of the participants who were tradesmen ($\bar{X}$=29.04) in favor of the participants who were teachers.

Interest and sensitivity sub-dimension scores of the participants showed a significant difference according to their occupations [$F_{(9-548)=}$ 4,504; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, a significant difference was found between the mean score of the participants who were teachers ($\bar{X}$=46.31) and the mean score of the participants who were farmers ($\bar{X}$=41.61) in favor of the participants who were teachers.

The overall solid waste and recycling scale scores of the participants showed a significant difference according to the level of education [$F_{(9-548)=}$ 4,457; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, a significant difference was found between the mean score of the participants who were teachers ($\bar{X}$=131,90) and the mean score of the participants who were workers ($\bar{X}$=121.03) in favor of the participants who were teachers.

When all dimensions of the scale are evaluated according to these findings, it is seen that the education level of the participants is related to their profession and affects their attitudes towards solid waste and recycling. It can be said that the attitudes of the participants, who are teachers, towards solid waste and recycling are more positive, since teaching is the most sensitive professional group and has

an environmental role. When the descriptive table regarding the profession variable is examined, it is seen that the average of the scores of teachers, civil servants, academicians, youth and religious officials from the solid waste and recycling scale is higher than that of students, housewives, workers, tradesmen and farmers, both in the overall scale and in the sub-dimensions.

Findings and Interpretations on the Differences in Individuals' Attitudes Towards Solid Waste and Recycling Scale Scores According to Income Status

The results of the ANOVA analysis performed to determine whether there is a significant difference in the scores of the Attitudes towards Solid Waste and Recycling Scale of the individuals according to the income status variable are given in Table 7.

Table 7. *One-Way analysis of variance for the differences in ındividuals' attitudes towards solid waste and recycling scale scores by ıncome status*

Dimensions	Source of Variance	KT	sd	KO	F	P	Significant Difference
Entrepreneurship and Participation	Between groups	397,058	5	79,412			
	Within groups	33046,830	552	59,867	1,326	,251	-
	Total	33443,887	557				
Belief	Between groups	360,126	5	72,025			4-3
	Within groups	7633,303	552	13,828	5,208	,000	5-3
	Total	7993,428	557				
Interest and Sensitivity	Between groups	463,585	5	92,717			
	Within groups	14400,553	552	26,088	3,554	,004	5-1
	Total	14864,138	557				
Total	Between groups	3236,938	5	647,388			4-3
	Within groups	104645,780	552	189,576	3,415	,005	5-3
	Total	107882,719	557				

Entrepreneurship and participation sub-dimension scores of the participants did not show a significant difference according to their income level [$F_{(5-552)}$= 1,326; p>0,05].

The belief sub-dimension scores of the participants showed a significant difference according to their income level [$F_{(5-552)}$= 5,208; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, the average score of the participants with 5001 and higher income level ($\bar{X}$=31.52) and the average score of the participants with income level of 3001-5000 ($\bar{X}$=31.50) and income between 2001-3000 a significant difference was found between the mean score ($\bar{X}$=29.48) of the participants with a high income level of 5001 and in favor of the participants with an income level of 5001 and above. This finding can be interpreted as the higher the average income level of individuals, the more they believe in solid waste and recycling. Participants' interest and sensitivity sub-dimension scores showed a significant difference according to their income level [$F_{(5-552)}$= 3,554; p<0,05]. According to the results of the Scheffe test, which was conducted to determine between which groups the difference was, a significant difference was found between the average score of the participants with an income level of 1000 and below ($\bar{X}$=42.22) and the average score of the participants with an income level of 5001 and above ($\bar{X}$=45.30) in favor of the participants with an income level of 5001 and above. This finding can be interpreted as the higher the income level, the more interested and sensitive individuals are towards solid waste and recycling.

The scores of the participants from the solid waste and recycling scale in general showed a significant difference according to their income level [$F_{(5-552)}$= 3,415; p<0,05]. According to the results of the Bonferroni test, which was conducted to determine between which groups the difference was, the

average score of the participants with an income level of 5001 and above ($\bar{X}$=128.52), the average score of the participants with an income level of 3001-5000 ($\bar{X}$=128.26), and the income between 2001 and 3000 A significant difference was found between the mean score ($\bar{X}$=122.60) of the participants with a high income level of 5001 and in favor of the participants with an income level of 5001 and above. According to these findings, it can be said that the participants with high income levels have more positive attitudes towards solid waste and recycling.

Findings Concerning the Differences in Individuals' Attitudes towards Solid Waste and Recycling Scale Scores According to Their Interests in Environmental Problems

Table 8 shows the results of the t-test performed to determine whether there is a significant difference in the Attitudes towards Solid Waste and Recycling Scale Scores of individuals according to the variable of interest in environmental problems.

Table 8. *The t-test results for the difference in the attitudes towards solid waste and recycling scale scores of the individuals according to their interest in environmental problems*

	Dimensions	Interest in Environmental Problems	N	$\bar{X}$	S	sd	T	p
Solid Waste and Recycling	Entrepreneurship and Participation	Yes (Related)	523	51,78	7,36	556	6,92	,000
		No (irrelevant)	35	42,77	8,55			
	Belief	Yes (Related)	523	31,03	3,70	556	3,58	,000
		No (irrelevant)	35	28,68	4,39			
	Interest and Sensitivity	Yes (Related)	523	44,55	4,95	556	5,45	,000
		No (irrelevant)	35	39,77	6,22			
	Total	Evet (İlgili)	523	127,38	13,33	556	6,92	,000
		Hayır (ilgisiz)	35	111,22	13,87			

A significant difference was found in the scores of the entrepreneurship and participation sub-dimension according to the level of interest in environmental problems [$t_{(556)}$= 6.92; p<0.05]. According to this finding, it can be said that participants who are interested in environmental issues in entrepreneurial and participation behaviors towards solid waste and recycling are more sensitive than participants who are not interested in environmental issues.

A significant difference was found in belief sub-dimension scores according to the level of interest in environmental problems [$t_{(556)}$= 3.58; p<0.05]. According to this finding, it can be said that the participants who are interested in environmental problems have higher beliefs about solid waste and recycling than the participants who are not.

A significant difference was found in the scores of the sub-dimension of interest and sensitivity according to the state of interest in environmental problems [$t_{(556)}$=5.45; p<0.05]. According to this finding, it can be said that the participants who are interested in environmental problems are more interested and more sensitive about solid waste and recycling than the participants who are not.

Solid Waste and Recycling Scale Scores show a significant difference according to the participants' level of interest in environmental problems [$t_{(556)}$=6.92; p<0.05]. According to these findings, when all dimensions of the scale are evaluated, it can be said that the participants who are interested in environmental problems have more positive attitudes towards solid waste and recycling than the participants who are not interested.

Findings and Interpretations on the Differences in Individuals' Attitudes Towards Solid Waste and Recycling Scale Scores by Environmental Protection Association Membership Status

Table 9 shows the results of the t-test conducted to determine whether there is a significant difference in the scores of the Attitudes towards Solid Waste and Recycling Scale of the individuals according to the variable of membership to the environmental protection association.

Table 9. *T-Test results for the differences in ındividuals' attitudes towards solid waste and recycling scale scores by environmental protection association membership status*

	Dimensions	Environmental protection association membership status	N	$\overline{X}$	S	Sd	T	P
Solid Waste and Recycling	Entrepreneurship and Participation	Member	29	54,41	8,72			
		Not a member	529	51,04	7,66	556	2,28	,023
	Belief	Member	29	33,10	2,75			
		Not a member	529	30,76	3,80	556	3,26	,001
	Interest and Sensitivity	Member	29	46,75	5,07			
		Not a member	529	44,13	5,14	556	2,67	,008
	Total	Member	29	134,27	14,03			
		Not a member	529	125,94	13,79	556	3,16	,002

A significant difference was found in the scores of the entrepreneurship and participation sub-dimension according to the membership status of the environmental protection association [$t_{(556)}$ = 2,28; p<0,05]. This difference is in favor of the participants who are members of the environmental protection association. According to this finding, it can be said that the participants who are members of the environmental protection association are more sensitive than the participants who are not members of the environmental protection association in terms of entrepreneurial and participation behaviors towards solid waste and recycling.

A significant difference was found in belief sub-dimension scores according to the membership status of the environmental protection association [$t_{(556)}$ = 3,26; p<0,05]. This difference is in favor of the participants who are members of the environmental protection association. According to this finding, it can be said that the participants who are members of the environmental protection association have higher beliefs about solid waste and recycling than the participants who are not members of the environmental protection association.

A significant difference was found in the scores of the sub-dimension of interest and sensitivity according to the membership status of the environmental protection association [$t_{(556)}$ = 2,67; p>0,05]. This difference is in favor of the participants who are members of the environmental protection association. According to this finding, it can be said that the participants who are members of the environmental protection association have a higher interest and sensitivity towards solid waste and recycling than the participants who are not members of the environmental protection association.

Solid waste and recycling scale scores show a significant difference according to the status of being a member of the environmental protection association of the participants [$t_{(556)}$ = 3,16; p>0,05]. This difference is in favor of the participants who are members of the environmental protection association. According to these findings, when all dimensions of the scale are evaluated, it can be said that the participants who are members of the environmental protection association have more positive attitudes towards solid waste and recycling than the participants who are not members of the environmental protection association.

Discussion and Conclusion

According to the results obtained from the research, it has been determined that individuals' attitudes towards solid waste and recycling are at a high level. Karatekin and Merey (2015) found that social studies teacher candidates generally have positive attitudes towards solid waste and recycling. In a different study that determines the awareness and perception of university students about recycling, it is seen that the awareness of recycling is in certain areas such as homes and streets and that they use recycling at a minimum level in practice (Ak and Genç, 2018). In addition, although there are no studies that directly determine the levels of solid waste and recycling, Cici et al. (2005) found that the knowledge level of teacher candidates on solid waste pollution is not sufficient in their studies; Yücel, Altunkasa, Gucsay, Uslu and Say (2006) found in their study that individuals' environmental sensitivity is at a moderate level; Akdoğan and Güleç (2007), on the other hand, stated that the importance of solid waste management is not yet fully understood and studies on the subject are at the initial level; determined that municipalities' solid waste management is at the initial level. Keskin Gürel (2008), on the other hand, determined that individuals' sensitivity to environmental problems and their level of environmental awareness are not very high.

In the study, it is seen that the average of the attitude score of the participants in the "belief" and "interest and sensitivity" dimensions is high, while the average of the attitude points they get from the "entrepreneurship and participation" dimension is low. It can be said that the participants have positive thoughts, are interested and sensitive about solid waste and recycling activities, but they find less participatory behaviors. It can be said that the participants have positive thoughts, are interested and sensitive about solid waste and recycling activities, but they find less participatory behaviors. This result indicates that in the study conducted by Karatekin and Merey (2015), pre-service teachers' attitude scores in the dimensions of "belief" and "interest and sensitivity" were higher; Names from the "entrepreneurship and participation" dimension show that there is a common point with the result that the mean attitude score is lower than the other dimensions. In another study, it was determined that the mean scores of pre-service teachers' environmental awareness in the dimensions of "organic waste and composting" and "packaging preferences" were at a moderate level, while the averages of the scores they got from the dimensions of "recycling" and "waste reduction" were found to be at a good level (Cici et al., 2005).

The amount of solid waste produced per capita varies according to specific garbage production and its components, socio-economic and cultural structure of the population, consumption habits and many similar factors (Karagözoğlu, Özyonar, Yılmaz and Atmaca, 2009). According to the results obtained from the research, when the total attitude scores of the individuals towards solid waste and recycling are examined, there is a significant difference according to the gender variable. Accordingly, it is seen that female participants' attitudes towards solid waste and recycling are higher than male participants. The reason for this situation can be explained as the feeling of "responsibility towards the environment/nature", which is an important element of environmental awareness, is instinctively reflected in the attitudes and behaviors of women, especially due to its nature (Kabaş, 2004; Kükrer, 2012). In addition, most of the consequences of environmental problems concern women more. This situation necessitates them to manage them with an understanding of environmental management and sustainability (Güneş, 2013). The result of the study that determined the attitudes of social studies teacher candidates towards solid waste and recycling also supports this finding (Karatekin and Merey,

2015). In addition, in different studies related to the subject, it has been determined that women have higher environmental awareness and attitudes towards environmental problems than men (Yücel et al., 2006; Keskin Gürel, 2008; Ünal, 2010).

Another result of the study is that younger participants and older participants have lower attitudes towards solid waste and recycling. In Ericson's personality theory, the transition from adolescence to adulthood defines young age as "intimacy versus isolation". Individuals in this age group are in search of emotional relationships. He defines the middle age segment as "productivity versus stagnation". The task of individuals in this age group is to raise and shape the next generation. Adults who do not experience this sense of productivity may experience stagnation. The advanced age group is defined as "despair against self-integrity". Individuals in this age group may experience hopelessness or self-integrity when they evaluate their lives (Tuna, 2011). In this context, it can be said that middle-aged participants have higher attitudes towards solid waste and recycling in order to be beneficial to future generations compared to young and older individuals. While Keskin Gürel (2008) determined in her research that the sensitivity of young people to environmental problems is higher than that of the elderly, Ünal (2010) emphasizes that the sensitivity of individuals increases as they get older.

In the study, it was concluded that as the education level of the participants increased, their attitudes towards solid waste and recycling also increased positively. The qualitative aspect of the lifestyle is in close interaction with the level of education as the way in which the consumption standard is realized with the influence of emotions, thoughts and habits. As the level of education increases, it brings about changes in every aspect of a person's life (Eke, 1987). These findings related to the education level variable in this study are the findings of Yücel et al. (2006), showing that the level of consciousness, attitude and sensitivity towards the environment increases depending on the level of education; the results of Keskin Gürel (2008), who stated that sensitivity to environmental problems and environmental awareness differ according to educational status; the results of Ünal (2010), who determined that the participants with a high level of education have a high level of sensitivity to environmental problems; It is seen that this is in line with the results of Kükrer (2012), which shows that there is a significant difference between environmental responsibility and educational status.

In the research, it has been determined that there is a difference in the attitudes of the participants towards solid waste and recycling according to their profession. In this context, it has been determined that the average scores of teachers, civil servants, academicians, youth and religious officials from the solid waste and recycling scale are higher than students, housewives, workers, tradesmen and farmers, both in the overall scale and in the sub-dimensions. It was concluded that the attitudes of the participants, especially teachers, towards solid waste and recycling were more positive. In this sense, it can be said that the profession affects the lifestyles of individuals (Eke, 1987). Yücel et al. (2006) found that the average of the environmental awareness scores of civil servants, students and private sector employees was higher than that of farmers, retired, housewives, tradesmen, workers and the unemployed. It can be said that this result is partially similar to the result obtained from the research.

According to the results obtained from the research, it was concluded that as the income level of the participants increased, their attitudes towards solid waste and recycling also increased positively. Straughan and Roberts (1999) reveal in their study that income level is directly proportional to environmental responsibility. Yücel et al. (2006), on the other hand, emphasize that individuals' economic concerns can cause their attitude levels. Kükrer (2012) found in his study that as the income

level increases, environmental responsibility also increases. However, high income alone is not a sufficient factor for individuals to show environmental awareness. Cultural development also has a significant impact on environmental awareness (Hanay and Koçer, 2006). As a matter of fact, in a different study, it is seen that teacher candidates with low family income are more sensitive to the solution of solid waste problem and participation in recycling than teacher candidates with high income (Karatekin & Merey, 2015).

In the research, it has been determined that the participants who are interested in environmental problems have more positive attitudes towards solid waste and recycling than the participants who are not interested in environmental problems. While Öcal (2013) stated that as the level of pre-service teachers' interest in environmental issues increased, the average of their attitude scores towards the environment also increased, Karatekin, Kuş and Merey (2014) found that pre-service teachers had less interest in environmental issues. As a matter of fact, environmental problems arise from indifferent human behavior. Individuals who are not made aware of the problems that arise as a result of these behaviors remain indifferent and insensitive to events that they think do not directly affect them (Özmen, Çakmakçı Çetinkaya and Nehir, 2005).

In the study, it was concluded that the participants who are members of the environmental protection association have more positive attitudes towards solid waste and recycling than the participants who are not members of the environmental protection association. Çabuk and Karacaoğlu (2003) state that university students participate in the work of voluntary organizations working on the environment, but a significant part of the students never participate. Karatekin et al. (2014) stated in their study that teacher candidates are not members of any non-governmental organization related to the environment. Uysal (2018), on the other hand, emphasizes that individuals who are members of non-governmental organizations have more responsibility and exhibit participatory behavior. However, it can be said that being a member of environmental protection associations will be effective in increasing the environmental awareness of individuals. In this context, since the membership of individuals in non-governmental organizations related to the environment is very low, it is necessary to increase the number of members by promoting the organizations that show these activities (Yücel et al., 2006).

When the items belonging to the attitude scale towards solid waste and recycling are evaluated, the items that the participants mostly agree with are; "When I encounter a solid waste problem, I take initiatives for a solution", "I support the investments made for recycling even though it causes an increase in taxes", "I am aware of the environmental problems caused by solid waste", "I feel sad that solid wastes are not used in recycling". This shows that the attitudes of the participants on solid waste and recycling are generally participatory, interested and sensitive. This indicates that individuals who are sensitive and knowledgeable about recycling also have high general environmental knowledge (Vining and Ebreo, 1990). Demirbağ and Güngörmüş (2012) determined in their study that individuals have knowledge about recycling of wastes and that separating garbage is beneficial for the environment. According to Bartelings and Sterner (1999), when appropriate infrastructure that facilitates recycling is established, individuals are willing to devote more time to recycling.

When the items belonging to the attitude scale towards solid waste and recycling are evaluated, the items that the participants least agree with are; "I do not separate waste materials for recycling at home", "I do not believe that recycling of solid wastes will contribute to the country's economy", "Even

though there is a recycling bin around me, I do not separate the wastes and put them in the relevant bin". The low rate of participation in these items indicates that the participants do not support negative behaviors related to solid waste and recycling. Therefore, it can be said that the fact that the answers given to the items are not positive complement each other in the dimensions of entrepreneurship and participant, belief, interest and sensitivity regarding solid waste and recycling. In a study conducted by Demirbağ and Güngörmüş (2012), it was determined that it is important for individuals to separate domestic wastes, but they accumulate mixed wastes without separating them.

Recommendations

Solid waste and recycling are issues related to every aspect of life. From this point of view, it is possible to improve the knowledge, behavior and attitudes of men and middle-aged individuals about solid waste and recycling, especially based on the results of the research, especially for all individuals in the society. Therefore, it can be realized with a sensitive approach to these issues, with the idea that solid waste management and recycling are important. In this context, individuals' interest in environmental problems should be increased and their membership in environmental protection association should be encouraged.

Research results show that there is a linear relationship between education and attitudes towards solid waste and recycling. Therefore, in order for individuals to have positive attitudes towards solid waste and recycling, solid waste and recycling should be evaluated within the lifelong learning process.

Individuals involved in every phase of the production, distribution and consumption processes can be informed in terms of giving importance to the subject. For our future, every individual in the society should be sensitive to waste management and recycling. In this regard, it is important that relevant institutions take concrete steps (free courses, programs, seminars on waste and recycling).

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: %33,4

Author 2: %33,3

Author 3: %33,3

Conflict Statement

There is no conflict of interest regarding the research.

Genişletilmiş Türkçe Özet

Toplumsal Bakış Açısıyla Katı Atık ve Geri Dönüşüme İlişkin Tutumların İncelenmesi

Giriş

Toplumlar ilk başlarda yukarıda belirtilen çevre sorunlarıyla çok fazla ilgilenmemişlerdir. Fakat küresel hastalıklar, beslenme sorunu, radyasyon, doğal kaynakların azalması gibi durumların kendilerini olumsuz bir şekilde etkilemeye başlamasıyla birlikte çevre sorunları fark edilmeye başlanmıştır (Çimen ve Yılmaz, 2012). Dolayısıyla küresel çevre sorunlarına çözüm bulmak için ülkeler arasında işbirlikli eylemlere ihtiyaç duyulmuştur (Hoel, 1991).

Günümüzde önemli çevre sorunlarından birisi ise atıklardır. Atıklar, ekonomik büyüme, sanayileşme ile birlikte kentleşme ve nüfus artışı gibi nedenlerle sürekli artmaktadır. Atıklar, çevreyi ve insanları doğrudan veya dolaylı olarak etkilemektedir. Bu etkiler biyolojik, kimyasal ve fiziksel özelliklerde olabilmektedir. Atıklar veba, kolera, dizanteri, tüberküloz, kuduz, sıtma gibi hastalıklara; çöp depolama yerlerinde oluşan sızıntı sulara ve gazlara neden olmaktadır. Dolayısıyla atıkların fiziksel, biyolojik ve kimyasal açıdan insanlara ve diğer canlılara birtakım zararları söz konusudur (Palabıyık, 2001).

Eryılmaz'a (2017, s. 171) göre, 20. yüzyılda artan çevre sorunları toplumda ve uluslararası alanda kabul edilmesiyle birlikte çevre konusu sosyal bilimlerde daha geniş yer bulmaya başlamıştır. Çünkü çevre ile ilgili konularda bireylerin davranışlarında eğitim, psikolojik, sosyolojik, ekonomik, ideolojik, politik, yönetim, katılım ve kültürel unsurlar etkili ve belirleyicidir (Uzunoğlu, 1996; Karaca, 2018). Toplumsal yaşamın kültürel özelliklerine göre kişilerin bireysel kimlik ve kişiliğinin yanında toplumsal rol ve statülerini de belirleyen cinsiyet, yaş, öğretim durumu, meslek gibi faktörler önemli sosyal değişkenlerdir. Bu faktörlerden cinsiyet, bireylerin kimlik ve kişiliğini, toplumsal rol ve statülerini, olaylar karsısındaki tutumlarına etki ederken, yaş faktörü, bireylerin kişisel ve toplumsal davranış, algılama ve tutumlarını etkileyen önemli değişkenlerdir. Bir diğer faktör olan öğrenim durumu, bireylerin yaşadığı toplumdaki rol ve statüsünü belirleme ile yaşamlarının her alanını

etkilemektedir. Meslek faktörü ise bireylerin toplumdaki yerini tayin eden bir olgu olarak algılama, tutum ve beklentilerine etki etmektedir (Akyüz, 1991; Karakaş, 2003; Keskin Gürel, 2008).

Bu çalışmada ise, bireylerin atık ve geri dönüşüme ilişkin tutumlarını belirlemek amacıyla cinsiyet, yaş, öğrenim durumu, meslek (ev hanımı, işçi, çiftçi, memur, öğrenci, öğretmen, akademisyen, esnaf, gençler, din görevlisi), gelir durumu, çevre sorunları hakkında ilgi, çevre koruma derneğine üyelik durumu değişkenleri ele alınmıştır. Katı atık ve geri dönüşümün toplumun çeşitli tabakaları tarafından nasıl algılandığı hem çevre sosyoloji hem de çevre eğitimi çerçevesinde merak konusudur. Farklı sosyo-demografik değişkenlerde, bireylerin farklı tutumlar gösterebileceği hipotezinden hareketle bu çalışma, bireylerin katı atık ve geri dönüşümü nasıl algıladığını ölçmeye yöneliktir. Bu doğrultuda bu araştırmanın genel amacı farklı sosyokültürel ve sosyoekonomik düzeye sahip bireylerin çeşitli değişkenler açısından katı atık ve geri dönüşüme ilişkin tutumlarını tespit etmektir. Bu amaç doğrultusunda aşağıdaki sorulara cevap aranmaktadır:

1. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları ne düzeydedir?

2. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları cinsiyetlerine göre farklılaşmakta mıdır?

3. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları yaşlarına göre farklılaşmakta mıdır?

4. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları eğitim düzeylerine göre farklılaşmakta mıdır?

5. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları mesleklerine göre farklılaşmakta mıdır?

6. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları gelir durumlarına göre farklılaşmakta mıdır?

7. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları çevre sorunları hakkındaki ilgi düzeyine göre farklılaşmakta mıdır?

8. Bireylerin katı atık ve geri dönüşüme ilişkin tutumları çevre koruma derneğine üyelik durumuna göre farklılaşmakta mıdır?

Yöntem

Araştırmada farklı sosyokültürel ve sosyoekonomik düzeye sahip bireylerin katı atık ve geri dönüşüme ilişkin tutumlarını ortaya koyabilmek amacıyla tarama modeli kullanılmıştır. Tarama modeli, araştırmacı tarafından olay, nesne, bireyleri değiştirmeden, onlara deneysel bir etkide bulunmadan, geçmişte var olan veya hala var olan bir durumu olduğu şekliyle betimlenmesidir (Karasar, 2012). Araştırmanın evrenini Türkiye'de yaşayan 18 yaş üzeri bireyler oluşturmaktadır. Araştırmanın örnekleminin belirlenmesinde amaçlı örnekleme yöntemlerinden maksimum çeşitlilik örnekleme yöntemi kullanılmıştır. Çeşitlilik gösteren durumlar arasında ne tür benzerliklerin olduğunu tespit etmek için araştırmada maksimum çeşitlilik örneklemesi seçilmiştir (Yıldırım ve Şimşek, 2016). Bu bağlamda araştırmanının örneklemini gönüllü katılım ilkesi doğrultusunda, farklı sosyokültürel ve ekonomik yaşam düzeylerinde yer alan toplam 558 birey oluşturmaktadır.

Araştırmada veri toplama aracı olarak Karatekin (2013) tarafından geliştirilen "Katı Atık ve Geri Dönüşüme Yönelik Tutum Ölçeği" kullanılmıştır. Ölçme aracı toplam 33 maddeden oluşmaktadır. Ölçek üç boyuttan oluşmuştur. Bu boyutlar "Girişimcilik ve katılım", "İnanç" "İlgi ve duyarlılık" boyutlarıdır. Ölçeğin güvenirliğini belirlemek için hesaplanan Cronbach alfa güvenilirlik katsayısı birinci faktör için .882, ikinci faktör için .882 ve üçüncü faktör için .877 olarak tespit edilmiştir.

Araştırma verilerinin toplanma süreci, kişisel bilgi ve katı atık ve geri dönüşüme yönelik tutum ölçeğinden oluşan anket formu aracılığı ile gerçekleştirilmiştir. Verilerin toplanması pandemi sürecinde gerçekleşmesi üzerine ilgili koşullar dikkate alınarak anket formu hem yüz yüze hem de çevrimiçi olarak toplanmıştır. Araştırmada toplanan veriler, belirlenen alt problemlere ilişkin olarak SPSS programı ile analiz yapılmıştır.

Bulgular

Katı atık ve geri dönüşüm boyutları incelendiğinde, her bir boyut için katılımcıların katı atık ve geri dönüşüm tutumlarının yüksek olduğu görülmektedir. Ortalamanın en düşük olduğu boyut girişimcilik ve katılımdır. Katı atık ve geri dönüşüm ölçek puanları katılımcıların cinsiyetine göre anlamlı farklılık göstermektedir. Bu farklılık kadın katılımcıların lehinedir. Hem toplam hem de alt boyutlardaki ortalama puanlara bakıldığında genç ve yaşlı katılımcıların katı atık ve geri dönüşüme yönelik tutumlarının daha düşük olduğu görülmektedir. Ölçeğin tüm boyutları bir arada değerlendirildiğinde, katılımcıların katı atık ve geri dönüşüm konusundaki duyarlılığını etkileyen en önemli faktörlerden birinin eğitim düzeyi olduğu görülmektedir. Bu bulgu, eğitim düzeyi yükseldikçe katılımcıların katı atık ve geri dönüşüme yönelik tutumlarının daha olumlu olduğu şeklinde yorumlanabilir. Bu bulgulara göre, ölçeğin tüm boyutları değerlendirildiğinde, katılımcıların eğitim düzeylerinin meslekleri ile ilgili olduğu, katı atık ve geri dönüşüme yönelik tutumlarını etkilediği görülmektedir. Katılımcıların genel olarak katı atık ve geri dönüşüm ölçeğinden aldıkları puanlar, gelir düzeylerine göre anlamlı farklılık göstermiştir. Katı atık ve geri dönüşüm ölçeği puanları, katılımcıların çevre sorunlarına olan ilgilerine göre anlamlı bir farklılık göstermektedir. Katı atık ve geri dönüşüm ölçek puanları, çevre koruma derneğine üye olma geneline göre bakış açısını göstermektedir.

Sonuç ve Tartışma

Araştırmadan elde edilen sonuçlara göre, bireylerin katı atık ve geri dönüşüme yönelik tutumlarının yüksek düzeyde olduğu tespit edilmiştir. Karatekin ve Merey (2015) çalışmalarında sosyal bilgiler öğretmeni adaylarının katı atık ve geri dönüşüm konusunda genel olarak olumlu tutumlara sahip olduklarını tespit etmiştir. Araştırmadan elde edilen sonuçlara göre, bireylerin katı atık ve geri dönüşüme yönelik toplam tutum puanları incelendiğinde cinsiyet değişkenine göre anlamlı farklılık göstermektedir. Buna göre, kadın katılımcıların katı atık ve geri dönüşüme yönelik tutumlarının erkek katılımcılara göre daha yüksek olduğu görülmektedir. Bu durumun nedeni, çevre bilincinin önemli öğesi olan "çevreye/doğaya karşı sorumluluk" duygusunun, yaradılışı gereği özellikle kadınların tutum ve davranışlarına içgüdüsel olarak yansıdığı şeklinde açıklanabilir (Kabaş, 2004; Kükrer, 2012).

Araştırmanın bir diğer sonucu ise, yaşı daha küçük olan katılımcılar ile yaşı daha büyük olan katılımcıların katı atık ve geri dönüşüme yönelik tutum düzeylerinin daha düşük olduğu görülmektedir. Keskin Gürel (2008) yaptığı araştırmada gençlerin çevre sorunlarına ilişkin duyarlılıklarının yaşlılara göre daha yüksek olduğunu tespit etmiştir. Araştırmada katılımcıların eğitim düzeyleri yükseldikçe katı atık ve geri dönüşüme yönelik tutumlarının da olumlu bir şekilde arttığı sonucuna ulaşılmıştır. Yaşama

tarzının nitel yönü, tüketim standardının duygu, düşünce ve alışkanlıkların etkisiyle gerçekleştiriliş tarzı olarak, eğitim düzeyi ile sıkı bir etkileşim halindedir. Eğitim seviyesi yükseldikçe, kişinin hayatının her yönünde değişiklik meydana getirmektedir (Eke, 1987).

Araştırmada katılımcıların mesleklerine göre katı atık ve geri dönüşüme yönelik tutumlarında bir farklılık olduğu tespit edilmiştir. Bu çerçevede hem ölçeğin genelinde hem de alt boyutlarda öğretmenlerin, memurların, akademisyenlerin, gençlerin ve din görevlilerinin katı atık ve geri dönüşüm ölçeğinden aldıkları puanların ortalamasının, öğrenci, ev hanımı, işçi, esnaf ve çiftçilerden daha yüksek olduğu tespit edilmiştir. Özellikle öğretmen olan katılımcıların katı atık ve geri dönüşüme yönelik tutumlarının daha olumlu olduğu sonucuna ulaşılmıştır. Bu anlamda meslek, bireylerin yaşam tarzlarını etkilediği söylenebilir (Eke, 1987). Katılımcıların gelir düzeyi yükseldikçe katı atık ve geri dönüşüme yönelik tutumlarının da olumlu bir şekilde arttığı sonucuna ulaşılmıştır. Straughan ve Roberts (1999) çalışmasında, gelir düzeyinin çevre sorumluluğu ile doğru orantılı olduğunu ortaya koymaktadır. Araştırmada çevre sorunları hakkında ilgili olan katılımcıların, çevre sorunları hakkında ilgili olmayan katılımcılara göre katı atık ve geri dönüşüme yönelik tutumlarının daha olumlu olduğu tespit edilmiştir. Öcal (2013) öğretmen adaylarının çevre konularıyla ilgilenme düzeyleri arttıkça çevreye yönelik tutum puanlarının ortalamasının da arttığını belirtmektedir. Araştırmada çevre koruma derneğine üye olan katılımcıların, çevre koruma derneğine üye olmayan katılımcılara göre katı atık ve geri dönüşüme yönelik tutumlarının daha olumlu olduğu sonucuna ulaşılmıştır. Çabuk ve Karacaoğlu (2003) çalışmasında üniversite öğrencilerinin çevre konusunda çalışan gönüllü kuruluşların çalışmalarına katıldıklarını fakat öğrencilerin önemli bir kısmının ise asla katılmadıklarını belirtmektedir.

Öneriler

Katı atık ve geri dönüşüm, yaşamın her alanı ile ilişkili konulardandır. Bu açıdan düşünüldüğünde toplumda yer alan tüm bireyler başta olmak üzere, özellikle araştırma sonuçlarına dayalı olarak, erkeklerin ve orta yaş sınıfındaki bireylerin katı atık ve geri dönüşüm ile ilgili bilgi, davranış ve tutumlarının geliştirilmesi sağlanabilir. Dolayısıyla bireylerin katı atık yönetimi ve geri dönüşümün önemli olduğu fikri ile bu konulara duyarlı bir yaklaşımla gerçekleşebilir. Bu bağlamda bireylerde çevre sorunları hakkındaki ilgileri artırılmalı ve çevre koruma derneğine üyelikleri teşvik edilmelidir.

Teachers' Opinions on the Application, Methods and Techniques Used in the Process of Distance Education

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Abstract
Technological developments have also been effective in the diversification of educational environments. Along with traditional face-to-face education, distance education methods have also started to become widespread with the Information Revolution. Especially during the Covid 19 epidemic, education and training continued through online platforms. Until this date, distance education applications were used in a limited number of private primary and secondary education institutions. For this reason, the number of teachers who had previous knowledge and experience in distance education practices remained extremely low. Therefore, the majority of teachers met with distance education during the pandemic process. This historical pedagogical transformation process is one of the most important breaking points in the history of Turkish and world education. In this research, it will be tried to reveal the opinions of teachers about distance education applications during the Covid 19 pandemic. For this purpose, 10 open-ended questions were asked to the teachers in the study, which was carried out with the phenomenology pattern, which is one of the qualitative research methods. In these questions, teachers were asked about the online platforms used, the educational applications preferred to make the lessons more efficient, their advantages and disadvantages, and whether they meet their learning needs. At the end of the research, most of the teachers stated that face-to-face education is more effective especially in reaching students, but these applications and platforms provide a great advantage especially in order not to interrupt education during the pandemic process.

Keywords: Covid 19, online education, distance education.

Introduction

Following Covid19, schools have started to continue their education and training through online platforms. Furthermore, students (8th and 12th graders), especially those in the stages of high school and university entrance exams, continued their education online for a while and then switched to a hybrid learning system. However, in this process, students and teachers encountered some difficulties. While some of these difficulties are caused by the teacher, others may be caused by physical distance, the tools used for communication and time-related problems (Elcil & Sözen Şahiner, 2014). Problems related to internet infrastructure and technology and deficiencies in the physical environments where students are located have also been effective in the inadequacy of distance education activities (Can & Köroğlu, 2020).

There are universities in our country that provide distance education and fortunately, since they were providing distance education before the pandemic, they continued their activities during the pandemic without any difficulties. However, teachers and students working in preschool, primary and secondary education institutions were inexperienced in this regard because they had not used online learning environments before the pandemic. Both teachers and students did not have sufficient infrastructure to use online learning environments and applications that could make them efficient. Teachers working in public schools tried to adapt to distance learning through in-service training programs organized by MoNE, and teachers working in private schools tried to adapt to distance learning through trainings provided by their institutions.

According to Moore & Kearsley (2011), distance education is a planned learning and teaching activity that can be communicated with the help of educational technologies other than traditional education, where the teaching process can be organized in different places. Distance education is a process that tries to provide equality of opportunity in education, allows people to receive education throughout their lives, and helps to continue education in cases where face-to-face education cannot be

provided by utilizing the opportunities offered by technology (Kaya, 2006). In online learning environments, student participation is both personal and social (Hrastinski, 2009). In these environments, it is important to make students feel like they are part of a community rather than alone. Making students feel like part of a community will positively affect success, interaction and attitude in these learning environments (Haar, 2018; Yılmaz, 2016) Due to factors such as teacher, student's personal characteristics, teaching method, interaction, etc., what students feel in the community also varies (Yıldız, 2020). For this reason, teachers have utilized digital applications and activities that can attract students' interest, increase their motivation, and provide mutual interaction in order to make them feel more comfortable and actively participate in the community. The applications known as Web 2.0 tools, where various games, activities, videos, visuals, presentations, posters, etc. course materials and course environments can be designed, provide significant advantages to teachers. Digital game design techniques were also utilized throughout this process (Şahin at al., 2017). The aim of the study is to identify the online applications that teachers use in their lessons, to determine the teaching processes they apply to make them more effective, and to reveal the advantages and disadvantages of these applications. To this end, the study sought answers to the following questions:

1. Which applications are used in the distance education process?

2. What are the advantages and disadvantages of the applications used?

3. Which applications, methods and techniques are selected to address the different characteristics of students?

4. Do the distance education applications and teacher competencies meet the educational needs?

5. What are the teacher suggestions for eliminating the problems and deficiencies experienced in the distance education process?

Method

The Design of the Study

This study was conducted using phenomenology design, one of the qualitative research methods. Phenomenology research aims to examine phenomena in depth. The aim of this study was to obtain new information about the phenomena that we are aware of or that we are not yet aware of by conducting interviews with individuals and groups (Gürbüz & Şahin, 2018). In addition, a review was conducted based on the experiences (Moustakas, 1994). Therefore the phenomenology study design was preferred for the study herein.

Study Group

The study group was determined by using easily accessible case sampling, one of the purposeful sampling methods (Yıldırım & Şimşek, 2013). In order to collect the data, the researchers sought the opinions of Turkish, Social Studies, Mathematics, Science and Foreign Language teachers working in different private schools in the city center of Istanbul. The opinions of the teachers were obtained on a voluntary basis. Graph 1 shows the professional experience of the teachers.
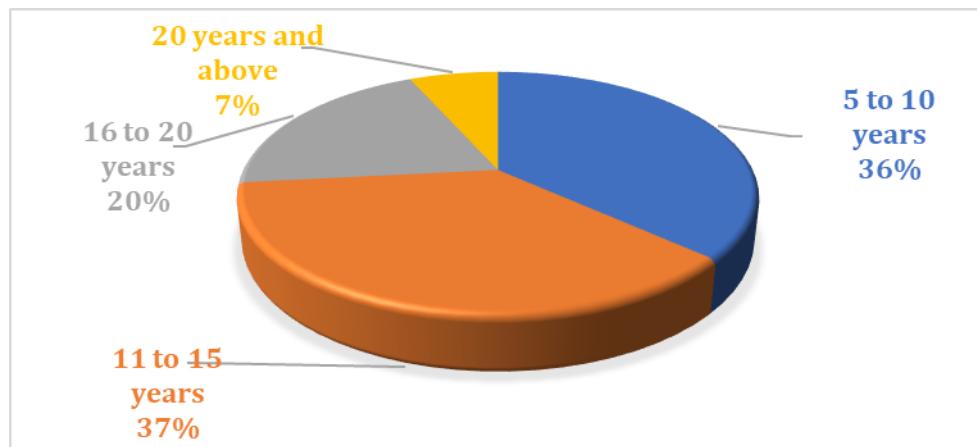
Figure 1. Professional experience of teachers

Of the 30 teachers who participated in the study, 11 had 5 to 10 years of professional experience. 11 of them have 10 to 15 years of professional experience. While 6 of them have 16 to 20 years of professional experience, 2 of them have 20 years or more of professional experience.

Collection of the Data

The teachers who voluntarily participated in the study were sent a google form with 10 open-ended questions in addition to personal information to collect the data. At the beginning of the Google form, there is an explanatory section informing the teachers participating in the research and it is emphasized that participation in the research is voluntary. In addition, the contact information of the researchers was also given so that they could reach them whenever needed.

The first part of the Google form included questions about the participants' personal information such as gender, educational status, professional experience, etc. The second part included questions that could answer the research questions about the applications, methods and techniques used in the distance education process. Among them were questions about the applications and platforms used by the teachers during the distance education period in the schools where they work, online applications that support distance education, advantages and disadvantages of the applications used in distance education, which applications are used by taking into account the different characteristics of the students, whether the applications meet the needs of the students, and the competencies required for distance education. In addition, teachers' suggestions were also sought to make distance education activities more efficient. While preparing the questions, expert opinion was consulted, and the questions were finalized by organizing them according to the suggestions from the experts.

After the questions were completed, they were sent to teachers working in different branches via Google form. The answers received from the teachers were collected. The answers given by the teachers to the questions were recorded and the teachers participating in the study were given pseudonyms as T1, T2, T3, T4, ...

Analysis of the Data

The research data were analyzed using the content analysis method. Content analysis enables the identification of recurring topics, problems or words and concepts among the collected data, determining how many times they are repeated and interpreting the data (Miles & Huberman, 2014). The answers given were grouped and then themes were created and data analysis was completed.

Validity and Reliability

In order to increase the validity and reliability of the research, the data obtained through the google form were also supported by the relevant literature. Then, the answers given to the questions were compared and the consistency of the answers was examined. The research questions were prepared with the help of expert opinion. The draft questions were reorganized in the light of the feedback from the experts and the questions were finalized. After the data were analyzed, the results obtained were shared with the participants and the accuracy of the evaluations was confirmed. While presenting the research findings, comments were supported by including direct quotations from teacher responses.

Ethical Permits of Research

This study complied with all the rules to be followed within the scope of the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions". No actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", have been practiced.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Istanbul Medeniyet University Educational Sciences Ethics Committee

Date of ethical review decision = 17/05/2021

Ethics assessment document issue number = 20/ 05 /2021

Findings

Below, we present teachers' opinions on which applications, methods and techniques are used in the distance education process, whether these applications meet the educational needs, the advantages and disadvantages of the applications, methods and techniques used in this process, and what needs to be done to improve the distance education process and overcome the deficiencies experienced. Firstly, teachers were asked about the system/application through which they carry out the distance education process in the school where they work in the context of research question 1. Graph 2 shows the responses of the teachers.
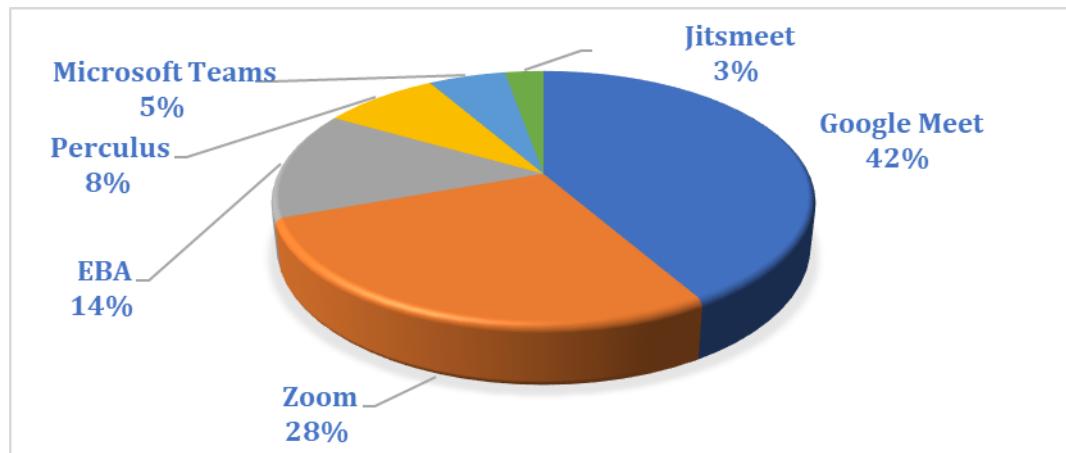
Figure 2. First study question: applications where distance education is conducted

As seen in Graph 2, 42% (f15) of the teachers participating in the study conduct distance education through the "Google meet" application. On the other hand, 28% (f10) of the teachers use "Zoom" application in distance education. Apart from these applications, 14% of teachers use "EBA" (f5) and 8% use "Perculus" (f3) applications. The least preferred applications were "Microsoft Teams" (f2) with 5% and "Jitsmeet" (f1) with 3%.

Teachers try to make their lessons more effective and useful by integrating different online applications with the applications mentioned in Graph 2. Accordingly, the teachers were asked which other online applications they have used in the distance education process. Table 1 shows the teacher responses to the question.

Table 1. *Continuation of the first study question: Other online applications utilized by teachers*

Name of Application	f	Name of Application	f
Google Applications (meet, classroom, drive, slides, forms, Jamboard,	20	Phet simulation	3
Zoom	11	Web 2.0 Tools and videos (youtube)	3
Padlet	8	Teachermade	2
Kahoot	7	Tinkercad	2
Nearpod	5	Teachable Machine	2
Online simulations	5	Kodable	2
Learning Apps	4	Python Code.org	2
Canva	4	Wordwall	2
Edpuzzle	3	Quizlet	2
Whiteboard	3	Kami	2
Flipgrid	3	Khan Academy	2
Quiziz	3	Crame, Edmodo, Active Inspire, Wordcloud, Educandi, Jitsmeet, Liveworksheet, Wizer me, Online Teaching and Assesment Tools, Artsteps, Peardeck, Breakout Rooms, Bambalzo, Blendspace, PPT/Prezi	1

In Table 1, in the category of other online applications used by teachers, the most preferred ones were "Google applications: meet, classroom, drive, slides, forms, jamboard" (f20). This answer was followed by "Zoom" (f11). The other most preferred applications were "Padlet" (f8); "Kahoot" (f7); "Nearpod" (f5); "Online simulations" (f5); "Learning Apps" (f4); "Canva" (f4). The least preferred applications were "Edpuzzle" (f3); "Whiteboard" (f3); "Flipgrid" (f3); Quiz (f3); "Mentimeter" (f3); "Phet Simulation" (f3); other "Web 2. 0 tools and videos (youtube)" (f3) and "Teachermade" (f2); "Tinkercad" (f2); "Teachable Machine"; "Kodable"; "Python Code.org"; "Wordwall" (f2); Quizlet (f2). The applications preferred only once were "Crame" (f1); "Edmodo" (f1); "Active Inspire" (f1); "Wordcloud" (f1); "Educandi" (f1); "Jitsmeet" (f1); "Liveworksheet" (f1); "Wizer me" (f1); "Online Teaching and Assesment Tools" (f1); "Artsteps" (f1); "Peardeck" (f1); "Microsoft Teams" (f1); "Breakout Rooms" (f1); "Bambalzo" (f1); "Blendspace" (f1); "PPT, Prezi, Presentation tools" (f1).

As seen in Table 1, Google applications other than Google Meet are among the other applications used by teachers. The fact that there are more than one application belonging to Google has been effective in teachers' use of other applications other than Google Meet. Teachers preferred to use other Google applications in addition to their own applications even if they did not continue the distance education process through Google Meet. Zoom application is also among the preferred applications in both Graph 1 and Table 1. The reason for this is that even if the teachers do not continue the distance education process through Zoom, they prefer to use it as a supporting application in their studies. For

example, T1, the first teacher who participated in the research, shared that he continued the distance education process through Google Meet, but from time to time they also participated in different studies through Zoom.

The second question asked teachers' opinions about the advantages and disadvantages of all the applications they used for themselves and their students. Table 2 shows the responses from the teachers.

Table 2. *Second study question: Teachers' views on the advantages and disadvantages of the applications used*

Advantages	f	Disadvantages	f
Offers a fun and easy learning environment with online games and different applications and activities (visual and auditory learning)	13	Causes falling behind the teaching plan because it takes time and learning takes time	4
Offers interactive, participatory education	8	Causes students to spend long periods of time in front of the screen	3
Provides effective, permanent information flow through prepared presentations and offers the opportunity for repetition.	5	Students perceive every moment of the learning process as fun and games, and the same activities create a cognitive load on students (Focusing problem)	3
Ensures the continuation of education	5	It becomes difficult for the student to understand instructions and interact with his/her friends	3
Enables students to learn in their own environment	4	Internet connection problems can disrupt education	3
Increases student attention, interest and motivation	4		
Supports individual focus, attention	3		
Gains speed in access to information	3		
Facilitates student follow-up (homework control, achievement tracking), performance evaluation in digital environment	2		

The most important advantage teachers saw was that online games and different applications and activities provided fun and easy learning opportunities (f13). Providing interactive, participatory education was also among the other advantages (f8). The other most preferred advantages were that the presentations provided effective, permanent information flow, that the presentations provided the opportunity for repetition and ensured the continuity of education (f5). Enabling students to learn in their own environment and increasing students' interest and motivation were also among the advantages repeated by four participants (f4). Other advantages include providing support for individual focus and attention (f3) and speed in accessing information (f3). 2 participants saw it as an advantage that it facilitates student follow-up and performance evaluation in digital environment (f2).

T2 mentioned the advantage of the application as "students have the opportunity to respond to the questions asked at the same time and make comments without being affected by each other's answers". It is thought that students can participate in the lessons interactively in this way.

The disadvantages included: lagging behind the program because it takes too much time (f4); causing students to spend time in front of the screen for a long time (f3); perceiving every moment of the learning process as entertainment, game, creating cognitive load, causing focusing problems (f3); students having difficulty in understanding the instructions, decreasing interaction with their friends

(f3); and problems in internet connection disrupting education (f3). 3 participants (T20, T22, T23) did not answer the question at all, while T26 only answered "it is useful".

T3 believes that the applications are advantageous in terms of providing active participation in the lesson and supporting individual learning with the comment "Thanks to these applications, we enable students to participate more actively in the lessons, albeit remotely, and students can learn the acquisitions more effectively with their own applications and answers". T3 commented on the disadvantage of the applications as "...However, we cannot include these applications in every lesson due to time constraints" and stated that more time may be needed in the lessons using the applications.

T14 mentioned that "The applications support the students both aurally and visually" and, like the other 12 participants, stated that students can learn fun and easily. Again, she mentioned the advantages of the applications with the comment: "...They can also be used as student assessment tools..." The same participant stated that there are disadvantages as well as advantages of the applications with the following comment: "...Long videos or complex, more complicated simulations sometimes take a long time for students to learn. In some cases, when students are stimulated with the same application for a long time, it creates a cognitive load on the student and does not support their learning" With this comment, she believes, like the other 3 participants, that the time allocated to the lesson for the applications is insufficient, and like the other 2 participants, she considers that it can be harmful for the student to spend a long time in front of the computer and that the student may face situations where the student has difficulties in learning.

Considering that students may have different characteristics from each other and that the applications used for the course may not appeal to every student at the same rate, the participants were asked whether there were any applications and activities that they had chosen considering the differences of the students and they were asked to share what these applications and activities were. Table 3 shows the findings of the activities that the participants prepared by taking into account the differences of the students.

Table 3. *Third study question: studies appropriate for student differences*

Study / Activity	f
Group Work (GRAPS, Raft, Six Hat Thinking, Menu activities)	6
Questions Suitable for the Level	4
PPT Presentation	3
Video and audio recordings/ Other gamification activities/ Case studies/brainstorming/ various visuals and pictures	3

According to Table 3, teachers mostly stated that they prepared group activities in accordance with student differences (f5). In addition, they stated that they prepared different activities such as GRAPS, Six Hats Thinking, Menu Activities in these group activities. This was followed by questions appropriate to student level (f4) and PPT presentations (f3) and differentiation activities such as "video and audio recordings; other gamification activities; case studies; brainstorming; using various pictures and visuals (f3). 2 participants stated that they did differentiation activities for student differences but did not give any examples. The other 12 teachers either left this question completely blank or stated that they did not work on this educational need.

As can be seen in Table 3, few of the participant teachers stated that they prepared studies for student differences and gave examples of these studies (f16). This suggests that students may

experience deficiencies in terms of the competence to prepare studies for student differences in the distance education process. These deficiencies may be due to the teacher's inability to fully reach the student in the distance education process. Another reason may be that teachers need in-service training on practices, methods and techniques to meet this need.

T14 answered: "I prepare these activities according to students' interests, students' learning methods or students' readiness (academic level). Generally, after applying a quiz or assessment, I group students according to their academic level and do group work with different worksheets and activities." The participant gave GRASPS; Six hat thinking activities and Menu activities as examples of different activities. The other 5 participants also stated that they included the same types of activities in their group work.

T4 shared examples of the applications she used by giving the following answer: "By using gamification in the subjects, they both relieve their stress and learn the subject by playing games. Escape games and wordwall activities are useful for this."

The teachers who shared that they prepare activities in accordance with student differences in their lessons stated that they can usually do group work by creating rooms with Breakout Rooms (f6). They also shared that they could prepare games online through different applications such as Wordwall and Learning Apps and play these games in groups, and that they also used Edpuzzle in their studies (f3). There is also a teacher who stated that by applying Flipped Classroom, students worked with their own groups on online platforms after the lesson and presented the work of these groups during the lesson.

The fourth question asked the participants' opinions on whether the practices used by teachers and teacher competencies meet the needs of students. Table 4 presents the opinions of the teachers on whether the practices used meet the needs.

Table 4. *Fourth study question: Teachers' opinions on whether the applications used meet students' needs*

Meets student needs because;	f	Does not meet student needs, because;	f
Includes activities to improve the quality of learning	11	Does not meet	8
Includes activities aimed at developing student skills	8	Cannot meet emotional and social needs	5
The applications used increase interest and motivation, increase active participation	3	The advantages of face-to-face training are needed	3
Access to information is fast and practical	1	Difficulties in reaching some students during online learning	3
		Prolonged screen time is difficult and risky for health, does not serve kinesthetic learning characteristics	3

As seen in Table 4, teachers stated that the applications met their learning needs because they consisted of studies aimed at increasing the quality of learning (f11). In addition, they stated that the applications met students' needs in terms of supporting students to develop their skills (f8); increasing interest and motivation (f3); and providing quick and practical access to information (f1). Some of the teachers who thought that there were activities to improve the quality of learning mentioned that students' thinking, critical thinking and creative thinking skills improved thanks to the activities (f6). In

addition to these skills, they also shared that students' cooperation skills improved thanks to group work.

8 participants (f8), on the other hand, did not make any other comment, but simply stated that "the practices do not meet the needs of the students". 5 participants thought that students' emotional and social needs were not met (f5). For example, T11 said, "These practices cannot fully meet the social and emotional needs of students. Students' need for socialization started during the pandemic " T20 shared that these practices may be insufficient for students who learn by establishing emotional bonds.

Three participants stated that the advantages of face-to-face education were needed; that there were difficulties in reaching some students during online learning; that students being in front of the screen for a long time posed a risk to health; and that it could not serve kinesthetic learning characteristics (f3).

T15 gave examples of the reasons why the practices could not basically meet the needs of the students as follows:"...Since students learn in depth by using their sensory organs, especially in science lessons, changing the environment they are in (laboratory, garden, gym) affects their motivation and the tools they touch enable them to learn sensory learning. If students do not stand up or move in this process, if they are only supported visually or auditorily, they may not learn fully because they create a cognitive load in these channels."

Participants were also asked about their thoughts on whether they have the necessary competencies for distance education within the scope of study question 4. Graph 3 shows the opinions of the teachers.
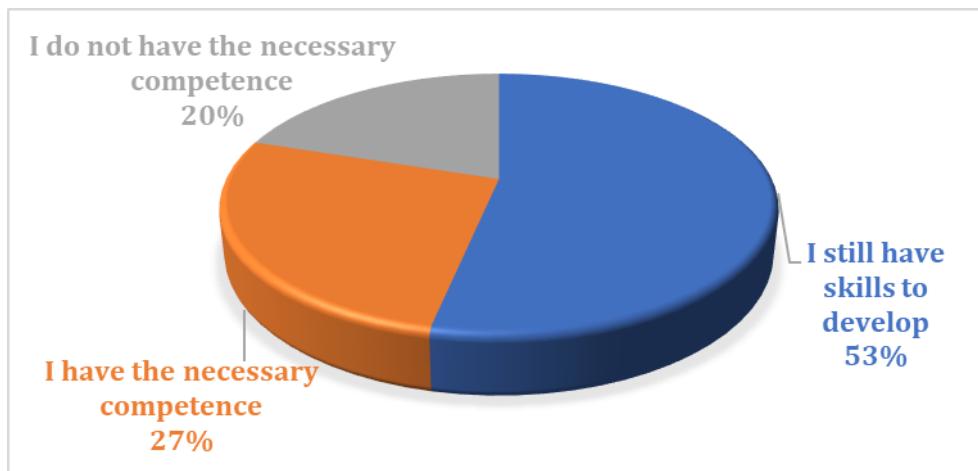
Figure 3. Fourth study question: views on teacher competencies

As seen in Graph 3, 57% of the participants (f16) answered "I think I have the necessary competencies, but there are skills I need to improve". For example, T6 commented that "I have the necessary competencies for distance education, but I continue to learn new activities that I can benefit students by following the current innovations in educational technologies".

29% of the participants (f8) only answered "yes, I have the necessary competencies". T30 was one of these participants with her comment "Yes, I think I have all the competencies" and she did not give any other explanation.r.

20% of the participants (f6) answered "no, I do not have the necessary competence".

Within the scope of the fourth study question, the participants were also asked what competencies they think they lack in order to make the distance education process more efficient. Graph 4 shows the answers of the participants.
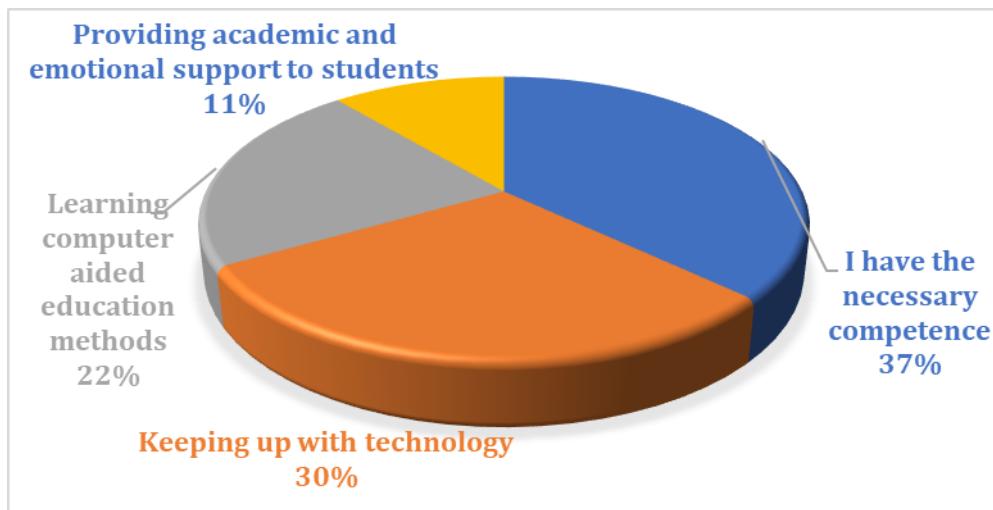
Figure 4. Fourth study question: Distance education competencies

As seen in the answers in Graph 4, 37% (f10) of the participants think that they have no deficiencies in distance education. For example, T7 answered as "I think that our development has reached a very good level at the end of one and a half years".

30% (f8) of the participants stated that they had difficulties in keeping up with technology; 22% (f6) stated that they had deficiencies in computer assisted education methods. For example, T21 emphasized the importance of following technological developments by saying "Many people started to use web 2.0 tools and I should continue to learn them".

11% of the participants (f3) stated that they experienced deficiencies in terms of active participation in the lesson and trying to reach students academically and emotionally.

Finally, in order to find an answer to the fifth study question, the participants were asked what suggestions they could make in order to overcome the deficiencies experienced in the distance education process. Table 5 shows the answers given by the participants.

Table 5. *Fifth study question: suggestions for overcoming the deficiencies experienced in the distance education process*

Participant Opinion	f
Providing in-service training to teachers	10
Use of online assessment tools	7
Ensuring equal opportunity for students in distance education	6
Creating a technological environment suitable for distance education	5
Providing psychological support to teachers and students	4
Supporting students academically	3

As can be seen in Table 5, teachers most frequently (f10) suggested more in-service training opportunities to overcome the problems experienced in distance education. For example, T28 expressed the necessity of in-service training with the suggestion that "technologically necessary trainings should be increased". Suggestions related to the use of online assessment tools were among the most preferred

suggestions (f7). The teachers' learning online assessment tools and using these applications to evaluate students' course performances and academic achievements are thought to overcome the deficiency in the field of assessment and evaluation in the distance education process.

Another most preferred suggestion was to provide equal opportunity to students in distance education (f6). For example, T3 stated that "the principle of equality and justice should be ensured for every student". Creating a technological environment suitable for distance education (f5); providing psychological support to teachers and students (f4); supporting students academically (f3) are among the other suggestions of the participants.

Discussion and Conclusion

This study aimed to determine the online applications used by teachers in their lessons in the distance education process, to determine the teaching processes they apply to make them more effective, and to reveal the advantages and disadvantages of these applications. In addition, the advantages and disadvantages of these applications, the methods and techniques used, and which applications, methods and techniques are preferred for the development of creative thinking, critical thinking and collaboration skills were revealed. The activities that teachers carry out by taking into account the different characteristics of the students were identified. Teachers' comments on whether the distance education applications used and teacher competencies meet the educational needs; teachers' suggestions for eliminating the problems and deficiencies experienced in the distance education process were received.

According to the findings we obtained from the research data, private school teachers mostly continued their education and training through Google meet and Zoom platforms during the distance education process. In addition to the Education Information Network (EBA), teachers also used platforms such as Perculus, Microsoft Teams and Jitsmeet. Alper (2020) concluded in his study that teachers communicated with their students via Zoom, Whatsapp, Google Classroom, e-mail and telephone during the distance education process. Other applications used by the teachers participating in the study during the education process include Google applications (Google meet/classroom/form/drive/slides), Jamboard, Padlet, Kahoot, Learning Apps, Online simulations, Canva, Nearpod, Edpuzzle, Mentimeter, Quiziz, Teachermade and other web 2.0 tools. Özdemir Baki and Çelik (2021) reported that teachers use programs such as Zoom, TeamLink, DroidCam, Teknokent distance education program as well as applications such as EBA, Whatsapp, Youtube, Perculus in the distance education process. Alper (2020) stated that teachers encountered different applications such as Camtasia, Padlet, Pawtoon, Edpuzzle, Kahoot, Vimeo, Webinars, Flipgrid, Plickers, Canva, Kizoa, Quick, etc. during the distance education process. The applications used by the teachers participating in other studies and the applications used by the teachers participating in our study are similar. Kör et al., 2013 stated that applications, animations, videos with course content and simulations used in distance education courses can increase student interaction and active participation, attract students to the lesson and make education more efficient (Kör et al., 2013). Başaran & Kılınçarslan, 2021 also reported that students' participation in the lesson increases thanks to gamification activities designed through the applications used (Başaran & Kılınçarslan, 2021). The teachers who participated in the study also stated that the applications they used positively affected learning with similar statements.

In Turkey, distance education has generally been carried out through the Education Information Network (EBA) prepared by the Ministry of National Education (MoNE, n.d.). Few of the teachers participating in the study stated that they benefited from EBA during the distance education process. We believe that the fact that teachers work in private schools and that private schools continue education through the applications and platforms of their own choice is the reason for this situation.

Participants see it as an advantage that they can create fun learning environments with online games, applications and activities that support visual and auditory learning thanks to the applications they use. Başaran and Kılınçarslan (2021), like the teachers participating in the study, stated that the preparation of gamification activities using applications creates a fun learning environment. The teachers participating in the study also stated that these applications offer learning opportunities in which students actively participate. They stated that thanks to the presentations and studies they prepared, they realized lessons in which they could realize permanent learning, provide easy information flow and provide repetition opportunities. Learning becomes more permanent in lessons where students have the opportunity to learn by doing, experiencing and applying (Babayiğit & Gültekin, 2019). Participants see the continuation of education, especially during the pandemic process, enabling students to learn in their own environment, increasing students' attention, interest and motivation, and speeding up access to information as other advantages of the applications. A small number of teachers also stated that the digital environment facilitates student follow-up (homework control, achievement tracking) and performance evaluation. Alper (2020), in the data he obtained from teacher opinions, determined the advantages of distance education as being able to reach the lesson at the desired time, reducing the loss of time, having some advantages in terms of attention, motivation, and providing more comfortable teaching by choosing the environment.

Participants see it as a disadvantage that they can fall behind the teaching plan because too much time is spent due to the applications and that learning takes time. In addition, the disadvantages include the fact that it causes students to spend time in front of the screen for a long time, that every moment of the learning process is perceived by students as a game and entertainment, that the use of the same activities and applications can create a cognitive load on students, and that they may experience focusing problems. While it is easier for students to communicate and interact with each other and their teachers in face-to-face education, it becomes difficult to establish this interaction in distance education (Akyürek, 2020). In particular, there may be problems related to increasing student motivation and interest and adapting to the course environment (Kara & Sevim, 2013).

Participants also see the students' difficulty in understanding the instructions, the difficulty in interacting and socializing with their friends, and the problems experienced due to internet connections as disadvantages. According to Özgöl, Sarıkaya, and Öztürk (2017), experiencing attendance problems, not being able to fully realize the applied lessons, students' lack of previous experience with distance education, lack of asking questions and receiving feedback, and problems with internet connection are among the disadvantages of distance education for students. Alper (2020) listed the negative aspects experienced by teachers in the distance education process as not being able to establish effective communication as in face-to-face education, not receiving feedback from students, having difficulties in the preparation phase, not being able to use the methods and techniques they want, increasing the time they spend in front of the computer, and spending more time in virtual environments. These findings

are similar to the data of our study. Özellikle öğrenci motivasyonu ve ilgisinin artırılmasına ve ders ortamına uyum sağlanmasına ilişkin sorunların yaşandığı görülmüştür (Kara & Sevim, 2013).

Teachers stated that they mostly used applications such as Breakout rooms, Google (Google doc/forms/slides/drive/meet) applications, Jamboard, group work using these applications, games played, Microsoft Teams, Kahoot, Artsteps to develop students' collaboration skills. Applications such as "Answer the question, step on the gas", "Who wants to be a millionaire" and Zoom, Crams, Quiziziz, Quizlet, Kami, Nearpod were preferred only once by the teachers. Teachers also stated that they used Breakout rooms, Padlet, Canva, Zoom, Postermywall, Microsoft Teams, Artsteps applications to develop students' critical thinking and creative thinking skills. Nearpod, Wizerme, Flipgrid, Mindminister, Quizlet, Bookwidget, Inquary Argumantation Technological Lab Activity, Phet Simulation Programs were preferred once by the teachers. Known as 21st century skills, educational technologies are also utilized to develop these skills. It is important to utilize educational technology applications to develop these skills both in distance education and face-to-face education periods. Dağhan et al. (2017) state that teachers and students should be able to use educational technologies for the development of 21st century skills. In the distance education process, planning and course designs should be developed to increase the efficiency of the course through the right technology and applications at the right time rather than the inclusion of various educational technologies and applications in the course environment (Özkul & Girginer, 2014). Therefore, teachers can be successful in developing students' critical thinking, creative thinking and collaboration skills as long as they plan lessons in accordance with the purpose and goal by making use of the applications mentioned in the research data. Gelen (2017) indicated that the continuation of lessons in distance education environments where technological developments are utilized, intractive, and interactive, as well as many other factors, and the acquisition of thinking skills will positively affect the development of 21st century skills. Teachers implement and evaluate lessons designed by thinking creatively to develop skills. For this, they need to have creative ideas, contribute to their colleagues with their different ideas, and serve as models (Günüç, Odabaşı & Kuzu, 2003). Teachers stated that they used methods and techniques such as group work, designing posters and banners, problem solving based on case studies, making use of visuals and videos, analyzing visuals and videos, preparing presentations, and question-answer to develop students' critical thinking and creative thinking skills. They also shared that they used GRASPS, Raft Activity, Menu Activity, Experiment-Observation, Digital exhibitions and games. Dramas, brainstorming, preparation of concept and mind maps, free lectern activities, homework, cartoons, fairy tales and stories, Six Hats Thinking Technique, Flipped Classroom, Wordwall and Edpuzzle were preferred once.

Each child has different abilities, interests and motivation, learning type and intelligence (Aktepe, 2005). These differences may also cause differences in learning habits. Taking into account the different characteristics of their students, teachers stated that they mostly used group activities (GRASPS, Raft, Six Hats Thinking, Menu activities). Asking questions appropriate to student levels and PPT presentations are also among the most preferred activities. Applications such as using video audio recordings, gamification activities, case studies, brainstorming, various visuals and pictures, Flipped Classroom, Wordwall, Edpuzzle were preferred once.

The majority of teachers think that the applications used and teacher competencies are not sufficient to meet their educational needs. They argued that the applications did not meet their educational needs due to reasons such as being insufficient to meet emotional and social needs, needing

the advantages of face-to-face education, having difficulties in reaching and communicating with some students in online learning environments, making it difficult for students to stay in front of the screen for a long time and carrying health risks, and not being able to serve kinesthetic learning characteristics.

The findings show that more comments were made that the needs were not met. Some teachers, on the other hand, stated that these applications increased the quality of learning, student interest and motivation, helped students to actively participate in the lesson, and that access to information was faster and more practical.

Studies have concluded that some teachers have difficulty in adapting the educational technologies they use to the course process and may have difficulty in creating an efficient course environment by integrating teaching methods and techniques with technological applications (Erbil, Demir & Erbil, 2021). Data obtained in our study showed that although teachers did not make such a statement directly, they shared that distance education applications do not replace the advantages of face-to-face education and that there may be difficulties in reaching all students. Lecturers working at universities also generally share that the efficiency of face-to-face education cannot be obtained in distance education (Sayan, 2020). In addition, teachers think that they have come a long way by improving themselves during the pandemic process, but they need to improve themselves more technologically (Baran & Sadık, 2021).

Teachers suggested that in-service trainings should be provided to overcome the problems and deficiencies in the teaching process and that teachers should be provided with opportunities to participate in these trainings. They also suggested that psychological support should be provided to both students and teachers during the pandemic process. There are also similar studies in which teachers' opinions on the need to support teachers with in-service trainings were obtained. Erbil, Demir, and Erbil (2021) suggested that teachers should be supported with in-service trainings especially on technology literacy. The teachers participating in our study expect to be supported with academic and emotional trainings in addition to educational technologies. It is recommended that teachers learn techniques to increase interest and motivation. Baran and Sadık (2021) also stated that in face-to-face teaching, it is easier for teachers to attract the attention of their students and provide lesson motivation, while in distance education they have difficulty because they cannot make eye contact with their students. There are studies suggesting that some studies and arrangements should be made in order to reach students socially and emotionally and to solve the problems arising from the inability to establish eye contact in the online process (Genç, 2020; Yurtbakan & Akyıldız, 2020; Erbil, Demir & Erbil, 2021;). Akdemir (2011) indicates that students do not have problems in communicating and interacting with their teachers in the distance education process, but students' interactions with their friends are restricted.

Teachers stated that solutions should be produced to use online assessment and evaluation tools, to evaluate students' academic achievements, and to increase online exam success. Baran and Sadık (2021) stated that although the courses continue as distance education, there are difficulties in conducting exams over distance education platforms, so teachers have difficulty in understanding whether learning has taken place. Adıgüzel (2020), on the other hand, reported that the most ideal method to measure student success during the pandemic period is written exams with open-ended questions, while the multiple-choice test technique, which is thought to be both easier and more objective, is not reliable in measuring success in the distance education process.

Equality of opportunity in education should be ensured and all students should be provided with the opportunity to benefit from educational opportunities. Providing computer and internet support to students and teachers in lower income groups, developing more course materials in accordance with students' interests and levels, preparing lesson plans, organizing activities to increase creative thinking, questioning and critical thinking skills are also critically important. Other suggestions include increasing the quality of internet connection speed, solving infrastructure problems, developing a good information network, and reorganizing the rote-based subject acquisitions in the curriculum.

In order for all students and teachers to take an active part in the distance education process, there is a need to meet the technological material needs and to solve the problems of internet, internet connection and infrastructure (Demir, F. & Özdaş, F., 2020; Erbil et all., 2021; Genç, 2020; Uyar, 2020;).

Recommedations

In today's world where distance education applications are increasing, it will be useful for teachers to plan the lesson very well in order to increase the efficiency in learning environments. Planned lessons will also limit the time that the student will spend in front of the screen. In addition, it is thought that teachers should be supported with the necessary trainings in order to use the right application in the right lesson environment and at the right time. For this, in-service trainings should be increased and teachers should be provided with opportunities and time to update themselves.

We also recommend that teachers be provided with support on how to adapt learning methods and techniques to the lessons they teach using technological applications. For example, Information Technologies teachers working in schools can plan short trainings at regular intervals so that teachers can closely follow current educational technology applications and use them in their lessons. New solutions that can improve student interaction in the distance education process should be developed and students should be supported to grow up as social individuals who can express themselves.

Teachers should be provided with the necessary knowledge to develop skills and values and to address student differences. Emphasis should be placed on organizing trainings and workshops for teachers, especially on the learning and teaching of 21st century skills and differentiation studies.

It is also important to minimize these problems by developing solutions for the inadequacy of technological equipment, physical and infrastructure problems in educational environments, especially computer, internet and internet connection problems, and to ensure equality of opportunity in education. The Ministry of National Education's project, the Movement to Increase Opportunities and Improve Technology (FATIH), provides support for information technology-related course materials in schools (Fatih Project, n.d.). We recommend that these efforts be increased and that the needs of students and teachers continue to be met.

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BIOGRAPHICAL NOTES

Genişletilmiş Türkçe Özet

Uzaktan Öğretim Sürecinde Kullanılan Uygulama, Yöntem ve Teknikler ile İlgili Öğretmen Görüşleri

Giriş

Eğitim teknolojilerinin gelişimine bağlı olarak uygulanmaya başlayan uzaktan eğitim özellikle pandemi sürecinde eğitim öğretimin devam etmesine büyük katkı sağlamıştır. Uzaktan eğitim, öğrencilere eğitimde fırsat eşitliği sunmayı amaçlayan, bireylerin yaşam boyu öğrenmesini kolay hale getiren, teknolojinin sunduğu imkanları avantaja çevirerek eğitimin devamını sağlayan bir eğitim faaliyetidir (Kaya, 2006). Uzaktan eğitim sürecinde öğretmenlerin yaşadığı sorunlar arasında eğitim teknojilerinin kullanımı, öğrenme ortamının düzenlenmesi, ders materyallerinin temini ve verimli bir şekilde kullanımı ile internet bağlantısına bağlı sorunlar yer almaktadır. Özellikle öğrenci motivasyonu ve ilgisinin artırılmasına ve ders ortamına uyum sağlanmasına ilişkin sorunların yaşandığı görülmüştür (Kara & Sevim, 2013). Bu süreçte öğrenme ortamlarının tasarlanmasında web 2.0 eğitim teknolojilerinden faydalanılmıştır. Öğrenciler için verimli dersler organize edilmeye çalışılmıştır.

Araştırmanın amacı, öğretmenlerin derslerinde kullanmış oldukları çevrimiçi uygulamaları belirlemek, bunları daha etkin hale getirmek için uyguladıkları öğretim süreçlerini saptamak ve bu uygulamaların avantaj ve dezavantajlarını ortaya koymaktır. Araştırmanın problem durumu ise; öğretmenlerin uzaktan öğretim sürecinde dersleri daha verimli hale getirebilmek için kullandıkları uygulama, yöntem ve tekniklerin neler olduğu ve bu uygulama, yöntem ve tekniklerin kullanım alanları hakkında öğretmen görüşlerini almaktır. Araştırmanın alt problemleri aşağıda verilmiştir.

1. Uzaktan eğitim sürecinde kullanılan uygulamalar hangileridir?

2. Kullanılan uygulamaların avantaj ve dezavantajları nelerdir?

3. Öğrencilerin farklı özelliklerine hitap etmek amacıyla seçilen uygulamalar, yöntem ve teknikler hangileridir?

4. Kullanılan uzaktan eğitim uygulamaları ve öğretmen yeterlilikleri eğitim ihtiyaçlarını karşılayabilmekte midir?

5. Uzaktan öğretim sürecinde yaşanan sorunların ve eksikliklerin giderilmesine yönelik öğretmen önerileri nelerdir?

Yöntem

Bu araştırma nitel araştırma yöntemlerinden fenomenoloji (olgu bilim) deseni kullanılarak yapılmıştır. Fenomenoloji (olgu bilim) araştırması, olguların derinlemesine incelenmesini amaçlamaktadır. Bu araştırma deseni ile birey ve gruplarla görüşmeler yapılarak farkında olunan ya da henüz farkında olmadığımız olgular ile ilgili yeni bilgiler elde edilmesi amaçlanmaktadır (Gürbüz & Şahin, 2018).

Araştırmanın çalışma grubu amaçlı örnekleme yöntemlerinden kolay ulaşılabilir durum örneklemesine uygun olarak belirlenmiştir (Yıldırım & Şimşek, 2013). Araştırmanın verilerini toplayabilmek için İstanbul il merkezinde farklı özel okullarda çalışan Türkçe, Sosyal bilgiler, Matematik, Fen Bilimleri ve Yabancı dil öğretmenlerinin görüşlerine başvurulmuştur. Araştırma ile öğretmenlerin derslerinde hangi uygulama, yöntem ve tekniklerden faydalandıkları, bu yöntem ve tekniklerin avantaj ve dezavantajları, bu yöntem, teknik ve uygulamaları kullanabilmek için gerekli olan öğretmen yeterlikleri ile ilgili görüşlerine ulaşılması amaçlanmıştır.

Araştırmanın verilerini toplamak için araştırmaya gönüllü olarak katılım gösteren öğretmenlere google form üzerinden kişisel bilgilerin yanında çevrimiçi öğrenme ortamlarında kullanılan uygulamalara ilişkin 10 tane açık uçlu soru gönderilmiştir. Sorular hazırlanırken uzman görüşüne başvurulmuş, sorular uzmanlardan gelen önerilere göre düzenlenerek son halini almıştır. Katılımcı öğretmenler için soru formunun başına araştırma ile ilgili açıklayıcı bilgi eklenmiştir. Ayrıca diledikleri zaman ulaşabilmeleri için araştırmacıların iletişim bilgileri de verilmiştir. Araştırmaya gönüllü olarak katılan öğretmenlerden gelen cevaplar araştırmanın verilerini oluşturmuştur. Araştırma verileri içerik analizi ile analiz edilmiştir. Öğretmenlerin sorulara verdikleri cevaplar kaydedilmiş olup araştırmaya katılan öğretmenlere Ö1, Ö2, Ö3, Ö4,... rumuz verilmiştir. Verilen cevaplara göre temalar oluşturularak veri analizleri tamamlanmıştır.

Bulgular

Uzaktan eğitim sürecinde kullanılan uygulama, yöntem ve teknikler ile ilgili öğretmen görüşlerine başvurulan araştırmanın bulguları incelendiğinde öğretmenlerin bu süreçte en çok Google meet (f15) ve Zoom (f10) uygulamalarını kullandıkları, derslerini bu platformlar üzerinden sürdürdükleri sonucuna ulaşılmıştır. Öğretmenler Eğitim Bilişim Ağı (EBA) (f5), Perculus(f3), Microsoft Teams(f2), Jitsmeet(f1) gibi uygulamalardan da bahsetmiştir ancak bu uygulamaları tercih edenlerin sayısı azdır. Araştırmaya katılan öğretmenler özel okullarda çalışmaktadırlar ve özel okulların uzaktan eğitim sürecini devam ettirmek için tercih etmiş oldukları Google Meet, Zoom, vb. platformlar bulunmaktadır. Öğretmenlerin kullandığı diğer yardımcı uygulamalar arasında Google uygulamaları (Meet, Classroom, Drive, Slides, Forms, Jaboard, vb.) (f20), Zoom (f11), Padlet (f8), Kahoot (f7), Nearpod(f5), Online simülasyonlar (f5), Learning Apps (f4), Canva (f4) vb. uygulamalar bulunmaktadır.

Öğretmenler, online oyunlar ve farklı uygulama ve etkinliklerle eğlenceli ve kolay öğrenme imkânı sunulmasını en önemli avantaj olarak görmüşlerdir (f13). İnteraktif, katılımcı eğitim imkânı

sunmaları da diğer avantajları arasında yer almıştır (f8). Hazırlanan sunumların etkin, kalıcı bilgi akışı sağlaması, sunumların tekrar olanağı sunması ve eğitim öğretimin devamını sağlaması da diğer en fazla tercih edilen avantajları oluşturmaktadır (f5). Öğrencinin kendi ortamında öğrenmesini sağlaması; öğrencilerin ilgi ve motivasyonlarını artırması da dörder katılımcı tarafından tekrarlanan avantajlar arasında yer almaktadır (f4). Bireysel odaklanma ve dikkat konusunda destek sağlaması (f3); bilgiye erişimde hız kazandırması (f3) da diğer avantajlar arasında yer almaktadır. 2 katılımcı ise dijital ortamda öğrenci takibini ve performans değerlendirmeyi kolaylaştırmasını avantaj olarak görmüşlerdir (f2).

Uzaktan eğitim uygulamalarının kullanımı fazla zaman aldığı için programın gerisinde kalınabilmesi (f4); öğrencinin uzun süre ekran başında zaman geçirmesine neden olması (f3); öğrenme sürecinin her anının eğlence, oyun olarak algılanması, bilişsel yük oluşturması, odaklanma sorununa neden olması (f3); öğrencilerin yönergeleri anlamakta zorlanması, arkadaşları ile etkileşiminin azalması (f3); internet bağlantısındaki sorunların eğitim öğretimi aksatması (f3) ise dezavantajları olarak görülmüştür. 3 katılımcı soruya hiç cevap vermemiş, Ö26 ise sadece "faydası var" cevabını vermiştir.

Katılımcılara, öğrencilerin farklılıklarını göz önünde bulundurarak seçmiş oldukları uygulama ve etkinlik olup olmadığı sorulmuştur. Eğer varsa bu uygulama ve etkinliklerin neler olduğunu paylaşmaları istenmiştir. Öğretmenler öğrenci farklılıklarına uygun olarak en çok grup çalışmaları hazırladıklarını (f5) belirtmişlerdir. Bunun yanında bu grup çalışmalarında GRAPS, Altı Şapka Düşünme, Menu Etkinlikleri gibi farklı çalışmalar hazırladıklarını belirtmişlerdir. Bunu öğrenci seviyesine uygun sorular (f4) ve PPT sunumlar (f3) ve "video ve ses kayıtları; diğer oyunlaştırma etkinlikleri; örnek olay incelemeleri; beyin fırtınası; çeşitli resim ve görsellerden yararlanma (f3) gibi farklılaştırma etkinlikleri takip etmiştir. 2 Katılımcı öğrenci farklılıklarına yönelik çalışmalar yaptığını belirtmiş ama yaptığı çalışmalara örnek vermemiştir. Diğer 12 öğretmen ise bu soruyu ya tamamen boş bırakmışlar ya da bu eğitim ihtiyacına yönelik çalışma yapmadıklarını belirtmişlerdir. Elde edilen verilerde görüldüğü gibi katılımcı öğretmenlerin azı öğrenci farklılıklarına yönelik çalışmalar hazırladığını belirterek bu çalışmalara örnek verebilmiştir (f16). Bu da öğrencilerin uzaktan eğitim sürecinde öğrenci farklılıklarına yönelik çalışmalar hazırlayabilme yeterliliği noktasında eksiklikler yaşayabildiklerini düşündürmektedir. Derslerinde öğrenci farklılıklarına uygun etkinlik hazırladıklarını paylaşan öğretmenler grup çalışmalarını genellikle Breakout Rooms ile odalar oluşturarak da yapabildiklerini belirtmişlerdir (f6). Ayrıca çevrimiçi ortamda Wordwall, Learning Apps gibi farklı uygulamalar aracılığıyla oyunlar hazırlayarak bu oyunları gruplar şeklinde oynayabildiklerini, çalışmalarında Edpuzzle'dan da faydalandıklarını paylaşmışlardır. (f3).

Öğretmenlerin kullandıkları uygulamalar ve öğretmen yeterliklerinin öğrenci ihtiyaçlarını karşılayıp karşılamadığı ile ilgili görüşleri alınmıştır. Öğretmenler, kullanılan uygulamaların öğrenme niteliğini artırmaya yönelik çalışmalardan oluşmasından dolayı (f11) öğrenme ihtiyaçlarını karşıladığını belirtmişlerdir. Bunun yanında uygulamaların öğrencilerin becerilerini geliştirmelerine destek olması (f8); ilgi ve motivasyonu artırması (f3); bilgiye hızlı ve pratik bir şekilde erişim sağlaması (f1) açısından öğrenci ihtiyaçlarını karşıladıklarını ifade etmişlerdir. Öğrenme niteliğini artırmaya yönelik çalışmaların yer aldığını düşünen öğretmenlerden bazıları yapılan etkinlikler sayesinde öğrencilerin düşünme, eleştirel düşünme, yaratıcı düşünme becerilerinin geliştiğine değinmişlerdir (f6) Bunun yanında grup çalışmaları sayesinde bu beceriler yanında öğrencilerin işbirliği becerilerinin de geliştiğini paylaşmışlardır. 8 katılımcı (f8) ise, başka hiçbir yorum yapmadan sadece "uygulamalar öğrenci

ihtiyaçlarını karşılamıyor" yorumunu yapmıştır. 5 katılımcı öğrencilerin duygusal ve sosyal ihtiyaçlarının karşılanmadığını (f5) düşünmektedir. Üçer katılımcı ise yüz yüze eğitimin avantajlarını ihtiyaç duyulduğunu; çevrimiçi öğrenme sırasında bazı öğrencilere ulaşma konusunda güçlük çekildiği; öğrencilerin uzun süre ekran başında olmasının sağlık açısından risk oluşturduğunu; kinesteteik öğrenme özelliklerine hizmet edemediğini (f3) belirtmişlerdir.

Katılımcılara öğretim sürecini daha verimli hale getirmeleri için eksik olduklarını düşündükleri yeterliklerin neler olduğu sorusu yöneltilmiştir. Katılımcıların %37'si (f10) uzaktan eğitim konusunda eksiğinin olmadığını düşünmektedir. Katılımcıların %30'u (f8) teknolojiye ayak uydurabilme konusunda sıkıntı yaşadıklarını; %22'si (f6) bilgisayar destekli eğitim yöntemlerinde eksikleri olduğunu belirtmişlerdir. Katılımcıların %11'i ise (f3) derse aktif katılım sağlama, öğrencilere akademik ve duygusal yönden ulaşmaya çalışma noktasında eksiklikler yaşadıklarını ifade etmişlerdir.

Katılımcılara uzaktan eğitim sürecinde yaşanan eksiklerin giderilebilmesi için ne gibi önerilerde bulunabilecekleri de sorulmuştur. Öğretmenler uzaktan eğitimde yaşanan sorunların giderilmesi için en çok (f10) daha fazla hizmet içi eğitim imkanı sunulmasını önermişlerdir. Çevrimiçi değerlendirme araçlarının kullanımı ile ilgili öneriler ise en çok tercih edilen (f7) diğer öneriler arasında yer almaktadır. Öğretmenlerin çevrimiçi değerlendirme araçlarını öğrenmeleri ve bu uygulamaları kullanarak öğrencilerin ders performansları ve akademik başarılarını değerlendirebilmeleri sayesinde uzaktan eğitim sürecinde ölçme değerlendirme alanındaki eksikliğin giderileceği düşünülmektedir. En çok tercih edilen bir diğer öneri ise uzaktan eğitimde öğrencilere fırsat eşitliğinin sağlanması (f6) olmuştur. Uzaktan eğitime uygun teknolojik ortamın oluşturulması (f5); öğretmen ve öğrencilere psikolojik destek sağlanması (f4); öğrencilerin akademik yönden desteklenmesi (f3) katılımcıların diğer önerileri arasında yer almaktadır.

Tartışma ve Sonuç

Araştırma verilerinden elde ettiğimiz bulgulara göre özel okul öğretmenleri uzaktan eğitim sürecinde eğitim öğretime en çok Google Meet ve Zoom platformları üzerinden devam etmişlerdir. Öğretmenler Eğitim Bilişim Ağı (EBA)'nın yanında Perculus, Microsoft Teams ve Jitsmeet gibi platformları da tercih etmişlerdir. Alper (2020), araştırmasında, uzaktan eğitim sürecinde öğretmenlerin öğrencileri ile Zoom, Whatsapp, Google Classroom, E-posta ve telefon üzerinden iletişime geçtikleri sonucuna ulaşmıştır. Araştırmaya katılan öğretmenlerin eğitim öğretim sürecinde faydalandıkları diğer uygulamalar arasında Google uygulamaları (Google meet/classroom/form/ drive/slides), Jamboard, Padlet, Kahoot, Learning Apps, Online simülasyonlar, Canva, Nearpod, Edpuzzle, Mentimeter, Quiziz, Teachermade ve diğer web 2.0 araçları bulunmaktadır. Araştırmaya katılan öğretmenlerden azı uzaktan eğitim sürecinde EBA'dan faydalandıklarını belirtmişlerdir. Bu öğretmenlerin özel okulda çalışıyor olmaları ve özel okulların kendi seçtikleri uygulama ve platformlar üzerinden eğitime devam etmelerinin bu duruma sebep olduğu düşünülmektedir.

Katılımcılar kullandıkları uygulamalar sayesinde online oyunlar, görsel ve işitsel öğrenmeyi destekleyen uygulama ve etkinliklerle eğlenerek öğrenme ortamları oluşturabilmelerini avantaj olarak görmektedirler. Başaran ve Kılınçarslan (2021) da araştırmaya katılan öğretmenler gibi uygulamalar kullanılarak oyunlaştırma etkinlikleri hazırlanmasının eğlenerek öğrenme ortamı oluşturduğunu belirtmişlerdir. Araştırmaya katılan öğretmenler de bu uygulamaların öğrencilerin aktif katılım sağladığı öğrenme imkanları sunduğunu ifade etmişlerdir. Araştırmaya katılan öğretmenler dezavantaj

olarak ise uygulamaların çok fazla zaman harcayabildiğini, ekran başında kalınan sürenin fazla olması ve bunun sağlık açısından da riskli olması, öğrencilerin eğitim sürecini hep eğlence ve oyun aktiviteleriyle geçireceği algısının oluşması, iletişim, etkileşim sorunlarının yaşanması, internet bağlantısı ile ilgili sorunların yaşanması gibi faktörleri sıralamışlardır. Akyürek (2020) de yüzyüze eğitim sürecinde öğrencilerle daha kolay iletişim kurulabildiğini ancak online eğitim sürecinde bunun zorlaştığını belirtmiştir.

Öğretmenler, öğrencilerin iş birliği becerisini geliştirmek için en çok Breakout rooms, Google (Google doc/forms/slaytlar/drive/meet) uygulamaları, Jamboard, bu uygulamaları kullanarak oluşturdukları grup çalışmalarını örnek vermişlerdir. Bunun yanında oyun içerikli etkinlikler, Microsoft Teams, Kahoot, Artsteps gibi uygulamalar kullanılarak yapılan etkinlikler de tercih edilmiştir. Öğrencilerin eleştirel düşünme ve yaratıcı düşünme becerilerini geliştirmeye yönelik de Breakout rooms, Padlet, Canva, Zoom, Postermywall, Microsoft Teams, Artsteps uygulamalarını kullandıklarını belirtmişlerdir. Becerilerin gelişimi için öğretmenler en çok grup çalışması yapabilecekleri uygulama ve etkinlikleri tercih etmişlerdir. Yine kendi ürünlerini tasarlayabilecekleri etkinlik ve uygulamalardan faydalandıklarını paylaşmışlardır. Özkul & Girginer (2014), öğrenme ortamında kullanılacak yöntem ve uygulamaların doğru seçiminin ders hedeflerini ve öğrenme becerilerinin kazandırılmasında önemli olduğunu belirtmiştir.

Her çocuk, birbirinden farklı yetenek, ilgi ve motivasyon, öğrenme türü, zeka gibi farklı özelliklere sahiptir (Aktepe, 2005). Bu farkılıkları öğrenme alışkanlıklarında da farklılıklara neden olabilmektedir. Öğretmenler öğrencilerinin farklı özelliklerini göz önünde bulundurarak en çok grup çalışmalarına (GRASPS, Raft, Altı Şapka Düşünme, Menu etkinlikleri) yer verdiklerini belirtmişlerdir.

Araştırmalara göre bazı öğretmenlerin kullandıkları eğitim teknolojilerini ders sürecine uyarlamakta güçlük çektikleri, öğretim yöntem ve teknikleri ile teknolojik uygulamaları birbirine entegre ederek verimli bir ders ortamı oluşturmakta zorlanabildikleri sonucuna varılmaktadır (Erbil, Demir & Erbil, 2021). Araştırmamızda elde edilen verilerde öğretmenler doğrudan böyle bir açıklamada bulunmasalar da uzaktan eğitim uygulamalarının yüz yüze eğitim avantajlarının yerini tutmadığını, öğrencilerin tamamına ulaşabilme noktasında sıkıntı yaşanabildiğini paylaşmışlardır. Tüm öğrenci ve öğretmenlerin uzaktan eğitim sürecinde aktif yer alabilmeleri için hem teknolojik materyal ihtiyaçlarının giderilmesi hem de internet, internet bağlantısı, altyapı sorunlarının giderilmesine ihtiyaç duyulduğu birçok araştırmanın sonuçlarını oluşturmaktadır (Demir & Özdaş, 2020; Erbil ve diğerleri, 2021; Genç, 2020; Uyar, 2020).

Öneriler

Uzaktan eğitim sürecinin daha verimli geçmesini sağlamak amacıyla öğretmenlerin ders planları üzerinde daha titiz çalışmaları dersin konu ve kazanımlarına uygun yöntem ve tekniklerin seçimine özen gösterilmeleri önerilmektedir. Öğretmenlerin uzaktan eğitim için daha yeterli hale gelebilmesi için eğitim teknolojilerinin kullanımına ilişkin hizmet içi eğitimlerle desteklenmeleri, bu eğitimleri alabilmeleri için kendilerine imkan ve zaman sunulması önerilmektedir.

Öğrencilerin bireysel farklılıkları göz önünde bulundurularak hazırlanacak öğrenme ortamlarının artırılması, öğretmenlerin farklılaştırma yöntemleri ile ilgili bilgi ve deneyim kazanma konusunda kendilerini geliştirmeleri, güncel gelişmeleri takip etmeleri önerilmektedir. Ayrıca öğrencilerin işbirliği becerilerinin gelişmesi, eleştirel ve yaratıcı düşünme ve diğer becerilerinin

gelişmesi için de uygun etkinlik ve yöntemlerle desteklenmeleri, öğretmenlerin bu konularda da kendilerini geliştirmeleri, bireysel olarak da eğitimleri ve sanal ortamdaki faydalı sayfaları takip etmeleri önerilmektedir. Okullarda ve evlerdeki teknolojik eksikliklerin giderilmesi, internet bağlantısı sorunlarının, öğrenme ortamlarındaki fiziki ve alt yapı sorunlarının çözülmesi, eğitimde fırsat eşitliğinin sağlanması için hem devlet hem de özel kurumların gerekli çalışmalara ağırlık vererek süreci devam ettirmesi önerilmektedir.

Examining the Relationship Between Teachers' Levels of Digital Literacy and Their Attitudes Towards Distance Education

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Abstract
The primary aim of this study was to investigate the relationship between teachers' levels of digital literacy and their attitudes towards distance education. Teachers' perceptions of distance education and their digital literacy levels were also compared in terms of gender, major, age, professional experience and the time they spend online daily. The sample of this survey study consisted of 919 teachers with 10 different majors working in state schools in the 2020-2021 academic year. The data were gathered through the digital literacy scale and the distance education attitude scale. In data analysis, regression and Pearson correlation, independent samples t-test, one-way ANOVA and Post Hoc tests were employed. The results showed that the teachers had a good level of digital literacy and their attitudes towards distance education were at moderate level. Significant differences were observed in their attitudes towards distance education and digital literacy levels in terms of gender, age, major and the time they spend online daily. In addition, a positive and moderately significant relationship was found between the teachers' levels of digital literacy and their attitudes towards distance education, and it was concluded that their digital literacy levels were a statistically significant predictor of their attitudes towards distance education attitude.
Keywords: Teachers, digital literacy, distance education, attitude

Introduction

Developments in science and technology have made communication easy and speeded up accessing information with a variety of ways and methods. The changes and developments have also affected the competencies and skills that individuals should have. Although many innovations such as appointment systems in the field of health, online shopping in the fields of economy and trade, banking systems and distance education tools in the field of education make our daily lives easier, they brought with them the need to acquire and develop certain skills so that we can benefit from these innovations.

Digital literacy has its place among the basic skills needed in the 21st century. The American Library Association (ALA) defines digital literacy as the cognitive and technical skills required to find, evaluate, create and communicate information using information and communication technologies. The concept was first defined by Paul Gilster (1997, p. 220) in 1997 as "the ability to use and evaluate digital resources, tools and services suitably and to extend this to lifelong learning processes". Digital literacy involves the ability to access information, media and technology, understand and critically evaluate different aspects of content, and create and communicate effectively. It can be briefly expressed as the ability to find, evaluate, use, share and create content using information technologies and the Internet.

Digital competence has been included among the eight key competencies included in the curricula updated in 2017. In the curricula, this competency is explained as follows, "It involves using information and communication technologies for work, daily life and communication in a safe and critical way. It is supported by basic skills such as using computers for accessing, evaluating, storing, producing, presenting, and exchanging information, as well as participating in common networks and communicating over the Internet" (Ministry of National Education [MoNE], 2017, p. 5). For students to be able to use information and communication technologies, teachers must first have these skills so as to use them effectively in their classes and enable their students to gain these skills.

Teachers' getting to know innovative educational technologies and creating learning opportunities for students by integrating them with pedagogical content knowledge has become a competency required by the digital age (Aksin, 2020: 43). Today, teachers are expected to keep up with

the developing technology and integrate it into their classes in order to address a group of students who know much more about technology than they do and who have been raised with technology. Prensky refers to people who are acquainted with digital technologies and try to keep up with them as "digital immigrants", and those who grow up familiar with these technologies are "digital natives" (Prensky, 2001). Digital natives who grow up surrounded by digital media are different from digital immigrants who learn to use technology later in life. These young individuals constitute the first generation in history to know more than their parents and teachers about digital information and communication technologies that are the most powerful tools for change in society (Trilling & Fadel, 2009). Although our tech-savvy 21st century students are often more fluent in the use of technology than their parents or teachers, they will always need guidance on how best to apply these powerful tools in complex learning and creative tasks (Trilling & Fadel, 2009). Teachers need to have digital competencies to be a good guide and use technology effectively in both face-to-face teaching and distance education. Even though the combination of decent content knowledge and good pedagogical competence is strategic for instruction, the ability to use technology as an important and powerful pillar of this integration has become one of the professional skills for today's teachers (Uzun & Akay, 2021, p. 242). Cuban, Kirkpatrick and Peck (2001) state that teachers' low-level use of technology is not sufficient to meet 21st-century students' needs, and that even the teachers who claim to have student-centred and constructivist practices do not have a strong or innovative way of using technology.

Digital literacy is regarded within the competency area called technological pedagogical content knowledge (TPACK) by Koehler and Mishra (2009). In addition, digital literacy covers "information literacy, media literacy, and information and communication technologies literacy" of the 21st century skills. The importance of having digital literacy skills for every member of the society, from teachers to students, or from children to the elderly, has been clearly seen during the COVID-19 pandemic that started in the first months of 2020 and spread all over the world. The pandemic turned all areas of life upside down, and various measures were taken to prevent its spread in Turkey as in rest of the world. Curfews, the obligation to use masks, the flexibility of working from home in government and private organizations were introduced, and face-to-face education was thus suspended. Many countries followed the concept "School's Out, But Class's On" adopted by the Chinese Ministry of Education, and have decided to suspend classes in the classroom, but move teaching and learning activities to a virtual environment (Carlesso, 2020, p. 1). Thus, distance education was implemented through online synchronous classes via computers/the Internet. In Turkey, one week after the schools were closed on March 11, 2020, the Ministry of National Education announced that there would be broadcasts on the Ministry's Education Information Network (EBA) and several TV channels of the Turkish State Radio and Television Corporation (TRT) for elementary and middle school students starting from March 23, 2020. Students were able to follow their own classes asynchronously through EBA. The same classes were broadcast on TRT channels at certain times of the day for students who did not have access to EBA and did not have computer/Internet access at home (Eken, Tosun & Tuzcu Eken, 2020, p. 119).

This instructional arrangement adopted during the pandemic is called "emergency distance education". According to Bozkurt et al. (2020), the most apparent difference between emergency distance education and distance education is that the latter is an option, but the former is a necessity. Distance education is a planned activity, and its implementation is based on theoretical and practical knowledge specific to the field and its nature. However, emergency distance education is about continuing educational activities with all available offline/online resources at the time of a crisis.

Distance education is an instructional setting that can be organized via the internet and computers without the need for the teacher and the student to be physically in the same environment. In the distance education process that was suddenly put into practice due to COVID-19, it was aimed to protect the health of children and young individuals on the one hand, and to continue education on the other. The use of information and communication technologies was prominent in this practice, trying to continue education through online and offline classes over the EBA platform (i.e. Educational Informatics Network in Turkey) and Zoom program.

The widely accepted advantage of distance education is flexibility in time, location and the pace of learning. Furthermore, students can attend the same lesson as many times as they want and review the same content as much as they need by means of materials uploaded online and video lessons stored in virtual libraries (Machado et al., 2019). The distance education process became a driving force by revealing the necessity of improving users' ability to use information and communication technologies. In order to ensure the effectiveness of the process, and academic achievement, both teachers, students and even parents had to try and improve their digital competencies through the help they could get from the environment, videos and online courses. The digital competencies of teachers, students and parents were an important factor affecting the effectiveness of the process. For Bozkurt et al. (2020), digital literacy skills emerged as the most critical need in emergency distance education for students, parents and teachers. Sezgin (2021, p. 284) also reported the lack of technological literacy and pedagogical knowledge of instructors who did not have distance education experience among the problems and limitations experienced in the process. Trust and Whalen (2020, p. 193) referred to teachers' competencies regarding the emergency distance education process as "making an airplane while flying". They found that teachers who frequently used technology in their classroom practices reported an easier transition to distance education for themselves and their students, while most teachers learned online and distance education strategies and tools during online classes.

The level of digital literacy skills teachers and students have in distance education can be seen as a factor that can positively or negatively affect their perception of this process. In the pandemic process starting with the 2020-2021 school year, many studies have been conducted in the context of distance education, particularly emergency distance education (Bozkurt et al., 2020; Carlesso, 2020; Eken, Tosun & Tuzcu Eken, 2020; Ferri, Grifoni & Guzzo, 2020; Sezgin, 2021; Trust & Whalen, 2020). There are also various studies on digital literacy, the focus of this study (Aksoy, Karabay & Aksoy, 2021; Arslan, 2019; Ata, Yıldırım, İpek & Ataş, 2021; Falloon, 2021; Sadaf & Johnson, 2017; Tatlı, 2018). However, no studies in the literature have focused on the relationship between teachers' levels of digital literacy and their attitudes towards distance education. The results of this study are expected to contribute to the research attempts on teacher competencies, digital literacy, and distance education.

The present study aimed at investigating the relationship between teachers' levels of digital literacy and their attitudes towards distance education by addressing the following research questions:

1. What are teachers' levels of digital literacy and their attitudes towards distance education?

2. Is there a relationship between teachers' digital literacy and their attitudes towards distance education?

3. Do teachers' levels of digital literacy have a statistically significant predictive effect on their attitudes towards distance education?

4. Do teachers' levels of digital literacy differ based on gender, major, age, education level, professional experience and the time they spend online daily?

5. Do teachers' attitudes towards distance education differ based on gender, major, age, education level, professional experience and the time they spend online daily?

Method

Research Model

Correlational survey model was adopted in this study aiming to examine the relationship between teachers' digital literacy and their attitudes towards distance education. Correlational survey studies are conducted to examine the relationships between two or more variables in order to describe a present case (Tabachnick & Fidell, 2013). Survey models are research approaches that aim to describe a past or present case as it exists. The case, individual or object that is the focus of research is aimed to be defined in its own conditions and as it is. There is no effort to change or influence them in any way (Karasar, 2012, p. 77).

Sample

Participants were chosen by convenience sampling. The participants in the sample were 919 teachers with 10 different majors working in state schools in the Central Anatolia Region in the 2020-2021 academic year. Demographic data for the participants are presented in Table 1.

Table 1. *Frequency and percentage distributions regarding the demographic characteristics of the participants*

Variable	Categories	f	%
Gender	Female	701	76,3
	Male	218	23,7
Major	Elementary School	387	42,1
	Social Studies	61	6,6
	Foreign Language	79	8,6
	Religious Culture and Ethics	41	4,5
	Mathematics	59	6,4
	Turkish Language	63	6,9
	Special Education	39	4,2
	Guidance	47	5,1
	Science and Technology	60	6,5
	Preschool	83	9,0
Age	20-30	120	13,1
	31-40	313	34,1
	41-50	328	35,7
	51 and above	158	17,2
Educational Level	Associate Degree	16	1,7
	Undergraduate	795	86,5
	Master's	93	10,1
	PhD	15	1,6
Professional Experience	1-5 years	94	10,2
	6-10 years	144	15,7
	11-15 years	160	17,4
	16-20 years	153	16,6
	21 years and above	368	40,0
Time Spent Online	less than 1 hour	35	3,8
	1-2 hours	200	21,8
	2-5 hours	421	45,8
	5 hours or above	263	28,6
Total		919	100,0

As is seen in Table 1, among the participants, 701 (76.3%) teachers were female and 218 (23.7%) male. With respect to major, 387 (42.1%) teachers were elementary school teachers, 61 (6.6%) social studies teachers, 79 (8.6%) foreign language teachers, 41 (4.5%) religious culture and ethics teachers, 59 (6.4%) mathematics teachers, 63 (6.9%) Turkish language teachers, 39 (4.2%) special education teachers, 47 (5.1%) guidance teachers, 60 (6.5%) science and technology teachers and 83 (9.0%) preschool teachers. Of all the teachers, 16 (1.7%) had an associate degree (two-year university program), 795 (86.5%) an undergraduate degree, 93 (10.1%) a Master's degree and 15 (1.6%) a PhD degree. Ninety-four teachers (10.2%) had a professional experience of 1-5 years, 144 (15.7%) 6-10 years, 160 (17.4%) 11-15 years, 153 (16.6%) 16-20 years and 368 (40%) 21 years and above. As for the time spent online daily, 35 (3.8%) teachers spent less than an hour, 200 teachers (21.8%) 1-2 hours, 421 teachers (45.8%) 2-5 hours and 263 teachers (28.6%) 5 hours or longer.

Data Collection Tools

The data were gathered through the "digital literacy scale" developed by Bayrakçı (2020) and the "distance education attitude scale" developed by Ağır (2007). The digital literacy scale consists of six sub-dimensions and 29 items on a five-point Likert type grading scale. The Kaiser-Meyer-Olkin (KMO) value was calculated as 0.922, and the Bartlett's test coefficient was significant ($p < .005$). The Cronbach-Alpha internal consistency coefficient was found to be 0.911. The CFA results of the scale showed that the fit indices of the six-factor model were at an acceptable level ($\chi2/sd = 4.3$; GFI = .91; AGFI = .90; CFI = .91; RMSEA = .05; RMR = .05; NFI = .89; IFI = .91).

Distance education attitude scale consists of 21 items on a five-point Likert-type grading scale, and two sub-dimensions. The KMO fitness value was calculated as 0.814, and the Bartlett test coefficient was found to be significant. The Cronbach-Alpha reliability coefficient was 0.835, and the correlation coefficient calculated using the Spearman Brown formula for split-half test reliability was found to be 0.799.

Data Analysis

The data collection instruments were shared online with the participants after obtaining the necessary permission from the Ethics Commision of Yozgat Bozok University (date: 12.08.2021, decision no.: 24/22). In order to see whether the collected data normally distributed, kurtosis, skewness and Kolmogorov-Smirnov normality test values were checked.

Table 2. *Descriptive statistics, normality and Levene's test values of the scores obtained from the scales*

Variables	n	$\bar{x}$	sd	Kurtosis	Skewness	Kolmogorov-Smirnov
Digital Literacy Scale	919	103,04	17,91	.166	-.219	.051
Distance Education Attitude Scale	919	55,27	13,97	.039	.127	.060

The skewness and kurtosis values of the scores obtained from each scale range from -1 to +1, and Kolmogorov-Smirnov test scores were found to be significant ($p > .05$). In this respect, the data can be said to be normally distributed in terms of scores obtained through the digital literacy scale and distance education attitude scale.

After ensuring a normal distribution, regression and Pearson correlation analyses were performed to determine the relationships between teachers' levels of digital literacy and their attitudes towards distance education. Whether the teachers' scores in the digital literacy scale and the distance

education attitude scale differed based on gender was examined by using Independent Samples T-test, while one-way ANOVA was used to reveal whether the scores differed based on major, age, education level, professional experience and the time spent online daily. In the case of significant differences as a result of ANOVA, Post Hoc analyses were carried out to determine which groups led to a significant difference. In the study, α=0.05 was accepted as the level of significance.

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Yozgat Bozok University, Ethics Committee

Date of ethical review decision= 25.08.2021

Ethics assessment document issue number= 24/22

Findings

What are teachers' levels of digital literacy and their attitudes towards distance education?

The descriptive statistics on the teachers' scores in the digital literacy scale and the distance education attitude scale are presented in Table 3.

Table 3. *Descriptive statistics on the teachers' scores in the digital literacy scale and the distance education attitude scale*

Variables	n	Range	Min	Max	Median	$\bar{x}$	sd
Digital Literacy Scale	919	104	41	145	130	103,04	17,91
Distance Education Attitude Scale	919	80	21	101	55	55,27	13,97

The teachers' (n=919) mean score was 103.04 in the digital literacy scale where the lowest score could be 29 and the highest 145. It can thus be argued that the teachers' digital literacy levels were good in general. The teachers' (n=919) mean score 55.27 in the distance education attitude scale where the lowest score could be 21, and the highest 105. In this regard, the teachers' attitudes towards distance education were at a moderate level.

Is there a relationship between teachers' digital literacy and their attitudes towards distance education?

The results of the correlation analysis conducted to see whether there was a relationship between the teachers' digital literacy levels and their attitudes towards distance education are presented in Table 4.

Table 4. *Results of the Pearson correlation analysis on the relationship between the teachers' digital literacy levels and their attitudes towards distance education*

Variables	n	$\bar{x}$	sd	r
Digital Literacy Scale	919	103,04	17,91	.339*
Distance Education Attitude Scale	919	55,27	13,97	

*$p < .01$

The results revealed a positive, moderate-level and significant relationship (r= .339, p < .01) between the teachers' digital literacy levels and their attitudes towards distance education.

Do teachers' mean scores in the digital literacy scale have a statistically significant predictive effect on their mean scores in the distance education attitude scale?

The results of the regression analysis performed to determine whether the teachers' digital literacy levels had a statistically significant predictive effect on their attitudes towards distance education are presented in Table 5.

Table 5. *Results of the regression analysis on the predictive effect of the teachers' digital literacy levels on their attitudes towards distance education*

R	R²	ΔR²		B	Std. Error	β	t	p
.339	.115	.114	Constant	28,05	2,53	.339	11,06	.001
			Attitude towards distance education	.264	.024		10,89	

The results showed that the teachers' digital literacy levels were a statistically significant predictor of their attitudes towards distance education. Of the total variance in the attitudes towards distance education, 11% could be explained with the teachers' digital literacy levels.

Do teachers' levels of digital literacy differ based on gender, major, age, educational level, professional experience, and the time they spend online daily?

The results of the Independent Samples t-test employed to determine whether the teachers' digital literacy levels significantly differed by gender.

Table 6. *Results of the Independent Sample t-test for the teachers' digital literacy levels based on gender*

Gender	n	$\bar{x}$	sd	df	t	p
Female	701	101,36	17,49	917	-5,161	.001*
Male	218	108,43	18,20			

*p<.01

The teachers' digital literacy levels were found to differ significantly by gender [t(917)=-5.161, p < .01]. The significant difference was due to the male teachers' digital literacy mean scores (X̄=108.43; sd=18.20) being higher than those of the female teachers (X̄=101.36; sd=17.49).

Table 7 shows the results of ANOVA performed to determine whether the teachers' digital literacy levels differed significantly based on major.

Table 7. *Results of ANOVA for the teachers' digital literacy levels based on major*

Major	n	$\bar{x}$	sd	df	F	p
Elementary School	387	100,58	18,42			
Social Studies	61	106,52	18,73			
Foreign Language	79	103,46	19,86			
Religious Culture and Ethics	41	101,97	14,58			
Mathematics	59	106,71	13,83	9	1,866	.06
Turkish Language	63	103,66	17,03	909		
Special Education	39	106,33	18,14			
Guidance	47	107,02	20,39			
Science and Technology	60	104,63	16,84			
Preschool	83	104,00	15,77			

The teachers' digital literacy levels were found not to differ statistically significantly based on major [F(9-909)=1,866, p > .05]. Although there was no statistically significant difference, guidance (X̄=107.02; sd=20.39), mathematics (X̄=106.71; sd=13.83), social studies (X̄=106.52; sd=18, 73) and special education (X̄=106.33; sd=18.14) teachers were observed to have higher levels of digital literacy compared to their colleagues with other majors. On the other hand, elementary school (X̄=100.58; sd=18.42) and religious culture and ethics (X̄=101.97; sd=14.58) teachers had lower levels of digital literacy.

The results of ANOVA conducted to see whether the teachers' digital literacy levels differed significantly based on age.

Table 8. *Results of ANOVA for the teachers' digital literacy levels based on age*

Age	n	$\bar{x}$	sd	df	F	p	Post Hoc
20 – 30	120	108,05	15,26				
31 - 40	313	106,60	17,35	3			1>3,4
41 - 50	328	100,39	18,35	915	15,019	.001*	2>3,4
51 and above	158	97,68	17,64				

*p<.01; Categories: 20-30=1, 31-40=2, 41-50=3, 51 and above=4

The teachers' levels of digital literacy showed a statistically significant difference based on age [F(3-915)=15,019, p < .01]. According to the Post Hoc test performed, the significant difference was due to the fact that the digital literacy levels of the teachers aged 20-30 (X̄=108.05; sd=15.26) and 31-40 (X̄=106.60; sd=17.35) were higher than those aged 41-50 (X̄=100.39; sd=18.35) and 51 and over (X̄=97.68; sd=17.64).

The results of ANOVA performed to determine whether the teachers' digital literacy levels significantly differed based on professional experience are presented in Table 9.

Table 9. *Results of one-way ANOVA for the teachers' digital literacy levels based on experience*

Professional Experience	n	$\bar{x}$	sd	df	F	p	Post Hoc
1 – 5 years	95	108,68	15,54				1>4,5
6 – 10 years	144	107,39	18,39				2>4,5
11 – 15 years	160	104,39	16,78	4	9,412	.001*	3>5
16 – 20 years	153	103,38	17,59	914			4>5
21 years and above	367	99,13	18,10				

*p<.01; Categories: 1-5 years=1, 6-10 years=2, 11-15 years=3, 16-20 years=4, 21 years and above=5

The teachers' levels of digital literacy showed a statistically significant difference based on professional experience [F(4-914)=9,412, p < .01]. The Bonferroni test revealed that the significant difference was due to the teachers with a professional experience of 1-5 years (X̄=108.68; sd=15.54), 6-10 years (X̄=107.39; sd=18.39), 11-15 years (X̄= 104.39; sd=16.78) and 16-20 years (X̄=103.38; sd=17.59) having higher digital literacy levels than those with an experience of 21 years and longer (X̄=99.13; sd=18.10), and the teachers with an experience of 1-5 years (X̄=108.68; sd=15.54) and 6-10 years (X̄=107.39; sd=18.39) having higher digital literacy levels than those with an experience of 16-20 years (X̄=103.38; sd=17.59). Based on the data, it can be stated that as the professional experience of the teachers increased, their average score in the digital literacy scale decreased.

Table 10 presents the results of ANOVA conducted to see whether the teachers' digital literacy levels differed significantly based on educational level.

Table 10. *Results of one-way ANOVA for the teachers' digital literacy levels based on educational level*

Education Level	n	$\bar{x}$	sd	df	F	p	Post Hoc
Associate Degree	16	98,25	14,62				
Undergraduate	795	101,81	17,45	3			3>1,2
Master's	93	110,92	18,66	915	15,332	.001*	4>1,2,3
PhD	15	124,26	15,40				

*p<.01; Categories: Associate degree=1, Undergraduate=2, Master's=3, PhD=4

The teachers' levels of digital literacy were found to significantly differ based on educational level [F(3-915)=15,332, p < .01]. The significant difference was due to the teachers with a Master's degree (X̄=110.92; sd=18.66) having higher digital literacy levels than those with an associate degree (X̄=98.25; sd=14.62) and an undergraduate (X̄=101.81; sd=17.45), and the teachers with a PhD degree (X̄=124.26; sd=15.40) having higher digital literacy levels than those with an associate degree (X̄=98.25; sd=14.62), an undergraduate (X̄=101.81; sd=17.45) and a Master's degree (X̄=110.92; sd=18.66). In other words, as the teachers' educational level increased, their average score in the digital literacy scale also increased.

The results regarding the teachers' digital literacy levels based on the time spent online daily are presented in Table 11.

Table 11. *Results of one-way ANOVA for the teachers' digital literacy levels based on the time spent online daily*

Time Spent Online	n	$\bar{x}$	sd	df	F	p	Post Hoc
Less than 1 hour	45	94,95	17,56				
1-2 hours	191	101,31	17,81	3			2>1
2-5 hours	413	103,29	17,75	915	5,084	.002*	3>1
5 hours or above	270	105,22	17,88				4>1,2

*p<.01; Categories: Less than 1 hour=1, 1-2 hours=2, 2-5 hours=3, 5 hours or above=4

The teachers' levels of digital literacy showed a statistically significant difference based on the time spent online daily [F(3-915)=5,084, p < .01]. The post-hoc test revealed that the teachers who were online 1-2 hours (X̄=101.31; sd=17.81) and 2-5 hours a day (X̄=103.29; sd=17.75) had higher digital literacy levels than those who spent less than 1 hour (X̄=94.95; sd=17.56), and the teachers who were online for 5 hours or longer (X̄=105.22; sd=17.88) had higher digital literacy levels than those who were online 1 hour (X̄=94.95; sd=17.56) and 1-2 hours a day (X̄=101.31; sd=17.81).

Do teachers' attitudes towards distance education differ based on gender, major, age, educational level, professional experience and the time they spend online daily?

Independent Samples t-test was performed to determine whether the teachers' attitudes towards distance education significantly differed by gender. The results of the analysis are presented in Table 12.

Table 12. *Results of the Independent Samples t-test for the teachers' attitudes towards distance education based on gender*

Gender	n	$\bar{x}$	sd	df	t	p
Female	701	54,01	12,94	917	-4,996	.001*
Male	218	59,35	16,26			

*p <.01

The data shows that the teachers' attitudes towards distance education differed statistically significantly based on gender [t(917)=-4.996, p < .05]. This significant difference was in favor of the male

teachers who had higher attitude scores (X̄=54.01; sd=12.94) than the female teachers (X̄=59.35; sd=16.26).

The results of ANOVA performed to determine whether the teachers' attitudes towards distance education differed significantly based on major are presented in Table 13.

Table 13. *Results of ANOVA for the teachers' attitudes towards distance education based on major*

Major	n	$\bar{x}$	ss	sd	F	p	Post Hoc
Elementary School	387	53,40	13,19				
Social Studies	61	62,42	15,15				
Foreign Language	79	57,56	16,05				
Religious Culture and Ethics	41	53,63	13,18				2>1,3,4,6,7,9,10
Mathematics	59	57,98	12,83	9	4,060	.001*	3>1,7
Turkish Language	63	54,36	14,69	909			5>1,7
Special Education	39	51,92	13,99				8>1,4,7,10
Guidance	47	59,57	11,05				
Science and Technology	60	56,46	14,85				
Preschool	83	54,46	13,69				

*p<.01; Categories: Elementary school=1, social studies=2, foreign language=3, religious culture and ethics=4, mathematics=5, Turkish language=6, special education=7, guidance=8, science and technology=9, preschool=10

The teachers' levels of attitudes towards distance education were found to differ statistically significantly based on major [F(9-909)=4,060, p < .01]. The post-hoc test revealed that this significant difference was in favor of the social studies (X̄=62.42; sd=15.15), foreign language (X̄=57.56; sd=16.05), mathematics (X̄=57.98; pp. =12.83) and guidance teachers (X̄=59.57; sd=11.05) who had higher scores in the distance education attitude scale than those with other majors.

The results of ANOVA performed to determine whether the teachers' attitudes towards distance education showed a significant difference based on educational level are presented in Table 14.

Table 14. *Results of one-way ANOVA for the teachers' attitudes towards distance education based on age*

Age	n	$\bar{x}$	sd	df	F	p	Post Hoc
20 – 30	120	57,05	12,53				
31 - 40	313	56,72	14,58	3			1>4
41 - 50	328	54,22	14,07	915	3,533	.01*	2>3,4
51 and above	158	53,24	13,23				

*p<.05; Categories: 20-30=1, 31-40=2, 41-50=3, 51 and above=4

The teachers' levels of attitudes towards distance education showed a statistically significant difference based on age [F(3-915)=3,533, p < .05]. This difference was in favor of the teachers aged 20-30 (X̄=57.05; sd=12.53) who had higher levels of attitudes than those aged 51 and above (X̄=53.24; sd=13.23), and the teachers aged 31-40 (X̄=56.72; sd=14.58) who had higher levels of attitudes than those aged 41-50 (X̄=54.22; sd=14.07) and 51 and above (X̄=53.24; sd=13.23).

The results of ANOVA conducted to find out whether the teachers' attitudes towards distance education significantly differed based on professional experience are presented in Table 15.

Table 15. *Results of one-way ANOVA for the teachers' attitudes towards distance education based on professional experience*

Professional Experience	n	$\bar{x}$	sd	df	F	p
1 – 5 years	95	56,28	13,43			
6 – 10 years	144	57,90	13,38			
11 – 15 years	160	55,74	14,86	4	2,337	.054
16 – 20 years	153	54,94	14,10	914		
21 years and above	367	53,92	13,79			

The teachers' levels of attitudes towards distance education showed no significant difference based on professional experience [F(4-914)=2,337, p > .05]. Even though there was no statistically significant difference, as the teachers' professional experience increased, their mean score in the distance education attitude scale decreased steadily.

Table 16 shows the results of ANOVA on the teachers' attitudes towards distance education based on educational level.

Table 16. *Results of one-way ANOVA for the teachers' attitudes towards distance education based on educational level*

Educational Level	n	$\bar{x}$	sd	df	F	p	Post Hoc
Associate degree	16	53,06	10,84				
Undergraduate	795	54,32	13,60	3	16,563	.001*	3>1,2
Master's	93	60,72	13,84	915			4>1,2,3
PhD	15	74,73	16,25				

*p<.01; Categories: Associate degree=1, undergraduate=2, Master's=3, PhD=4

The teachers' levels of attitudes towards distance education were found to significantly differ based on educational level [F(3-915)=16,563, p < .01]. This significant difference was in favour of the teachers with a Master's degree (X̄=60.72; sd=13.84) who had higher levels of attitudes than those with an associate degree (X̄=53.06; sd=10.84) and an undergraduate degree (X̄=54.32; sd=13.60), and the teachers with a PhD degree (X̄=74.73; sd=16.25) who had higher levels of attitudes than those with an associate degree (X̄=53.06; sd=10.84), an undergraduate degree (X̄=54.32; sd=13.60) and a Master's degree (X̄=60.72; sd=13.84). That is to say, as the teachers' educational level increased, their mean score in the distance education attitude scale also increased.

The results regarding the teachers' attitudes towards distance education based on the time spent online daily are presented in Table 17.

Table 17. *Results of one-way ANOVA for the teachers' attitudes towards distance education based on the time spent online daily*

Time Spent Online	n	$\bar{x}$	sd	df	F	p	Post Hoc
Less than 1 hour	45	46,77	14,84	3	9,422	.001*	2>1
1-2 hours	191	53,15	13,44				3>1,2
2-5 hours	413	55,85	13,22	915			4>1,2
5 hours or above	270	57,32	14,67				

*p<.01; Categories: less than 1 hour=1, 1-2 hours=2, 2-5 hours=3, 5 hours or above=4

The teachers' levels of attitudes towards distance education statistically significantly differed based on the time spent online daily [F(3-915)=9,422, p < .01]. According to the post-doc test, the difference was in favor of the teachers who were online 1-2 hours (X̄=53.15; sd=13.44), 2-5 hours (X̄=55.85; sd=13.22) and 5 hours or longer a day (X̄=57.32; sd=14.67) compared to those who spent less than 1 hour (X̄=46.77; sd=14.84), and the teachers who were online for 2-5 hours (X̄=55.85; sd=13.22)

and 5 hours or longer a day (X̄=57.32; sd=14.67) compared to those who were online less than 1 hour (X̄=46.77; sd=14.84) and 1-2 hours a day (X̄=53.15; sd=13.44). It can thus be stated that the teachers' mean scores in the distance education attitude scale increased as the time they spent online a day also increased.

Discussion and Conclusion

Developments observed in science and technology have led to a change in the competencies and skills that individuals should possess. The need for new skills and competencies has emerged with the widespread use of digital technologies in all areas of life (McGarr & McDonagh, 2019). Digital competence is one of these new skills and competencies. In the Turkish Qualifications Framework (2015, p. 24), digital competence is defined as "being able to use information society technologies for work, daily life and communication in a safe and critical manner". Reasons such as the effectiveness of using digital materials in education, easy access to public services over digital environments, the rapid spread of using information and communication technologies among children and young individuals, and the transition to distance education in elementary education during the pandemic process have highlighted that it is important for teachers, pre-service teachers, and students, even parents, to develop digital competence. In the European Union's Digital Education Action Plan covering the years 2021-2027, it is stated that digital competence should be a basic skill for all teachers and other educational staff and should be integrated into all areas of teacher professional development, including pre-service teacher training (Demirci, 2021, p. 10).

The results retrieved in the present study that aimed to reveal the relationship between teachers' levels of digital literacy and their attitudes towards distance education, and to compare their attitudes towards distance education and digital literacy levels in terms of gender, age, major and professional experience are as follows:

In the study, the teachers' levels of digital literacy were firstly determined, and these levels were compared in terms of gender, age, major and professional experience. It was found that the teachers' levels of digital literacy were somewhat good and showed significant difference in favor of the male teachers. Yontar (2019) and Rizal, Setiawan & Rusdiana (2018) found that the digital literacy levels of teacher candidates were at a moderate level, and Arslan (2019) reported that teachers' digital literacy scores were at a high level in average. Krumsvik (2008) argues that digital competence is more needed in the teaching profession than in other professions or for the average citizens. This is because teachers need to expand the opportunities of using information and communication technologies in their classes, as well as to enable their students to develop an ability to use technology safely and effectively (Krumsvik, 2008, p. 283). Similar to the findings of the present study, Çam and Kıyıcı (2017), Özerbaş and Kuralbayeva (2018), and Yontar (2019) found that male teacher candidates had higher levels of digital literacy compared to their female peers. This was attributed to the fact that men could be more interested in technological tools and developments than women.

Although the teachers' levels of digital literacy did not show a significant difference based on major, guidance teachers, mathematics teachers, social studies teachers and special education teachers were found to have higher levels than those with other majors did. Elementary school teachers and religious education and ethics teachers were found to have lower levels of digital literacy compared to teachers of other majors. In Arslan (2019), the digital literacy levels of teachers were revealed to differ

based on major, and the levels of informatics, mathematics and science teachers were found to be higher. Aksoy, Karabay and Aksoy (2021) reported that elementary school teachers perceived themselves as highly digitally literate.

The teachers' levels of digital literacy significantly differed based on age. The significant difference was in favor of the teachers aged 20-30 and 31-40 who had higher levels of digital literacy than those aged 41-50 and 51 and over. Sengir (2019) reported that the female teachers, teachers over 40 years old, and those with more than 20 years of experience had lower levels of using information technologies. Several studies (e.g., Aksoy, Karabay & Aksoy, 2021; Aslan, 2019) reported a negative correlation between the level of digital literacy and the age of teachers, indicating that the level of digital literacy decreases as the age of teachers increases. This can be explained by the fact that digital-immigrant teachers have more difficulties in adapting to technology compared to today's youth.

The teachers' levels of digital literacy were found to significantly differ based on professional experience. The Bonferroni test showed that the significant difference was due to the teachers with a professional experience of 1-5 years, 6-10 years, 11-15 years, and 16-20 years having higher digital literacy levels than those with an experience of 21 years and longer, and the teachers with an experience of 1-5 years and 6-10 years having higher digital literacy levels than those with an experience of 16-20 years. This finding overlaps with the results reported in Karabay and Aksoy (2021), and Aslan (2019), which can be interpreted as that the teachers' levels of digital literacy decreased as their professional experience increased. This can be attributed to the teacher education system that has been modified over the years.

The results of the present study revealed that the teachers' levels of digital literacy significantly differed based on educational level. The teachers holding an MA degree had higher levels of digital literacy than those with a two-year college degree or an undergraduate degree, while the teachers with a PhD degree had higher levels than those with a two-year college degree, an undergraduate degree or an MA degree. This shows that the teachers' level of digital literacy increased with their educational level. Similarly, Aksoy, Karabay and Aksoy (2021) found that teachers with a graduate degree had higher levels of digital literacy than those with other education levels did.

The amount of time spent online daily was found to be a variable that affected the level of digital literacy. The teachers' levels of digital literacy were found to differ statistically significantly based on the time spent online daily. The digital literacy levels of the teachers who were online for 5 hours or longer a day were higher than those who spent less time online. As the duration of using information and communication technologies increases, the skills and experience gained with digital tools will also increase with the digital literacy levels of teachers. This result coincides with the results of the research conducted by Yaman (2019) and Özerbaş and Kuralbayeva (2018), both of which concluded that the duration and frequency of Internet use was an effective variable on the digital literacy levels of teacher candidates.

Positive attitudes towards any task, activity or class are an important factor that increases the level of achievement. Just as teachers' or students' attitudes towards a class in face-to-face education affects the effectiveness of instruction, the same is true for the distance education process. The successful implementation of this process, for which we were not well prepared due to the pandemic, could mainly be associated with teachers' attitudes towards distance education.

In the present study, the teachers' attitudes towards distance education were determined, and were examined in terms of gender, age, major and professional experience. Their attitudes were found to be at the moderate level and differed based on gender in favor of the male teachers. The male teachers' scores in the distance education attitude scale were found to be higher than those of the female teachers. Several studies (e.g. Baek, Zhang & Yun, 2017; Moçoşoğlu & Kaya, 2020) found that teachers' levels of attitudes towards distance education were low. Ülkü (2018) reported that the attitudes of teachers working in primary schools were moderate towards distance education, but they had mostly negative attitudes. Kocayiğit and Uşun (2020) found that teachers' attitudes towards distance education were at a high level, but nearly half of the teachers participating in the study had little knowledge about distance education.

The teachers' levels of attitudes towards distance education were found to differ significantly based on major. The social studies, foreign language, mathematics, and guidance teachers had higher levels of attitudes towards distance education than those with other majors. In Baek, Zhang and Yun (2017), language teachers had a higher attitude than other content teachers.

The teachers' levels of attitudes towards distance education showed a statistically significant difference based on age. The teachers aged 20-30 had higher levels of attitudes than those aged 51 and above, and the teachers aged 31-40 had higher scores than those aged 41-50, and those aged 51 and above. Although there was no statistically significant difference in the teachers' levels of attitudes based on professional experience, as the teachers' professional experience increased, their mean score in the distance education attitude scale showed steady decrease. This finding overlaps with the findings reported in Moçoşoğlu and Kaya (2020) and Özen and Baran (2020). Yahşi and Kırkıç (2020) also found that attitudes towards distance education decreased as professional experience increased.

The teachers' levels of attitudes towards distance education were found to significantly differ based on educational level. In the distance education attitude scale, the teachers holding an MA degree had higher scores than those with a two-year college degree or an undergraduate degree, while the teachers with a PhD degree had higher scores than those with a two-year college degree, an undergraduate degree or an MA degree. In other words, as the teachers' level of educational degree increased, their mean scores in the distance education attitude scale also increased. In a similar vein, Karaca et al. (2021) concluded that teachers with an MA degree had a more positive perception of distance education than those with an undergraduate degree. Likewise, Yahşi and Kırkıç (2020) also found that teachers' attitudes towards distance education differed based on education level, and that their attitudes towards distance education became more positive as their education level increased.

The teachers' attitudes towards distance education differed significantly based on the duration of online time spent daily, and as this duration increased, their mean scores in the distance education attitude scale also showed an increase. This is consistent with another study, Durmuş and Baş (2017), reporting that the awareness level of teachers about distance education increased as the duration of using technological devices such as computers, tablets and smart phones increased.

With the global epidemic, online and distance education options have been widely used to ensure the continuity of education and instruction. In this regard, teachers' digital competencies have become one of the variables that bring about differences in quality and scope of online and distance education practices. In this process, teachers' lack of digital readiness caused many limitations (Demirci,

2021). Distance education implemented during the pandemic was a process where digital competencies were, in a way, tested. Teachers with digital competence were able to employ different methods, techniques and materials in online courses, as in face-to-face teaching. However, those who did not have this competence had a lot of difficulties in this process.

The results of the correlation analysis conducted to identify whether there was a relationship between teachers' levels of digital literacy and their attitudes towards distance education revealed a positive, moderate and significant relationship between the teachers' digital literacy levels and their attitudes. The results reported in Yahşi and Kırkıç (2020) also indicate that as the technology usage of teachers improves, their attitudes towards distance education get better. Metin, Gürbey and Çevik (2021) reported that teachers generally had a negative view of distance education, were not able to use the technological tools and software employed in distance education, and thus experienced difficulties in the process. The results of the regression analysis performed to determine whether the teachers' digital literacy levels had a statistically significant predictive effect on their attitudes towards distance education demonstrated that their digital literacy levels were a significant predictor of their attitudes. Bakioğlu and Çevik (2020) concluded that the biggest problems faced by science teachers in distance education were related to basic digital competencies including hardware/software programs like the Internet connection, computer programs and how to use computers. In international surveys, most teachers indicate that they need support to improve their ICT skills (Demirci, 2021). Sezgin (2021) asserts that the problems experienced by educators, such as content development, and finding, learning, and using the right technologies, or ethical concerns due to the use of personal data, especially in the emergency distance education process, can be the basis for resistance and reluctance to distance education in the long term.

Recommendations

Based on the results of this study, there seems to be a need to develop positive attitudes in individuals in order to increase effectiveness in distance education and for this to be achieved, teachers' digital competencies need to be improved. In based on the results of the present study, the following suggestions can be offered:

For teachers to integrate digital technologies into their classes, their levels of digital competence should be determined at the beginning of each semester and their needs should be clearly defined. The number of in-service trainings on distance education and digital competencies can be increased so as to ensure teacher professional development and promote positive attitude towards distance education. It can also be suggested to create forums where information and experiences are shared about using technology in face-to-face and distance education and organize national and international teacher congresses to share good practices. Digital literacy and distance education can be added to teacher education programs as compulsory courses. Implementing hybrid education in schools affiliated to the Ministry of National Education, as in higher education, and continuing to teach various courses through distance learning can increase teachers' experience in digital competencies and distance education. Studies in the literature mostly focus on teacher candidates' attitudes towards distance education. Teacher candidates are students in the distance education process, not educators. Further studies should be conducted to examine the experiences and perceptions of in-service teachers in distance education.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Öğretmenlerin Dijital Okuryazarlık Düzeyleri ile Uzaktan Eğitime Yönelik Tutumları Arasındaki İlişkinin İncelenmesi

Giriş

Bilim ve teknolojide yaşanan gelişmeler iletişimi kolaylaştırmış, bilgiye ulaşma yol ve yöntemlerini çeşitlendirerek hızlandırmıştır. Yaşanan değişim ve gelişmeler bireylerin sahip olması gereken yetkinlik ve becerileri de değiştirmiştir. Öğretmenlerin yenilikçi eğitim teknolojilerini iyi tanıyıp, pedagojik alan bilgileri ile bütünleştirerek öğrenciler için öğrenme fırsatları oluşturabilmesi dijital çağın gerektirdiği bir yeterlilik halini almıştır (Aksin 2020). Günümüzde öğretmenlerin, teknoloji hakkında kendilerinden çok daha fazla bilgi sahibi olan, teknoloji ile büyüyen bir öğrenci grubuna hitap edebilmesi için gelişen teknolojiye ayak uydurmaları ve teknolojiyi dersleriyle bütünleştirebilmeleri gerekmektedir. Bunun için ise öğretmenlerin dijital okuryazarlıklarının belirlenmesi önem taşımaktadır.

Uzaktan eğitim, öğretmen ve öğrencinin fiziksel olarak aynı ortamda bulunmasına gerek kalmadan internet ve bilgisayar aracılığıyla gerçekleştirilebilen bir eğitim uygulamasıdır. Covid-19 nedeniyle hızlı bir şekilde uygulamaya konulan uzaktan eğitim sürecinde bir yandan çocukların ve gençlerin sağlığını korumak diğer yandan eğitimin devam ettirilmesi amaçlanmıştır. Bu uygulamada bilgi iletişim teknolojilerinin kullanımı ön plana çıkmış, EBA platformu ve Zoom programı üzerinden çevrimiçi ve çevrimdışı dersler aracılığı ile eğitimin sürdürülmesine çalışılmıştır. Uzaktan eğitim süreci kullanıcıların bilgi ve iletişim teknolojilerini kullanma yeterliliklerini geliştirme zorunluluğunu ortaya çıkararak bir itici güç unsuru olmuştur.

Uzaktan eğitim sürecinde öğretmen ve öğrencilerin sahip oldukları dijital okuryazarlık becerilerinin düzeyi onların uzaktan eğitime yönelik algısını olumlu ya da olumsuz yönde etkileyen bir unsur olarak görülebilir. Literatür incelendiğinde öğretmenlerin dijital okuryazarlık düzeyleri ile

uzaktan eğitime ilişkin tutumları arasındaki ilişkinin incelendiği bir çalışmaya rastlanmamıştır. Öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutumları arasındaki ilişkiyi ortaya koymayı amaçlayan bu araştırmaya ilişkin alt problemler şunlardır:

1. Öğretmenlerin dijital okuryazarlık ve uzaktan eğitime yönelik tutumları hangi düzeydedir?

2. Öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutumları arasında ilişki var mıdır?

3. Öğretmenlerin dijital okuryazarlık düzeylerinin uzaktan eğitime ilişkin tutum düzeyleri üzerinde istatistiksel olarak anlamlı bir yordama etkisi var mıdır?

4. Öğretmenlerin dijital okuryazarlık düzeyleri cinsiyete, branşa, yaşa, eğitim düzeyine, mesleki kıdeme ve günlük çevrimiçi kaldıkları süreye göre farklılık göstermekte midir?

5. Öğretmenlerin uzaktan eğitime ilişkin tutum düzeyleri cinsiyete, branşa, yaşa, eğitim düzeyine, mesleki kıdeme ve günlük çevrimiçi kaldıkları süreye göre farklılık göstermekte midir?

Yöntem

Öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutumları arasındaki ilişkinin incelendiği bu araştırma bir ilişkisel (korelasyonel) tarama araştırmasıdır. Araştırma örneklemine dâhil edilen katılımcılar, kolay ulaşılabilir örnekleme yöntemiyle belirlenmiştir. Örneklemde yer alan katılımcılar, 2020-2021 eğitim-öğretim yılında İç Anadolu Bölgesindeki devlet okullarında, 10 farklı branşta görev yapan 919 öğretmenden oluşmaktadır. Veri toplama araçları olarak dijital okuryazarlık ölçeği ve uzaktan eğitim tutum ölçeği kullanılmıştır. Elde edilen verilerin normal dağılıp dağılmadığının incelenmesi için basıklık, çarpıklık ve Kolmogorov-Smirnov normallik testi değerlerine bakılmıştır. Verilerin normal dağıldığını belirledikten sonra öğretmen adaylarının dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutumları arasındaki ilişkileri belirlemek için regresyon ve Pearson korelasyon analizleri gerçekleştirilmiştir. Öğretmen adaylarının dijital okuryazarlık ölçeği ve uzaktan eğitim tutum ölçeğinden elde ettikleri puanların cinsiyete göre anlamlı bir farklılık oluşturup oluşturmadığı bağımsız örneklem t-testi; sınıf düzeyi ve gelir düzeyine göre anlamlı bir farklılık oluşturup oluşturmadığı ise tek yönlü ANOVA testi ile incelenmiştir.

Bulgular

Öğretmenlerin Dijital Okuryazarlık ve Uzaktan Eğitime Yönelik Tutumları Hangi Düzeydedir?

Öğretmenlerin dijital okuryazarlık ölçeği ve uzaktan eğitime yönelik tutum ölçeğinden aldığı puanlara ilişkin betimsel istatistikler incelendiğinde, öğretmenlerin (n=919) dijital okuryazarlık ölçeği puan ortalamalarının 103,04 olduğu görülmektedir. Öğretmenlerin ölçekten alabileceği en düşük puan 29, en yüksek puan ise 145'tir. 103,04 olan dijital okuryazarlık ölçeği puan ortalaması dikkate alındığında, öğretmenlerin dijital okuryazarlık düzeylerinin genel itibarıyla iyi düzeyde olduğu söylenebilir. Öğretmenlerin (n=919) uzaktan eğitim tutum ölçeği puan ortalamaları ise 55,27'dir. Uzaktan eğitim tutum ölçeğinden öğretmenlerin alabileceği en düşük puan 21, en yüksek puan ise 105'tir. Bu bağlamda düşünüldüğünde, öğretmenlerin uzaktan eğitime ilişkin tutumlarının orta düzeyde olduğu söylenebilir.

Öğretmenlerin Dijital Okuryazarlık Düzeyleri ile Uzaktan Eğitime Yönelik Tutumları Arasında İlişki Var Mıdır?

Öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutumları arasında ilişki olup olmadığını belirlemek amacıyla yapılan korelasyon analizi sonuçları incelendiğinde, öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutum puanları arasında pozitif yönlü ve orta düzeyde (r= .339, *p* <.01) anlamlı bir ilişki olduğu görülmektedir.

Öğretmenlerin Dijital Okuryazarlık Tutum Ölçeği Puan Ortalamalarının Uzaktan Eğitim Tutum Ölçeği Puan Ortalamaları Üzerinde İstatistiksel Olarak Anlamlı Bir Yordama Etkisi Var Mıdır?

Öğretmenlerin dijital okuryazarlık düzeylerinin uzaktan eğitime yönelik tutum düzeyleri üzerinde istatistiksel olarak anlamlı bir yordama etkisine sahip olup olmadığını belirlemek amacıyla gerçekleştirilen regresyon analizi sonuçları incelendiğinde, öğretmenlerin dijital okuryazarlık düzeylerinin, uzaktan eğitim tutum puanlarının istatistiksel olarak anlamlı bir yordayıcısı olduğu (R =.339, R^2 =.115, F = 118,787; P < .01) görülmektedir. Uzaktan eğitime ilişkin toplam varyansın %11'inin öğretmenlerin dijital okuryazarlık düzeyleri ile açıklandığı ifade edilebilir.

Öğretmenlerin Dijital Okuryazarlık Düzeyleri Cinsiyete, Branşa, Yaşa, Kıdeme, Eğitim Düzeyine ve Günlük Çevrim İçi Kalma Sürelerine Göre Farklılık Göstermekte Midir?

Öğretmenlerin dijital okuryazarlık düzeylerinin cinsiyete göre anlamlı farklılık gösterip göstermediğini belirlemek amacıyla gerçekleştirilen bağımsız örneklem t-testi sonuçlarına bakıldığında, öğretmenlerin dijital okuryazarlık düzeylerinin cinsiyete göre anlamlı bir farklılık gösterdiği görülmektedir [$t_{(917)}$=-5,161, *p* < .01]. Anlamlı farklılık erkek öğretmenlerin dijital okuryazarlık düzeyi puan ortalamalarının ($\bar{X}$=108,43; ss=18,20) kadın öğretmenlerin dijital okuryazarlık düzeyi puan ortalamalarından ($\bar{X}$=101,36; ss=17,49) daha yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin dijital okuryazarlık düzeylerinin, görev yaptıkları branşa göre anlamlı farklılık gösterip göstermediğini belirlemek amacıyla yapılan tek yönlü varyans analizi (ANOVA) sonuçları incelendiğinde, öğretmenlerin dijital okuryazarlık düzeylerinin görev yaptıkları branşa göre istatistiksel olarak anlamlı bir şekilde farklılaşmadığı görülmektedir [$F_{(9-909)}$=1,866, *p* > .05]. İstatistiksel olarak anlamlı bir farklılık görülmemesine rağmen Rehberlik ($\bar{X}$=107,02; ss=20,39), Matematik ($\bar{X}$=106,71; ss=13,83), Sosyal Bilgiler ($\bar{X}$=106,52; ss=18,73) ve Özel Eğitim ($\bar{X}$=106,33; ss=18,14) branşlarında görev yapan öğretmenlerin dijital okuryazarlık düzeylerinin diğer branşlarda görev yapan öğretmenlere göre daha yüksek olduğu görülmektedir. Sınıf Öğretmenliği ($\bar{X}$=100,58; ss=18,42) ve Din Kültürü ve Ahlak Bilgisi Öğretmenliği ($\bar{X}$=101,97; ss=14,58) branşlarında görev yapan öğretmenlerin dijital okuryazarlık düzeylerinin ise diğer branşlarda görev yapan öğretmenlerden daha düşük düzeyde olduğu söylenebilir.

Öğretmenlerin dijital okuryazarlık düzeylerinin yaşa göre anlamlı farklılık gösterip göstermediğini belirlemek için gerçekleştirilen tek yönlü varyans analizi (ANOVA) sonuçları incelendiğinde, öğretmenlerin dijital okuryazarlık düzeylerinin yaşa göre istatistiksel olarak anlamlı farklılık gösterdiği görülmektedir [$F_{(3-915)}$=15,019, *p* < .01]. Anlamlı farkın hangi değişken kategorilerinden kaynaklandığını belirlemek amacıyla yapılan Post Hoc testi sonucunda, görülen anlamlı fark, 20-30 ($\bar{X}$=108,05; ss=15,26) ile 31-40 ($\bar{X}$=106,60; ss=17,35) yaş aralığında olan

öğretmenlerin dijital okuryazarlık düzeylerinin, 41-50 ($\bar{X}$=100,39; ss=18,35) ile 51 ve üzeri ($\bar{X}$=97,68; ss=17,64) yaş aralığında olan öğretmenlerden daha yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin dijital okuryazarlık düzeylerinin kıdeme göre anlamlı farklılık gösterip göstermediğini belirlemek için yapılan tek yönlü varyans analizi (ANOVA) sonuçlarına göre, öğretmenlerin dijital okuryazarlık düzeyleri kıdeme göre istatistiksel olarak anlamlı farklılık gösterdiği görülmektedir [$F_{(4-914)}$=9,412, $p < .01$]. Gerçekleştirilen Bonferroni testi sonucunda, anlamlı farklılığın 1-5 yıl ($\bar{X}$=108,68; ss=15,54), 6-10 yıl ($\bar{X}$=107,39; ss=18,39), 11-15 yıl ($\bar{X}$=104,39; ss=16,78) ve 16-20 yıl ($\bar{X}$=103,38; ss=17,59) arası kıdeme sahip öğretmenlerin 21 yıl ve üzeri ($\bar{X}$=99,13; ss=18,10) kıdeme sahip öğretmenlerden; 1-5 yıl ($\bar{X}$=108,68; ss=15,54) ve 6-10 yıl ($\bar{X}$=107,39; ss=18,39) arası kıdeme sahip öğretmenlerin ise 16-20 yıl ($\bar{X}$=103,38; ss=17,59) arası kıdeme sahip öğretmenlerden daha yüksek dijital okuryazarlık düzeyine sahip olmasından kaynaklandığı görülmektedir. Veriler doğrultusunda öğretmenlerin mesleki kıdemleri arttıkça dijital okuryazarlık düzeyi puan ortalamalarının düşüş gösterdiği söylenebilir.

Öğretmenlerin eğitim düzeylerine göre dijital okuryazarlık düzeylerinin istatistiksel olarak anlamlı farklılık gösterip göstermediğini belirlemek için yapılan tek yönlü varyans analizi (ANOVA) sonuçları, öğretmenlerin dijital okuryazarlık düzeylerinin eğitim düzeylerine göre istatistiksel olarak anlamlı farklılaştığını göstermektedir [$F_{(3-915)}$=15,332, $p < .01$]. Görülen bu anlamlı farklılık yüksek lisans ($\bar{X}$=110,92; ss=18,66) mezunu öğretmenlerin ön lisans ($\bar{X}$=98,25; ss=14,62) ve lisans ($\bar{X}$=101,81; ss=17,45) mezunu olanlardan; doktora ($\bar{X}$=124,26; ss=15,40) mezunu olan öğretmenlerin ise ön lisans ($\bar{X}$=98,25; ss=14,62), lisans ($\bar{X}$=101,81; ss=17,45) ve yüksek lisans ($\bar{X}$=110,92; ss=18,66) mezunu olanlardan daha yüksek dijital okuryazarlık düzeyine sahip olmalarından kaynaklanmaktadır. Bir başka ifadeyle öğretmenlerin eğitim düzeyi arttıkça dijital okuryazarlık düzeyi puan ortalamalarının da artış gösterdiği söylenebilir.

Öğretmenlerin dijital okuryazarlık düzeylerinin günlük çevrim içi kalma sürelerine göre istatistiksel olarak anlamlı farklılık gösterip göstermediğine ilişkin sonuçlar incelendiğinde, öğretmenlerin dijital okuryazarlık düzeylerinin günlük çevrim içi kalma sürelerine göre istatistiksel olarak anlamlı farklılık gösterdiği görülmektedir [$F_{(3-915)}$=5,084, $p < .01$]. Anlamlı farkın hangi kategorilerinden kaynaklandığını belirlemek amacıyla yapılan Post Hoc testi sonucunda farklılığın, 1-2 saat ($\bar{X}$=101,31; ss=17,81) ve 2-5 saat ($\bar{X}$=103,29; ss=17,75) çevrim içi kalan öğretmenlerin 1 saatten az ($\bar{X}$=94,95; ss=17,56) çevrim içi kalan öğretmenlerden; 5 saat ve üzeri ($\bar{X}$=105,22; ss=17,88) çevrim içi kalan öğretmenlerin ise 1 saatten az ($\bar{X}$=94,95; ss=17,56) ve 1-2 saat ($\bar{X}$=101,31; ss=17,81) çevrim içi kalan öğretmenlerden dijital okuryazarlık düzeylerinin daha yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin Uzaktan Eğitim Tutum Düzeyleri Cinsiyete, Branşa, Yaşa, Kıdeme, Eğitim Düzeyine ve Günlük Çevrim İçi Kalma Sürelerine Göre Farklılık Göstermekte Midir?

Öğretmenlerin uzaktan eğitime yönelik tutumlarının cinsiyete göre anlamlı farklılık gösterip göstermediğini belirlemek amacıyla gerçekleştirilen bağımsız örneklem t-testi sonuçları, öğretmenlerin uzaktan eğitime yönelik tutumlarının cinsiyete göre istatistiksel olarak anlamlı farklılaştığını göstermektedir [$t_{(917)}$=-4,996, $p < .05$]. Bu anlamlı fark, erkek öğretmenlerin uzaktan eğitime yönelik tutum puanlarının ($\bar{X}$=54,01; ss=12,94) kadın öğretmenlerin uzaktan eğitime yönelik tutum puanlarından ($\bar{X}$=59,35; ss=16,26) daha yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin uzaktan eğitime ilişkin tutum düzeylerinin, görev yaptıkları branşa göre anlamlı farklılık gösterip göstermediğini belirlemek amacıyla yapılan tek yönlü varyans analizi (ANOVA) sonuçları incelendiğinde, öğretmenlerin uzaktan eğitim tutum düzeylerinin görev yaptıkları branşa göre istatistiksel olarak anlamlı bir şekilde farklılaştığı görülmektedir [$F_{(9-909)}$=4,060, *p* < .01]. Yapılan Post Hoc testi sonucunda bu anlamlı fark, Sosyal Bilgiler ($\bar{X}$=62,42; ss=15,15), Yabancı Dil ($\bar{X}$=57,56; ss=16,05), Matematik ($\bar{X}$=57,98; ss=12,83) ve Rehberlik ($\bar{X}$=59,57; ss=11,05) branşlarında görev yapan öğretmenlerin uzaktan eğitime ilişkin tutum düzeyi puan ortalamalarının diğer branşlarda görev yapan öğretmenlerden yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin uzaktan eğitim tutum düzeylerinin yaşa göre anlamlı farklılık gösterip göstermediğini belirlemek amacıyla yapılan tek yönlü varyans analizi (ANOVA) sonuçları incelendiğinde, öğretmenlerin uzaktan eğitim tutum düzeylerinin yaşa göre istatistiksel olarak anlamlı farklılık gösterdiği görülmektedir [$F_{(3-915)}$=3,533, *p* < .05]. Elde edilen bu anlamlı fark, 20-30 yaş ($\bar{X}$=57,05; ss=12,53) aralığında olan öğretmenlerin 51 ve üzeri ($\bar{X}$=53,24; ss=13,23) yaş aralığında olan öğretmenlerden; 31-40 ($\bar{X}$=56,72; ss=14,58) yaş aralığında olan öğretmenlerin ise 41-50 yaş ($\bar{X}$=54,22; ss=14,07) aralığı ile 51 ve üzeri ($\bar{X}$=53,24; ss=13,23) yaş aralığında olan öğretmenlerden dijital okuryazarlık düzeylerinin daha yüksek olmasından kaynaklanmaktadır.

Öğretmenlerin uzaktan eğitim tutum düzeylerinin kıdeme göre anlamlı farklılık göstermediğine ilişkin tek yönlü varyans analizi (ANOVA) sonuçları incelendiğinde, öğretmenlerin uzaktan eğitime ilişkin tutum düzeylerinin kıdemlerine göre istatistiksel olarak anlamlı bir farklılık göstermediği görülmektedir [$F_{(4-914)}$=2,337, *p* > .05]. İstatistiksel olarak anlamlı bir farklılık görülmemesine rağmen, öğretmenlerin kıdemleri arttıkça uzaktan eğitim tutum düzeyi puan ortalamalarının da düzenli olarak düşüş gösterdiği söylenebilir.

Öğretmenlerin eğitim düzeylerine göre uzaktan eğitime ilişkin tutumlarının istatistiksel olarak anlamlı farklılık gösterip göstermediğini belirlemek için yapılan tek yönlü varyans analizi (ANOVA) verileri, öğretmenlerin uzaktan eğitim tutum düzeylerinin eğitim düzeylerine göre istatistiksel olarak anlamlı farklılaştığını göstermektedir [$F_{(3-915)}$=16,563, *p* < .01]. Görülen bu anlamlı farklılık yüksek lisans ($\bar{X}$=60,72; ss=13,84) mezunu öğretmenlerin ön lisans ($\bar{X}$=53,06; ss=10,84) ve lisans ($\bar{X}$=54,32; ss=13,60) mezunu olanlardan; doktora ($\bar{X}$=74,73; ss=16,25) mezunu olan öğretmenlerin ise ön lisans ($\bar{X}$=53,06; ss=10,84), lisans ($\bar{X}$=54,32; ss=13,60) ve yüksek lisans ($\bar{X}$=60,72; ss=13,84) mezunu olanlardan daha yüksek uzaktan eğitim tutum düzeyine sahip olmalarından kaynaklanmaktadır. Bir başka ifadeyle öğretmenlerin eğitim düzeyi arttıkça uzaktan eğitime ilişkin tutum düzeyi puan ortalamalarının da artış gösterdiği söylenebilir.

Öğretmenlerin uzaktan eğitim tutum düzeylerinin günlük çevrim içi kalma sürelerine göre istatistiksel olarak anlamlı farklılık gösterip göstermediğine ilişkin veriler incelendiğinde, öğretmenlerin uzaktan eğitim tutum düzeylerinin günlük çevrim içi kalma sürelerine göre istatistiksel olarak anlamlı farklılık gösterdiği görülmektedir [$F_{(3-915)}$=9,422, *p* < .01]. Anlamlı farkın hangi kategorilerinden kaynaklandığını belirlemek amacıyla yapılan Post Hoc testi sonucunda farklılığın, 1-2 saat ($\bar{X}$=53,15; ss=13,44), 2-5 saat ($\bar{X}$=55,85; ss=13,22) ile 5 saat ve üzeri ($\bar{X}$=57,32; ss=14,67) çevrim içi kalan öğretmenlerin 1 saatten az ($\bar{X}$=46,77; ss=14,84) çevrim içi kalan öğretmenlerden; 2-5 saat ($\bar{X}$=55,85; ss=13,22) ile 5 saat ve üzeri ($\bar{X}$=57,32; ss=14,67) çevrim içi kalan öğretmenlerin 1 saatten az ($\bar{X}$=46,77; ss=14,84) ve 1-2 saat ($\bar{X}$=53,15; ss=13,44) çevrim içi kalan öğretmenlerden uzaktan eğitim tutum düzeylerinin daha yüksek olmasından kaynaklandığı görülmektedir. Tablodaki veriler sonucunda

öğretmenlerin günlük çevrim içi kalma süreleri arttıkça uzaktan eğitim tutum düzeyi puan ortalamalarının da düzenli bir artış gösterdiği söylenebilir.

Tartışma ve Sonuç

Araştırmada ilk olarak öğretmenlerin dijital okuryazarlık düzeyleri belirlenmiş ve bu düzey cinsiyet, yaş, branş, mesleki kıdem değişkenleri açısından karşılaştırılmıştır. Araştırmada, öğretmenlerin dijital okuryazarlık düzeylerinin genel itibarıyla iyi düzeyde olduğu, bu düzeyin cinsiyete göre erkek öğretmenler lehine anlamlı bir farklılık gösterdiği belirlenmiştir. Yontar (2019) ve Rizal, Setiawan ve Rusdiana (2018) tarafından yapılan araştırmalarda da öğretmen adaylarının dijital okuryazarlık düzeyinin orta düzeyde olduğu, Arslan (2019) tarafından yapılan araştırmada öğretmenlerin dijital okuryazarlık ortalama puanlarının yüksek düzeyde olduğu belirlenmiştir. Yine araştırma bulguları ile örtüşen Çam ve Kıyıcı (2017), Özerbaş ve Kuralbayeva (2018) ve Yontar (2019) tarafından yapılan çalışmalarda erkek öğretmen adaylarının dijital okuryazarlık düzeylerinin kadın öğretmen adaylarınınkinden daha yüksek olduğu belirlenmiştir. Bu durumun, erkeklerin teknolojik araç ve gelişmelere kadınlara göre daha fazla merak ve ilgi duymalarından kaynaklanabileceği ifade edilmiştir.

Öğretmenlerin dijital okuryazarlık düzeylerinin, görev yaptıkları branşa göre istatistiksel olarak anlamlı bir şekilde farklılaşmadığı ancak Rehberlik, Matematik, Sosyal Bilgiler ve Özel Eğitim branşlarında görev yapan öğretmenlerin dijital okuryazarlık düzeylerinin diğer branşlarda görev yapan öğretmenlere göre daha yüksek olduğu görülmüştür. Arslan'ın (2019) yaptığı araştırmada öğretmenlerin dijital okuryazarlık düzeylerinin branşa göre farklılaştığı belirlenmiş, bilişim, matematik ve fen bilgisi öğretmenlerinin düzeylerinin diğer branşlara göre daha yüksek olduğu bulunmuştur. Aksoy, Karabay ve Aksoy (2021) tarafından yapılan çalışmada sınıf öğretmenlerinin kendilerini yüksek düzeyde dijital okuryazar gördükleri sonucuna ulaşılmıştır. Sonuçların farklılığı, örneklem farklılığı ile açıklanabilir. Öğretmenlerin dijital okuryazarlık düzeylerinin düşük yaş gruplarında daha yüksek olduğu görülmüştür. Aksoy, Karabay ve Aksoy (2021) ve Aslan (2019) tarafından yapılan çalışmalarda da öğretmenlerin yaşı arttıkça dijital okuryazarlık düzeyinin azaldığı görülmüştür. Bu durum, dijital göçmen olarak adlandırılabilen öğretmenlerin günümüz gençlerine oranla teknolojiye uyum sağlamakta zorlanmaları ile açıklanabilir. Öğretmenlerin dijital okuryazarlık düzeyleri, lisansüstü eğitim derecesine sahip öğretmenlerin lehine anlamlı farklılık göstermiştir. Aksoy, Karabay ve Aksoy (2021) tarafından yapılan çalışmada da lisansüstü eğitime sahip öğretmenlerin dijital okuryazarlık düzeylerinin diğer öğrenim düzeyindeki öğretmenlere kıyasla daha yüksek bulunmuştur. Günlük çevrimiçi kalma süresi yüksek olan öğretmenlerin dijital okuryazarlık düzeylerinin daha yüksek olduğu belirlenmiştir. Bu sonuç Yaman (2019) ve Özerbaş ve Kuralbayeva (2018) tarafından gerçekleştirilen araştırma sonuçları ile örtüşmektedir. Her iki çalışmada da internet kullanma süresi ve sıklığının öğretmen adaylarının dijital okuryazarlık düzeyleri üzerinde etkili bir değişken olduğu sonucuna ulaşılmıştır.

Araştırmanın diğer bir bağımlı değişkeni öğretmenlerin uzaktan eğitim tutum düzeyleridir. Öğretmenlerin uzaktan eğitim tutumlarının orta düzeyde olduğu ve bu tutumun cinsiyete göre istatistiksel olarak erkeklerin lehine anlamlı farklılaştığı görülmüştür. Baek, Zhang ve Yun (2017) ile Moçoşoğlu ve Kaya'nın (2020) çalışmalarında öğretmenlerin uzaktan eğitime yönelik tutum düzeylerinin düşük olduğu belirlenmiştir. Ülkü'nün (2018) çalışmasında ise ilkokullarda görev yapan öğretmenlerin uzaktan eğitime yönelik tutumlarının orta seviyede olduğu ancak daha çok olumsuz yönde bir tutuma sahip oldukları ifade edilmiştir.

Sosyal Bilgiler, Yabancı Dil, Matematik ve Rehberlik branşlarında görev yapan öğretmenlerin uzaktan eğitim tutum düzeyleri diğer branşlara göre daha yüksektir. Baek, Zhang ve Yun (2017) tarafından yapılan çalışmada ise dil öğretmenlerinin diğer branşlara göre daha yüksek bir tutuma sahip oldukları görülmüştür. 20-30 yaş aralığında olan öğretmenlerin 51 ve üzeri yaş aralığında olan öğretmenlerden; 31-40 yaş aralığında olan öğretmenlerin ise 41-50 yaş aralığı ile 51 ve üzeri yaş aralığında olan öğretmenlerden uzaktan eğitime ilişkin tutum düzeyi puanlarının daha yüksek olduğu görülmüştür. Bu bulgu, Moçoşoğlu ve Kaya'nın (2020) ve Özen ve Baran'ın (2020) araştırma sonuçları ile örtüşmektedir. Yahşi ve Kırkıç da (2020) mesleki kıdem yükseldikçe uzaktan eğitim tutumunun azaldığı yönünde sonuçlar elde etmişlerdir. Yüksek lisans mezunu öğretmenlerin ön lisans ve lisans mezunu olanlardan; doktora mezunu olan öğretmenlerin ise ön lisans, lisans ve yüksek lisans mezunu olanlardan daha yüksek uzaktan eğitim tutum düzeyine sahip oldukları görülmüştür. Bu bulgu öğretmenlerin eğitim düzeyi arttıkça uzaktan eğitime ilişkin tutum düzeyi puan ortalamalarının da artış gösterdiği şeklinde yorumlanabilir. Karaca ve arkadaşlarının (2021) yaptıkları çalışmada yüksek lisans mezunu öğretmenlerin lisans mezunu öğretmenlerden daha olumlu bir uzaktan eğitim algılarının olduğu sonucuna ulaşılmıştır. Yahşi ve Kırkıç da (2020) yaptıkları araştırmada öğretmenlerin uzaktan eğitime yönelik tutumlarının öğrenim düzeyi değişkenine göre farklılaştığı, öğretmenlerin eğitim düzeyi yükseldikçe uzaktan eğitim konusundaki tutumlarının daha olumlu olduğu sonucuna ulaşmışlardır. Öğretmenlerin uzaktan eğitim tutum düzeylerinin günlük çevrimiçi kalma sürelerine göre istatistiksel olarak anlamlı farklılık gösterdiği, günlük çevrimiçi kalma süreleri arttıkça uzaktan eğitim tutum düzeyi puan ortalamalarının da düzenli bir artış gösterdiği sonucuna ulaşılmıştır. Durmuş ve Baş'ın (2017) araştırmasındaki bilgisayar, tablet ve akıllı telefon gibi bilişim cihazlarını kullanma süresi arttıkça öğretmenlerin uzaktan eğitime ilişkin farkındalık düzeyinin arttığı sonucu, araştırmanın bulguları ile örtüşmektedir.

Araştırmada öğretmenlerin dijital okuryazarlık düzeyleri ile uzaktan eğitime yönelik tutum puanları arasında pozitif yönlü ve orta düzeyde anlamlı bir ilişki olduğu görülmüştür. Yahşi ve Kırkıç'ın (2020) araştırma sonuçları da öğretmenlerin teknoloji kullanım düzeyi iyileştikçe uzaktan eğitim tutumunun yükseldiği yönündedir. Araştırma sonucunda öğretmenlerin dijital okuryazarlık düzeylerinin, uzaktan eğitim tutum puanlarının istatistiksel olarak anlamlı bir yordayıcısı olduğu belirlenmiştir. Bakioğlu ve Çevik (2020) tarafından yapılan çalışmada fen bilimleri öğretmenlerinin uzaktan eğitimde yaşadıkları en büyük problemlerinin bilgisayarla ilgili olarak yazılım/donanım problemleri; internet bağlantısı, bilgisayar programları, bilgisayar aksanları ve bilgisayarı nasıl kullanacaklarını bilmeme gibi genel dijital yetkinlik düzeyleri olduğu sonucuna ulaşılmıştır.

Öneriler

Araştırma sonuçlarından hareketle uzaktan eğitimde başarının arttırılması için olumlu tutumun geliştirilmesine ve bunun gerçekleştirilebilmesi için de öğretmenlerin dijital yeterliliklerinin geliştirilmesine ihtiyaç duyulduğu söylenebilir. Bu kapsamda yapılabilecek öneriler şunlardır:

Öğretmenlerin dijital teknolojiyi dersleriyle bütünleştirebilmeleri için her yılın başında dijital yeterlilik düzeyleri belirlenmeli ve ihtiyaçları net olarak tanımlanmalıdır. Öğretmenlerin dijital yeterliliklerinin geliştirilmesi, uzaktan eğitime yönelik olumlu tutumun arttırılması için uzaktan eğitim ve dijital yetkinlik konusunda hizmetiçi eğitimlerin sayısı arttırılabilir. Yüz yüze eğitimde ve uzaktan eğitimde teknolojiyi kullanma konusunda bilgi ve deneyimlerin paylaşıldığı forumlar oluşturulması, örnek uygulamaların paylaşılabilmesi için düzenli olarak ulusal ve uluslararası öğretmen kongrelerinin

yapılması önerilebilir. Öğretmen eğitimi programlarına dijital okuryazarlık dersi ve uzaktan eğitim dersi zorunlu ders olarak eklenebilir. Milli Eğitim Bakanlığına bağlı okullarda da yükseköğretimde olduğu gibi hibrit eğitime geçilerek bazı derslerin uzaktan eğitimle yapılmaya devam edilmesi dijital yeterlilik ve uzaktan eğitim konusunda deneyimi arttırabilir. Yapılan çalışmalar genellikle öğretmen adaylarının uzaktan eğitime ilişkin tutumlarının incelendiği çalışmalardır. Öğretmen adayı uzaktan eğitim sürecinde eğitimci değil öğrenci konumundadır. Hizmet sürecindeki öğretmenlerin uzaktan eğiteme yönelik deneyimlerinin ve algılarının incelendiği çalışmalara daha fazla yer verilmelidir.

The Effect of OpenDyslexic Font on Fluent Reading and Reading Comprehension Skills of Students with Dyslexia

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Abstract
In this study, the effect of OpenDyslexic font on increasing the reading fluency and reading comprehension skills of students with dyslexia was investigated. For this purpose, the effect of OpenDyslexic font on increasing the reading speed, reading accuracy, prosodic reading levels, reading levels and reading comprehension levels of students with reading difficulties was examined. Three students with a diagnosis of "Learning Disability" and a subdiagnosis of "Mixed-Type Disorder in Scholastic Skills" participated in the study. Participants are 10 years old and fourth grade level. In the study, "Inter-Subject Multiple Probe Model", one of the single-subject research designs, was used. In order to collect the research data, texts suitable for the fourth grade level were used. At the beginning level of the research, the texts in the font used in the textbooks were studied, and in the application phase, the texts were converted to OpenDyslexic font. Research results show that OpenDyslexic font is effective in increasing reading fluency and reading comprehension level in all three students. There was an increase in participants' reading speed, reading accuracy, prosodic reading and reading comprehension skills. It is recommended to include texts prepared with OpenDyslexic font in school textbooks.
Keywords: Dyslexia, OpenDyslexic, learning disability, specific learning disability, mixed-type disorder in scholastic skills.

Introduction

Reading is becoming more and more important in the academic, social and personal development of individuals. However, there are several students who have reading problems in schools (Bingöl, 2003). One of the most important causes of reading problems is known as "dyslexia". Dyslexia; which is a genetically based neurodevelopmental reading disorder characterized by reading, decoding and spelling problems at the word level and disorders in oral reading fluency and usually manifests as a deficiency in phonological abilities. (Rello and Baeza-Yates, 2013; Hoien and Lundberg, 2000).

Dyslexia is commonly classified as acquired and developmental dyslexia. Acquired dyslexia is a reading disorder caused by brain damage, also known as "alexia" or "traumatic dyslexia". It is a condition that is generally seen in adults, and it is a condition that occurs when the reading ability, which is fully acquired and developed before, is lost as a result of accident, tumor, stroke, drugs used, psychiatric disorders or damage to the brain due to aging (Brunswick, 2009; Doyle, 2002). Those having reading loss are divided into groups according to the reading or spelling mistakes they make, or the specific literacy skills they seem to lack (Doyle, 2002). Accordingly, the most known types of acquired dyslexia are deep dyslexia, surface dyslexia and phonological dyslexia. Although there is no single universally accepted definition of developmental dyslexia, many proposed definitions generally describe its symptoms and point to the possible cause. The American Psychiatric Association (APA) defines developmental dyslexia as an unexpected, specific, and persistent failure to acquire productive reading skills despite traditional teaching, adequate intelligence, and sociocultural opportunities (Nicolson & Fawcett, 2008).

A good number of hypotheses have been put forward to use in the diagnosis and treatment of individuals with dyslexia in order to eliminate reading difficulties. One of these hypotheses, the "Magnocellular Deficiency Hypothesis", shows that the magnocellular systems of dyslexics are different from each other as responsible for their reading difficulties. This hypothesis is based on the fact that the magnocellular system is very actively involved in the saccadic movement of the eyes during reading (Vellutino, Fletcher, Snowling, & Scanlon, 2004; Vender, 2017). Proponents of the Magnocellular

Deficiency Hypothesis claim that the magnocellular system is not active in the normal order of functioning in relation to the reading difficulties experienced by dyslexics, and they show the problems they experience in the visual focus of attention, timing and tracking of eye movements in dyslexics. The fact that the magnocellular system is responsible for detecting visual movement, sensing the direction of movement, controlling eye movement, timing and tracking eye movements, and changes in the focus of visual attention and eye movements have led them to this conclusion (De Leeuw, 2010; Stein, 2018; Wilsenach, 2006). The lack of the magnocellular system makes it difficult to control eye movements, causing the reader to be unable to position the letters and see the letters moving as they slide over each other (De Leeuw, 2010; Wilsenach, 2006). Changing the place of letters is one of the most common situations in dyslexics. This is due to the inability to direct both eyes to the same point steming from the inability to control eye movements, which leads to 'reverse' letter effects (Goswami, 2014). The visual confusion of the letters or their reverse order causes the visual form of the words not to be transferred to the visual dictionary or memory, which is emphasized in reading, and thus, spelling skills cannot be acquired (Wilsenach, 2006).

Individuals with dyslexia who are exposed to these difficulties cannot make positive progress with traditional teaching methods. The British Dyslexia Association (2021) and Bender (2012) stated that while dyslexic individuals resist standard intervention methods, their difficulties can be alleviated with appropriate special intervention methods. One of the special intervention methods for individuals with dyslexia is the use of special tools such as adapted typography. According to Zelinkova (2003), the reading performance of students with dyslexia is significantly affected by the graphic qualities of the text, such as font and size, line spacing or letter spacing. Dyslexic readers must put more effort in word recognition and focus more on the text compared to other readers, making them more sensitive to all visual aspects of the text (Zikl et al., 2015). This finding prompted the authors to further examine the effect of visual features of text on reading in individuals with dyslexia.

Recent studies on dyslexia have emphasized that it may be beneficial to prepare the texts they read in a different quality from those presented to normal readers in order to enable dyslexics to read in better conditions. Therefore, different fonts have been designed that are claimed to make it easier for individuals with dyslexia to read. One of them is the OpenDyslexic font, which is the subject of our research.

OpenDyslexic Font

Many fonts are designed differently to provide better reading performance for dyslexics. Among these, apart from "OpenDyslexic" (Gonzalez, 2021), which is the subject of our study, there are also "Lexie Readable" (Bates, 2021) and "Dyslexie" (Dyslexie Font, 2021). The common feature of the designed fonts is the use of simple handwriting forms of certain letters and avoidance of letter symmetry in order to increase the reading performance of dyslexic readers, as well as increasing the spacing between letters, words and lines in the text (Harle et al., 2013).

OpenDyslexic is an open source font created to increase the readability of texts for individuals with dyslexia (Laddusaw and Brett, 2019). The OpenDyslexic font is designed to assist with the most common reading difficulties in dyslexics. The first of these is the confusion of letters that are similar to each other, as in the example of 'b' and 'd'. In the OpenDyslexic font, this problem was tried to be solved by giving fullness in different directions to make the letters distinguishable from each other (see Figures 1 and 2). According to Laddusaw and Brett (2019), the design of letters with fullness in different

directions and their unique shapes help prevent the mind of the dyslexic reader from moving and turning the letters.
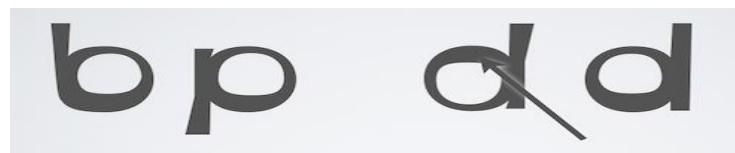
Figure 1. OpenDyslexic letter notation (OpenDyslexic, 2021)

Figure 2. OpenDyslexic comparison (OpenDyslexic, 2021)

The OpenDyslexic font has been widely used on many platforms such as Wikipedia, Amazon Kindle Paperwhite and Koboe Reader, since it is open source after its design (Laddusaw and Brett, 2019). In the studies conducted, it has been determined that the OpenDyslexic font reduces the reading anxiety and reading errors of dyslexics, keeping their concentration on the text more intensely and enabling them to read for a long time (Zikl, et al., 2015; Laddusaw and Brett, 2019; Wery and Diliberto, 2016; De Leeuw, 2010).

Studies have also found that positive results will increase due to the increase in the experience of students using the OpenDyslexic font (Zikl, et al., 2015; Barsky and Grigorovich, 2013). Therefore, it is expected that the positive results from the first use of the OpenDyslexic font will be further enhanced by the increasing familiarity of the students with the font. This can be achieved by using the same font throughout a long process, starting from the first step of their education life to the end. In addition to the positive results obtained in the use of the OpenDyslexic font, studies concluded that no positive or negative difference was observed or they did not provide positive contributions. In these studies, although the OpenDyslexic font was found to be more readable and more suitable for dyslexics, it was also found that it did not significantly contribute to reading speed and did not shorten the eye fixation time (Zikl, et al., 2015; Wery and Diliberto, 2016; De Leeuw, 2010; Rello and Baeza-Yates, 2013).

In this research, the effect of OpenDyslexic font on improving reading fluency and reading comprehension skills of students diagnosed with dyslexia was examined. For this purpose, the effect of OpenDyslexic font on improving a) oral reading speed, b) reading accuracy, c) prozodic reading levels, d) reading levels and e) reading comprehension levels of students with reading difficulties has been looked at.

Method

This section is explained under six sub-titles: (a) research design, (b) dependent and independent variables, (c) participants and their selection, (d) data collection tools, (e) data collection, (f) data analysis.

Research Design

In this study, quasi-experimental research method, one of the experimental research methods, was used to determine the effect of OpenDyslexic font on increasing fluent reading (reading speed, reading accuracy, prosodic reading) and reading comprehension skills of students with reading difficulties. In our study, which was conucted with the participation of three students diagnosed with dyslexia, the multiple probe model between subjects, which is one of the single-subject experimental research designs, was used. Under the heading of experimental research, two groups of research are mentioned, namely real/full experimental research and quasi-experimental research, according to the way the participants are selected. One of the main factors that determines the difference between fully experimental and quasi-experimental research is whether the participants are selected by unbiased assignment. Since the participants of single-subject experimental studies are selected from among those who already have problematic behaviors or need to gain new behaviors, research participants cannot be determined by impartial assignment (Aydın, Tekin-İftar, & Rakap, 2019). In our study, students with reading difficulties were determined and those who met the prerequisites were included in the study.

Multiple probe models aim to evaluate the effectiveness of a teaching or behavior change program in more than one situation (Aydın, Tekin-İftar, & Rakap, 2019). Multiple probe models; are examined in three groups as (a) inter-behavioral multiple probe model, (b) inter-participant multiple probe model, (c) inter-environment multiple probe model. The multiple probe model among participants is a research model in which the effectiveness of an independent variable is examined on at least three different participants (Tekin-İftar, 2018). The model does not require an effective application, withdrawal and continuous baseline data collection, which provides ease of implementation (Tekin-İftar, 2018).

Dependent and Independent Variable

The independent variable of the study is OpenDyslexic font, while the dependent variable is the participants' reading speed, reading accuracy, reading prosody and reading comprehension skills.

Participants and Their Selection

This study was conducted with three fourth grade students who were attending public schools in Aksaray in the 2020-2021 academic year. After obtaining the necessary permissions to determine the students to participate in the research, fourth-year students with a diagnosis of special learning disability (SLD) and mixed-type disorder in scholastic skills were identified at Aksaray Guidance and Research Center. Preliminary information about the student was obtained from the teachers and parents by contacting the schools of the identified students. Three students, two ten-year-old boys and one girl, who were willing to work from the collected information, were included in the study.

Information of the Students Participating in the Study

Table 1. *Information of the participants*

Student	Gender	Pre-School Education Status	Number of siblings	Mother's Education	Mother's Occupation	Father's Education	Father's Ocuupation
1.Participant	Female	Yes	3	High School	Housewife	Secondary School	Mechanic
2.Participant	Male	Yes	3	Elementary School	Houswife	Elementary School	Builder
3.Participant	Male	Yes	3	Elementary School	Houswife	Elementary School	Turnspit

In order to get to know the students better and to evaluate the observations more accurately, a parent interview was held before the study and some questions were asked to the parents. The answers given by the parents to the questions are presented below.

Student 1

Researcher: "Have you had any problems in your child's physical and mental development since your pregnancy?"

Mother: "My pregnancy was very difficult. I was fainting all the time. When she was 40 days old, they said that her heart was punctured. She had three holes in her heart. Her lips became bruised when she cried a lot. She was treated until the age of 2.5. It closed spontaneously without surgery."

Researcher: "Did you detect any differences in your child during and after pre-school education?"

Mother: "She went to kindergarten for a period when she was 6 years old. At that time, she used to paint at home and play with her sister. We started having problems in the 1st grade. When she started the 1st grade, she was constantly forgetting the things we said while studying at home. Even though we repeated it, she didn't remember it. She was mixing the letters "d" and "b" and writing the numbers backwards. She always confused the words "elek, felek, kelek" in my mind. She did not learn for a long time. We couldn't teach the subject of rounding to tens in the math class, no matter what we did. We had very difficult times. The class teacher wanted us to take her to a psychiatrist. We were in Istanbul at that time. A diagnosis of dyslexia was made. Her teacher said that when I attend a meeting and when I was going to have a reading, she started to tremble when I approached her. We had never experienced anything like this at home. I was also angry with your teacher, sice she did not tell me the issue before. She went to the Quran course during the summer vacation. An older sister, whom she loved very much, was teaching there. It trembled there too. We came to Aksaray ehen she was in the 3rd grade. I moved to Aksaray mostly for my child. There are grandparents and relatives here. The psychiatrist said it would be good for her to be with her loved ones, with whom she felt comfortable. As for Aksaray, the Guidance and Research Center did not give us a report. They told us to visit them during the 2nd term. She had been receiving support training for 5-6 months. She did not like school very much, but she went to the special education and rehabilitation center more willingly. She was very reluctant about everything related to the lesson, her favorite thing was painting. She could paint for hours without getting up."

Researcher: "When was your child first diagnosed with dyslexia?"

Mother: "When she had difficulty in reading, the class teacher directed her to a psychiatrist in the first grade. A dyslexia report was issued at Bakırköy Psychiatric Hospital."

Researcher: "How does your child spend time at home?"

Mother: "She watches cartoons, draws, plays with the computer. She is very active at home. She loves animals and imitates their voices very well. She loves watching documentaries."

Researcher: "Would you introduce your child to me?"

Mother: "She is shy, anxious, introverted. She doesn't like to go to public places, and even if she does, she doesn't play with anyone. She plays alone. She doesn't talk to strangers, she won't say her name even if asked. Later, she always says the same thing, "I'm ashamed" when I ask why you didn't speak. She forgets. She doesn't even say what she knows. She doesn't like to talk outside or at home. She talks a lot with her older sister. She loves to travel, loves to eat. She doesn't like to read at all."

Researcher: "Does any other family members have reading-writing difficulties?"

Mother: "No. Her elder sister is merit student, very sociable, sociable, and her courses are very good. Her teachers love her."

In the first interview with the student, during the stage of determining the reading level, I tried to motivate the student for about 20 minutes. While the student was rubbing his hands, I tried to relax and establish a sincere relationship. It was observed that after the student was persuaded to read, he read in a very weak and timid tone.

Student 2

Researcher: "Have you had any problems in your child's physical and mental development since your pregnancy?"

Mother: "He was born when I was 7 months pregnant because I have high blood pressure. He slept in an incubator for 3 months. When he was born, they said he had blisters in his brain. Doctors said he might have trouble walking. Then we went to a special education and rehabilitation center. They said that this child cannot walk or talk, but we did not have these problems. we didn't."

Researcher: "Did you detect any differences in your child during and after pre-school education?"

Mother: "He went to kindergarten when he was 5 years old. Then we sent him to the 1st grade. He started having difficulties in reading. He read letters "d" instead of "b". He wrote missing letters when writing his name. He said to think about it. He started a special education and rehabilitation center in the 3rd grade. He did not like to write at all, but after he started there, his reading improved a bit."

Researcher: "When was your child first diagnosed with dyslexia?"

Mother: "I hear the word dyslexia from you first. No one has mentioned it until now, but it is in the hospital reports. Since last year, he has been going to the rehabilitation center."

Researcher: "How does your child spend time at home?"

Mother: "He likes playing with his toys. He plays by himself for a long time. He watches cartoons on TV a lot. He watches a lot of videos on the phone. If I don't take it away from him, he watches it from morning to night."

Researcher: "Would you introduce your child to me?"

Mother: "Actually, he is sociable, that is, he likes to talk, asks a lot of questions. He doesn't care about the lesson, but he likes to fix it with the screwdriver. He forgets the lesson, but never forgets something he does with pleasure. He does not have a daily study schedule. He does homework by force. The child doesn't understand very well, neither do I. He reads well when he wants to. When a new story is received, he reads it eagerly but cannot finish it. He gets bored quickly."

Researcher: "Does any other family members have reading-writing difficulties?"

Mother: "His brother also had difficulties. His brother is 20 years old. He is at university now. My eldest son had even more difficulty in reading. I also have reading difficulties. I get excited when I read."

The student is friendly, imaginative, talkative, very active and does not like to sit in the classroom for a long time. The level of awareness of the father about the student's situation is higher. The mother has difficulty even writing the name of her child, skipping letters. In addition to supportive education, the student also receives private lessons at the special education and rehabilitation center. He does not like school, but expresses that he is happy when he goes to support education and private lessons.

Student 3

Researcher: "Have you had any problems in your child's physical and mental development since your pregnancy?"

Mother: "In the sixth month of my pregnancy, doctors said that the baby had water in his brain, but nothing came out after he was born. He was very pale when he was a baby. He would usually look sleepy if his head was to the right or left."

Researcher: "Did you detect any differences in your child during and after pre-school education?"

Mother: "He went to kindergarten for 2 years at the age of 5 and 6. It was a little difficult. He spoke late, walked late anyway. I took his to RAM in both years, but they said there was nothing wrong. Then I took his to Kayseri and they said there was no problem there, either. I struggled a lot, but they said there was nothing wrong with the boy."

Researcher: "When was your child first diagnosed with dyslexia?"

Mother: "In the 1st grade, they were misdiagnosed as mildly mentally retarded. They gave me a form, I marked them as insufficient so that they could receive a support education report. Later, I regretted that this report would always be in front of my child. He was diagnosed with a learning disability in the 2nd grade. Then our neighbor's daughter recommended the movie "Stars on the Ground." I watched it. I thought he had dyslexia from there. Then I read a book about dyslexia. It was like he was describing my child."

Researcher: "How does your child spend time at home?"

Mother: "He loves puzzles. He even makes cartoons with gum. He makes a car out of play dough. He plays with whatever he has in his hand for hours."

Researcher: "Would you introduce your child to me?"

Mother: "His visual memory is very strong. He does not forget details. He remembers even the person he saw when he was very young. He forgets things about the lesson because he is reluctant. He is very panicked. When his father comes home in the evening, he constantly asks, "When will my father come?" He panics, "I cannot sleep without my father." On the way to his class, he repeatedly askes if we are late. He has sudden anger. He becomes stubborn and angry because I don't do his homework."

Researcher: "Does any other family members have reading-writing difficulties?"

Mother: "Father has reverse writing. While writing he skips letters."

In the first interview with the student, it was observed that the student's perception skills and fine motor skills were low. When he goes to the toilet, he asks his mother for help to open and close the button of her pants. The mother is very upset about the inadequacy of her child, especially in perception and reading skills. She states that she has been looking for a remedy since kindergarten but could not get any results. She stated that she took her child to a psychiatrist many times in Konya and Kayseri, but there was no apparent problem and his tests were clean. The child has been receiving supportive education in a special education and rehabilitation center since the 2nd grade and expresses that he likes supportive education more than his own school.

Data Collection Tools

In order to determine the effectiveness of the OpenDyslexic font, the texts taught in the 4th grade Turkish textbooks by the Ministry of National Education were used as a data collection tool. The texts were selected from the texts in the last themes of the Turkish textbooks that the students had never read before. In order to determine the student's reading speed, the number of words read correctly in one minute was recorded. In order to determine the reading accuracy, the number of correct words read in the text and the words pronounced incorrectly were recorded. "Prosodic Reading Scale" developed by Keskin, Baştuğ, and Akyol (2013) was used to determine the prosodic reading level. "False Analysis Inventory" was used to determine the reading levels of the participants. In order to determine the reading comprehension levels, the reading comprehension scale, which was prepared by taking the evaluation questions of the texts in the textbook, was used. The students were allowed to answer the text questions in both written and oral ways. Before the implementation, the video recorder, the text to be read and the text questions were prepared in advance, and the student was informed about why the video recorder was used. Before starting the implementation, the environment was made suitable and the student was motivated to read.

Prosodic Reading Scale

The Prosodic Reading Scale is a five-point Likert-type, fifteen-item scale developed to measure fluent reading. The highest score that can be obtained from the scale is 60. Students who get 50% or more out of the total score are considered prosodically sufficient. If the student has not gained enough reading skills and makes too many reading mistakes, it is recommended not to continue the assessment (Keskin, Baştuğ, & Akyol, 2013). While scoring the students according to the Prosodic Reading Scale, the items were marked by listening to the videos recorded during reading repeatedly. Since one of the

students made too many mistakes while reading, this scale was used with the other two students. While using the scale, every sentence of the student was listened carefully while they were reading the text, and evaluation was made according to the whole text.

False Analysis Inventory

After the video recordings were taken during the students' reading aloud, the mistakes made by the students in the text were determined by the researcher with the "False Analysis Inventory" and the percentage of word recognition was determined. The "False Analysis Inventory" used to determine students' reading and reading comprehension levels was adapted from Ekwall and Shanker (1988) and Akyol (2011) (Sezgin & Akyol, 2015).

Reading Comprehension Scale

As a reading comprehension scale, the measurement criteria in the False Analysis Inventory were used by making use of the related text questions in the 4th grade Turkish textbook. According to this inventory, 6 questions, 3 simple and 3 in-depth comprehension questions, were asked. 2 points are scored for fully correct answers to simple comprehension questions, 1 point for semi-correct answers, and 0 points for unanswered questions. For deep understanding questions, 3 points are scored for complete and effective answers, 2 points for answers that are close to the expected but incomplete, 1 point for questions with very incomplete answers, and 0 points for questions that are not answered at all. While making use of the font written in the textbook for the beginner level data, the text questions for the application phase were converted to OpenDyslexic font and the implementation was made.

Data Collection

Baseline data for reading speed and prosody were collected at one-day intervals until stability was achieved in at least three sessions. While texts written in the font written in school textbooks were used for the baseline data, the texts were converted to OpenDyslexic font for the application phase data. During the application process, five texts translated into OpenDyslexic fonts were used. For the baseline data, the texts named "Oldman and Money Father", "Pinti", "About Smiling and Smiling" prepared for fourth grades in the Turkish textbooks of the Ministry of National Education were used. During the implememtation process, the texts "Oh Heidi, Where Are You?", "Learning and Marie Curie", "Silkworm", "What's the Brain For", "Joking Elephant" were used. Face-to-face training was conducted in the first two weeks of the studies. However, a curfew was declared in Turkey due to the Covid-19 epidemic that gripped the whole world during the research process, which started to be implemented in the spring term of the 2020-2021 academic year. Therefore, distance education was conducted during the two-week period of the research. With the easing of the bans, the last two weeks of the implementation process were completed with face-to-face training. The baseline data for reading comprehension were collected from the questions of the text named "Old Man with Money". The texts "Oh Heidi, Where Are You?", "What is the Brain For" were used for the implementation phase data. Reading comprehension exercises with the texts "Learning and Marie Curie" and "Silkworm" were processed as live lessons due to the pandemic, and the reading comprehension scales could not be answered in written form. Therefore, the reading comprehension scales of these texts were not included in the scoring. The study was completed in 16 sessions, 23 course hours in total.

Baseline and Probing Sessions

Before starting the study, the students were informed about the implememtation and the materials to be used. One copy of the reading text was taken by the researcher and the other was presented to the student. The student was told to start reading when he was ready by being motivated. Video recording was started from the moment the student started to read. The student was allowed to read the entire text without any intervention. The words that the student could not read were read by the researcher after waiting for three seconds. The student's line skipping errors were immediately corrected, and the skipped line was shown to continue. The student's reading video was listened carefully by the researcher after the session, and the number of words he read correctly in one minute was determined, and the reading errors were recorded on the chart. After listening to the student's reading video several times, the prosodic reading scale was scored. For the reading comprehension initiation level data, the text written in the text "Oldman and the Rich Man" was studied in the font written in the textbook, and for the application phase data, "Oh Heidi, Where Are You?", "Learning and Marie Curie", "Silkworm", "What is the Brain For". The questions were answered by converting the texts to OpenDyslexic font. The questions were prepared as three activities: guessing the words in the text, questions about the text, the subject of the text and the main idea of the text. The questions were read to the volunteer student and each student was asked to answer on their own paper. Students with writing difficulties were asked to answer the questions orally, and the correct answers verbally were also noted.

Data Analysis

As for the beginner level, the texts in the font used in the textbooks and the data collected were analyzed. For the implementation phase, data analysis was made with texts translated into OpenDyslexic font. Data on participants' reading speed, reading accuracy, prosodic reading, reading levels and reading comprehension scores were collected, recorded and graphed. Reading speed was calculated by subtracting the number of errors made from the number of words read by the participant in one minute (Deeney, 2010).

Accuracy was measured by the number of correctly defined words for each text. Adding, skipping, misreading, not being able to read at all, or words that the participant read with help were scored as reading errors. The percentage of reading accuracy was calculated by dividing the number of words read correctly and multiplying by 100 (Dowhower, 1987).

The scores obtained from the prosodic reading scale developed by Keskin, Baştuğ, and Akyol (2011) for prosodic reading were recorded and the data were graphed. Keskin (2012) does not find it appropriate to use the scale for students who have not gained enough reading skills and make too many reading mistakes. The prosodic reading scale data of the first and second participants wereevaluated. However, the prosodic reading scale of the third participant was not taken into consideration due to too many reading errors.

Word recognition and reading levels were determined with the False Analysis Inventory, which was used to determine reading levels. In order to determine the level of reading comprehension, the answers given by the participants to the text questions were scored. The answers of the participants were taken verbally and in writing for each activity. Unanswered questions or incorrect answers were not scored, and missing answers were scored as half of the value of each question.

Ethical Permision of the Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the title of "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, were not carried out.

Information about Ethical Permision of the Research:

Title of the committee that made the ethical evaluation= Niğde Ömer Halisdemir University Ethics Committee

Date of ethical review decision=24.02.2021

Ethical assessment certificate issue number=03.03.2021-25998

Findings

In this study; The effect of OpenDyslexic font on increasing the fluency and reading comprehension levels of students with reading difficulties was investigated. In this section, the findings and comments obtained at the end of the research are given. Findings are listed according to research purposes.

The Effect of OpenDyslexic Font on Reading Speed

The research was completed in 16 sessions, 23 course hours in total, in a 6-week period. A total of 8 reading data, 3 at the beginning level of the research and 5 at the implementation phase, were recorded. Reading data were recorded for 1 minute for each text. At the beginning level of the reading speed study, 3 text reading data were taken in the font used in the fourth grade textbook. During the implementation phase, five texts in the fourth grade textbook were translated into OpenDyslexic font and read and reading speed data were obtained.

Participant I

3 session baseline data were obtained from the first participant. According to these data, the reading speed of the first participant was 48, 47, 45 words, respectively. The average reading speed of the participant was calculated as 47 words. Due to the stability of these data at the baseline level, the application phase was started with the first participant. 5 sessions of data were collected from the first participant during the implementation phase. The participant's reading speed was 55, 58, 69, 59, 79 words, respectively. The data in the implementation phase of the participant is generally increasing.

Compared to the baseline data of the first participant, which consisted of texts prepared in standard fonts, the reading speed of the application phase texts prepared with OpenDyslexic increased from the first application. The average reading speed of the participant in the application phase was calculated as 64 words. The average reading speed of the first participant at the baseline level increased from 47 words to 64 words. When calculated as a percentage, there was a 48% increase in the participant's reading speed compared to the initial level.

Participant II

3 session baseline data were obtained from the second participant. According to these data, the reading speed of the second participant was 52, 58, 55 words, respectively. Average reading speed was

calculated as 55 words. Due to the stability of the data at the baseline level, the application phase was started with the second participant.

5 sessions of data were collected from the second participant during the implementation phase. The participant's reading speed was 66, 64, 83, 62, 77 words, respectively. When the baseline data of the second participant and the application phase data were compared, an increase in reading speed was observed. The average reading speed of the participant in the application phase is 70 words. The average reading speed of the second participant increased from 55 words to 70 words, and a 27% increase in reading speed was observed.

Participant III

4 session baseline data were obtained from the third participant. According to these data, the reading speed of the third participant was 10, 7, 6, 7 words. The average reading speed of the third participant was calculated as 8 words. With the stability of the data at the baseline level, the application phase was started with the third participant.

5 sessions of data were collected from the third participant during the implementation phase. The participant's reading speed is 8, 13, 13, 12, 14 words. According to the baseline data of the third participant, there was an increase in the reading speed in the application phase. The average reading speed in the application phase is 12 words. The average reading speed of the third participant increased from 8 words to 12 words. 50% increase in the participant's reading speed was observed.

The data on the effect of the OpenDyslexic font on increasing the reading speed of students with reading difficulties are shown in Figure 3.
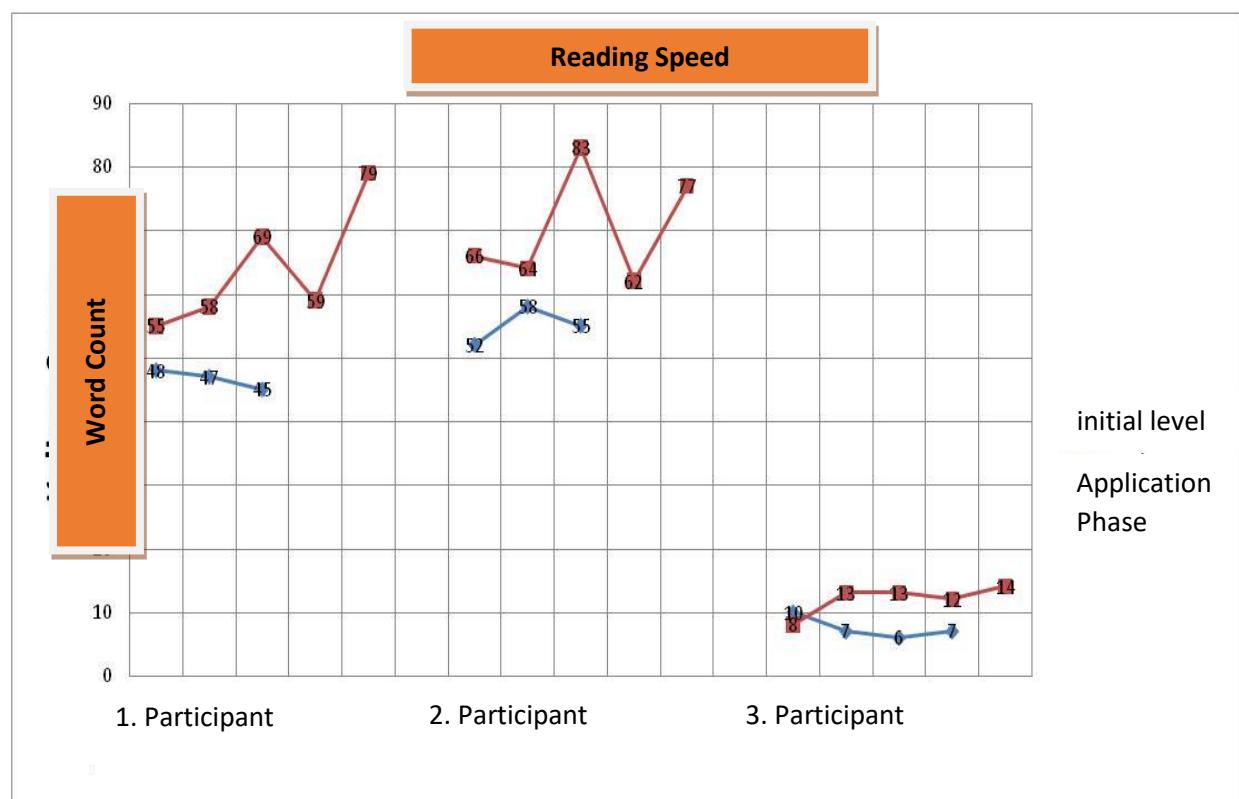

Figure 3. Reading speed of the participants

The Effect of OpenDyslexic Font on Reading Accuracy

In the study, a total of 8 data were collected for reading accuracy; 3 at the baseline level and 5 at the application stage. As for reading accuracy, 3 text reading data were taken in the font used in the fourth grade textbook at the beginner level. During the implementation phase, 5 texts in the fourth grade textbook were translated into OpenDyslexic font and read and reading accuracy data were obtained.

Participant I

Three session baseline data were obtained from the first participant. According to these data, the percentage of reading accuracy was calculated as 93.57%, 95.89% and 95.62%, respectively. The average percentage of reading accuracy at the participant's baseline level is 95.02%. Since the data at the baseline level showed stability, the application phase was started with the first participant.

Data were collected in the implementation phase of the first participant during five sessions. According to these data, the percentage of reading accuracy was calculated as 96.37%, 98.52%, 96.30%, 96.69% and 98.73%, respectively. The participant's average reading accuracy percentage was 97.32%. Although there were fluctuations in the participant's practice phase data points, the percentage of reading accuracy increased overall. The first participant's percentage of reading accuracy showed a 2.3% increase in the average of practice data compared to the baseline data average.

Participant II

Three session baseline data were obtained from the second participant. According to these data, the percentage of reading accuracy was calculated as 96.94%, 95.20% and 96.20%, respectively. The average percentage of reading accuracy at the participant's baseline level is 96.11%. Since the data at the baseline level showed stability, the application phase was started with the second participant.

Data were collected in the implementation phase of the second participant during three sessions. According to these data, the percentage of reading accuracy was calculated as 98.85%, 98.81%, 98.52%, 98.49% and 100%, respectively. The participant's average reading accuracy percentage was 98.93%. The second participant's percentage of reading accuracy showed a 2.82% increase in the average of the practice data compared to the baseline data average.

Participant III

Data were collected in the implementation phase of the first participant during four sessions. According to these data, the percentage of reading accuracy was calculated as 31.19%, 32.87%, 27.69% and 33.23%, respectively. The average percentage of reading accuracy at the participant's baseline level was 31.24%. Since the data at the baseline level showed stability, the application phase was started with the third participant.

Data were collected during the implementation phase of the third participant during five sessions. According to these data, the percentage of reading accuracy was calculated as 25%, 37.14%, 46.42%, 42.85% and 43.45%, respectively. The participant's average reading accuracy percentage was 38.97%. The third participant's percentage of reading accuracy showed a 7.73% increase in the average of the practice data compared to the baseline data average.

Data on the effect of the OpenDyslexic font on increasing the reading accuracy of students with reading difficulties are shown in Figure 4.
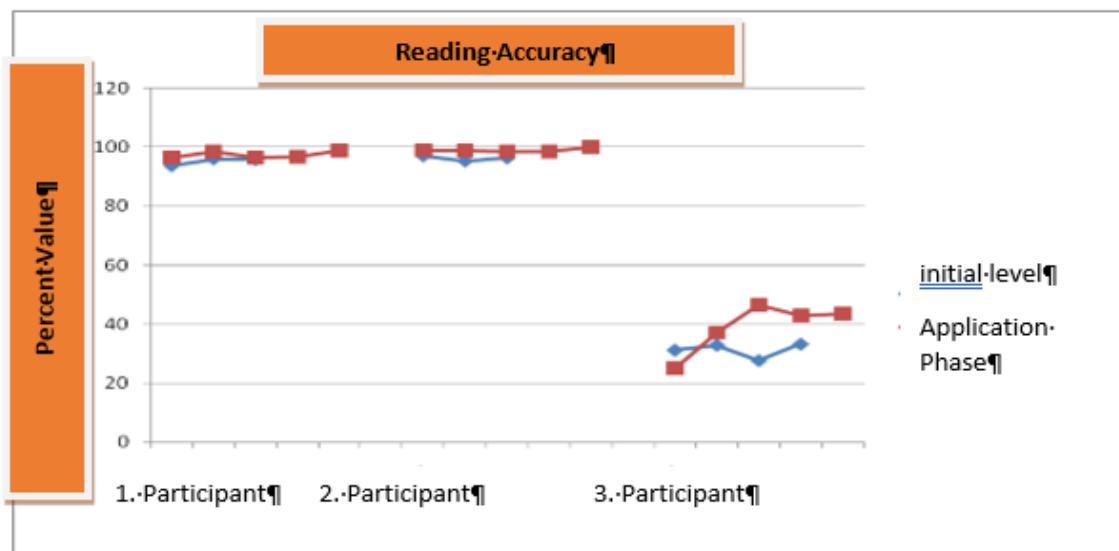
Figure 4. Percentages of participants' reading accuracy

The Effect of OpenDyslexic Font on Prosodic Reading

In the research, a total of 8 data were collected for prosodic reading, 3 at the beginning level and 5 at the implementationphase. For prosodic reading, 3 text reading data were taken in the font used in the fourth grade textbook at the beginner level. During the implementation phase, 5 texts in the fourth grade textbook were translated into OpenDyslexic font and read and prosodic reading data were obtained.

Participant I

Baseline data was obtained from the first participant in three sessions. According to these data, prosodic reading scores were calculated as 32, 34, 34, respectively. The average prosodic reading score of the first participant was 33. Since these data at the baseline level showed stability, the implementation phase was started with the first participant.

Five session probe data were obtained from the first participant during the implementation phase. Considering these data, prosodic reading scores were calculated as 53, 52, 51, 54 and 55, respectively. The average prosodic reading score of the first participant in the application phase was 53. The prosodic reading skill of the first participant improved since the first text written in OpenDyslexic font. Considering the scores, although some minor fluctuations were observed in the data, there was an increase in the prosodic reading level of the participant in general. While the prosodic reading average of the first participant's baseline was 33 points, it increased to 53 points in the application phase.

Participant II

Three session baseline data were obtained from the second participant. According to these data, prosodic reading scores were calculated as 31, 31 and 34, respectively. The average prosodic reading score of the second participant was 32. Since these data at the baseline level showed stability, the application phase was started with the first participant.

Five session probe data were obtained from the second participant during the implementation phase. Considering these data, prosodic reading scores were calculated as 53, 52, 51, 53 and 56, respectively. The average prosodic reading score of the second participant in the application phase was

53. The participant's prosodic reading skill improved since the first text written in OpenDyslexic font. Considering the scores, although some minor fluctuations were observed in the data, there was an increase in the prosodic reading level of the participant in general. While the prosodic reading average of the second participant's baseline was 32 points, it increased to 53 points in the application phase.

Participant III

The prosodic reading scale was not kept because the third participant did not gain enough reading skills and made too many reading errors in the text.

Data on the effect of OpenDyslexic font on prosodic reading of students with reading difficulties are shown in Figure 5.
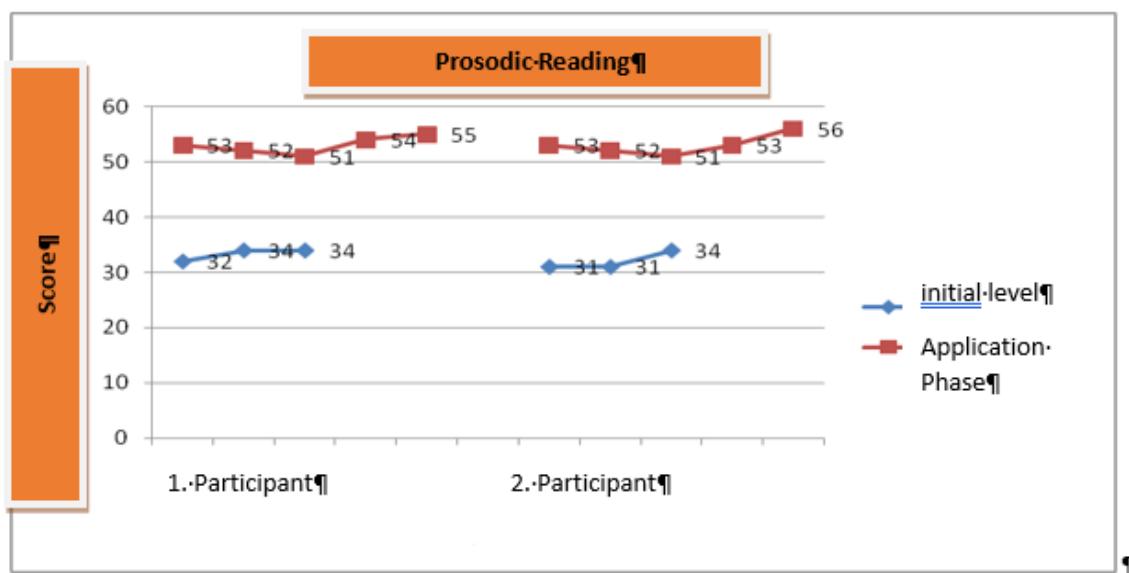

Figure 5. Participants' prosodic reading scores

Effect of OpenDyslexic Font on Reading Level

Participant I

Table 2. *Reading level of Participant I*

Error Types	Initiation Level First Text	Implementation Phase Final Text
Misreading	1	1
Replacing Another Word	0	0
Words Given by the Researcher	1	0
Skipping	0	0
Adding	1	0
Reversing	0	0
Total	3	1
Word Recognition Percentage	%94,11	%98,75
Words read right within 1 min.	48	79

There was a decrease in reading errors in the last text of the first participant compared to the first text. An increase of approximately 5% was observed in the percentage of word recognition. While the reading level of the first participant was at the teaching level in the first text, it was seen that he was at the teaching level in the last text. However, while the percentage of word recognition in the first text was close to the level of anxiety, it increased to a level very close to the level of free reading in the final text.

Participant II

Table 3. *Reading level of Participant II*

Error Types	Initiation Level First Text	Implementation Phase Final Text
Misreading	1	0
Replacing Another Word	0	0
Words Given by the Researcher	0	0
Skipping	1	0
Adding	0	0
Reversing	0	0
Total	2	0
Word Recognition Percentage	%96,15	%100
Words read right within 1 min.	52	77

While the second participant made 2 errors in the first text, he read the last text without any errors. While the participant's word recognition percentage was at the level of instruction in the first text, it increased to the level of free reading in the last text.

Participant III

Table 4. *Reading level of Participant III*

Error Types	Initiation Level First Text	Implementation Phase Final Text
Misreading	9	8
Replacing Another Word	5	5
Words Given by the Researcher	2	1
Skipping	3	2
Adding	1	1
Reversing	2	1
Total	22	18
Word Recognition Percentage	%31,25	%43,75
Words read right within 1 min.	10	14

Compared to the first text, the third participant's reading error rate decreased in the last text. While the participant's word recognition percentage was at the level of concern in the first text, it remained at the level of concern in the last text. On the other hand, there was a 12.5% increase in the percentage of word recognition in the last text compared to the first text.

The Effect of OpenDyslexic Font on Reading Comprehension

In the study, a total of 4 data were collected; one for the reading comprehension initiation level and three for the application phase. Beginner level text questions were applied in the font used in the fourth grade textbook. Implementation phase text questions were translated into OpenDyslexic font and applied. Reading comprehension questions were taken from the textbooks. The first part of the comprehension questions, which consists of three activities, consists of guessing the meanings of the words in the text, the second part consists of answering questions about the text, and the third part consists of finding the subject of the text and the main idea. Equally weighted scoring was given to all three events.

Participant I

The percentage of reading comprehension of the first participant was calculated as 59%, 82% and 82%, respectively. Although the participant's reading comprehension percentage fluctuated in the application phase data points, the reading comprehension percentage increased in general. There is a 23% increase between the first score and the last score.

Participant II

The reading comprehension percentage of the second participant was calculated as 54%, 78% and 78%, respectively. Although the participant's reading comprehension percentage fluctuated in the application phase data points, the reading comprehension percentage increased in general. There is a 24% increase between the first score and the last score.

Participant III

The reading comprehension percentage of the third participant was calculated as 31%, 48% and 49%, respectively. Although the participant's reading comprehension percentage fluctuated in the application phase data points, the reading comprehension percentage increased in general. There is an 18% increase between the first score and the last score. Data on the effect of OpenDyslexic font on reading comprehension of students with reading difficulties are shown in Figure 6.
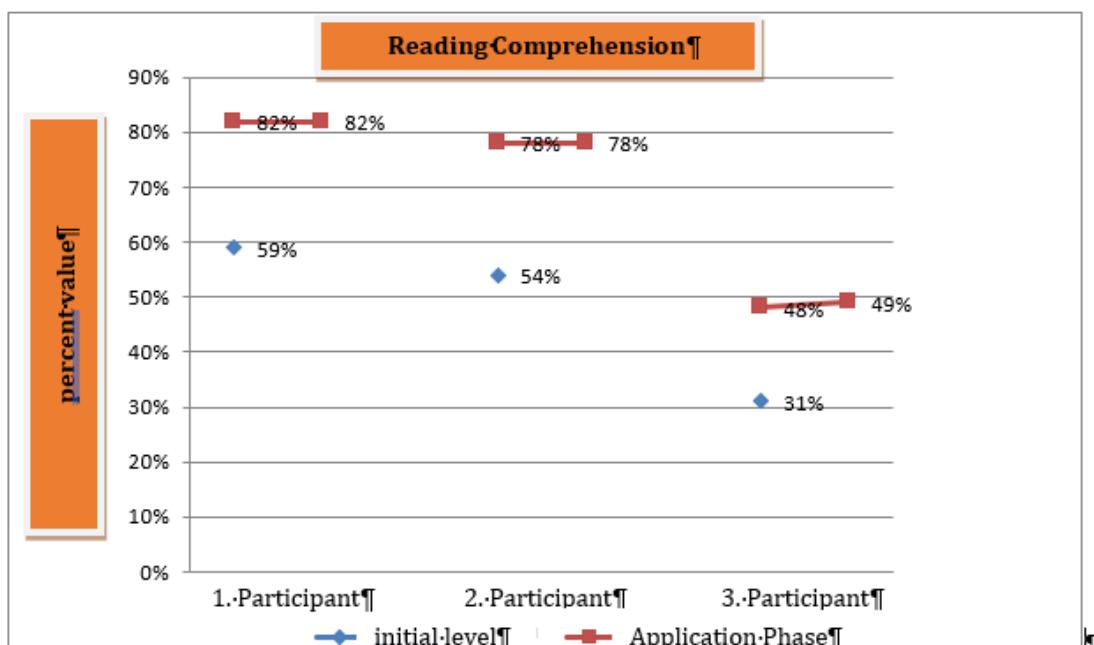
Figure 6. Reading comprehension percentages of the participants

Discussion and Conclusion

In this section, the effect of OpenDyslexic font applied in the research on reading fluency and reading comprehension level is discussed based on findings and comments.

Conclusion and Discussion on the Effect of OpenDyslexic Font on Reading Speed

In the first sub-objective of the research, the effect of OpenDyslexic font on the reading speed of students with dyslexia was investigated. Considering the reading speed of the participants included in the study, the average reading speed of the first participant at the initial level increased from 47 words to 64 words. There was a 48% increase in the first participant's reading speed compared to the initial level. The average reading speed of the second participant increased from 55 words to 70 words, and a 27% increase in reading speed was observed. The average reading speed of the third participant increased from 8 words to 12 words. There was a 50% increase in the reading speed of the third participant. When these results were evaluated, it was seen that the reading speed of all three of the participants increased, and it was found that OpenDyslexic font was effective.

No studies were found examining the effect of OpenDyslexic font on the reading speed of Turkish readers. There are very few studies on the effect of OpenDyslexic font on reading speed abroad. On the other hand, studies have focused more on word reading for the determination of reading speed.

Zikl et al. (2015) compared OpenDyslexic with the widely used Arial in their research to confirm whether the use of certain fonts in dyslexics affects the reading quality and whether the font is suitable for use to compensate for educational problems. Reading speed of students was measured when using OpenDyslexic font with standard fonts. In conclusion, it was found that the use of the OpenDyslexic font, specially designed for dyslexic students, did not lead to a significant improvement in reading speed or error rates compared to the commonly used font.

In another study investigating the effect of OpenDyslexic on the reading speed of students with dyslexia, Wery and Diliberto (2016) present a single-subject alternative to investigate the extent to which it affects reading speed or accuracy compared to two commonly used fonts, Arial and Times New Roman. treatment design was used. Results from this alternative therapy experiment showed no improvement in reading speed for students with dyslexia.

The study of Rello and Baeza-Yates (2013), in which they investigated the effect of font on reading speed on individuals with dyslexia, is known as the first study to measure the effect of 48 dyslexic individuals (between 11-50 years) on reading performance using eye tracking and asking them about their personal preferences. The study is an objective study of the 12 most commonly used fonts on the web (Arial, Arial Italic, Computer Modern Unicode (CMU), Courier, Garamond, Helvetica, Myriad, OpenDyslexic, OpenDyslexic Italic, Times, Times Italic, and Verdana). The results of the study on reading performance provide evidence that font types have an impact on readability. In this study, it was found that the reading time of italic fonts is always longer than that of latin fonts. This result confirmed the widely accepted fact that ligatures are more difficult to read for people with dyslexia. It did not find a significant difference in read time, although non-serif, monospaced, and latin fonts resulted in significantly shorter fix times. It is thought that keeping the age range of the participants included in the studies too wide has a negative effect on the results.

In Turkey, there was a study examining the effect of font on the reading speed of children with dyslexia. İleri (2020) used the electrooculography (EOG) method in his master's thesis, in which he aimed to determine the most suitable font to be used in the education of children with dyslexia. A total of 36 individuals, 23 of whom were diagnosed with dyslexia and 13 without dyslexia, were simultaneously recorded EOG signals while reading the texts containing different fonts and fonts. As a result of the research, while average reading times increased in texts prepared with Times New Roman in both groups, average reading times decreased in texts prepared with BonvecoCF font. This result supports the finding of our research with the inference that the font used has an effect on the reading speed of students with dyslexia.

The publication of the British Dyslexia Society also supports our research finding. The British Dyslexia Association reveals the importance of factors such as the selection of appropriate fonts and background colors and the use of non-transparent thick paper in order to prevent the visual stress experienced by some dyslexic people in written materials and make it easier to read (Dyslexia Style Guide, 2021). Hughes and Wilkins (2000) claim that children with reading difficulties are more susceptible to visual stress and that text size greatly affects students' reading speed. Visual stress is

manifested by unpleasant visual symptoms such as imaginary shapes, movement and colors of text, distorted or blurred printing, and general visual irritation during reading (Zikl et al., 2015). This finding prompted researchers to further examine the effect of visual features of text on reading in individuals with dyslexia. In our country, more and more comprehensive studies are needed to determine the effect of OpenDyslexic font on the reading speed of individuals with dyslexia.

Conclusion and Discussion on the Effect of OpenDyslexic Font on Reading Accuracy

The effect of the OpenDyslexic font applied in the second sub-objective of the study on the reading accuracy of students with reading difficulties was investigated. While the average reading accuracy percentage of the first participant at the baseline was 95.02%, the average reading accuracy percentage in the application phase increased to 97.32%. Considering these data, a 2.3% increase was observed in the average of the application data compared to the first participant's reading accuracy percentage baseline data average. While the average reading accuracy percentage of the second participant at the baseline was 96.11%, the average reading accuracy percentage in the application phase increased to 98.93%. The second participant's percentage of reading accuracy showed a 2.82% increase in the average of the practice data compared to the baseline data average. While the average reading accuracy percentage of the third participant at the baseline was 31.24%, the average reading accuracy percentage in the application phase increased to 38.97%. When these data were examined, a 7.73% increase was observed in the average of the application data compared to the third participant's percentage of reading accuracy compared to the baseline data average.

To sum up, the reading accuracy level of all three of the participants included in the study increased and OpenDyslexic font was found to be effective. While the correct reading rate of the first and second participants was high, the third participant made too many reading errors in the text. The third participant's reading errors caused by inversion are mostly composed of monosyllabic, short words such as "en, what". When the reading accuracy data of the participant were examined, it was observed that sometimes he made a reading error even in single syllable words, and sometimes he read 4-5 syllable words correctly in one go. This suggests that the participant's reading error is due to the fact that he tends to read backwards.

Zikl et al., (2015), who investigated the effect of OpenDyslexic on reading accuracy, found that error rates with OpenDyslexic font were slightly lower, especially in students who made frequent mistakes, suggesting that OpenDyslexic font might be more effective in students with severe reading difficulties. In their article, Wery and Diliberto (2016) revealed that studies with OpenDyslexic font did not show any improvement in reading accuracy. De Leeuw (2010), another study close to our research, found that reading with Dyslexie font reduces reading errors.

Conclusion and Discussion on the Effect of OpenDyslexic Font on Prosodic Reading

In the third sub-objective of the research, the effect of OpenDyslexic font on students' prosodic reading was investigated. While the average prosodic reading score of the first participant at the baseline was 33, the average prosodic reading score in the implementation phase increased to 53. While the average prosodic reading score of the second participant was 32, it was observed that the average prosodic reading score in the application phase increased to 53. Considering these data, it was evident that the prosodic reading levels of the first two participants increased and it was found that

OpenDyslexic font was effective on prosodic reading. The prosodic reading scale could not be kept since the third participant made too many reading errors in the text.

It was observed that the first and second participants' reading speed and accuracy increased, they read more fluently and confidently, and the participants who could recognize the word faster and more accurately began to use their voices better in text reading. As a result, the prosody reading scores of the participants increased.

Conclusions and Discussion on Reading Level of OpenDyslexic Font

In the fourth sub-objective of the research, the effect of OpenDyslexic font on students' reading comprehension level was investigated. The first participant read 48 words in 1 minute in the first text he read at the baseline level and made 3 reading errors. In the last text of the application phase, which was translated into OpenDyslexic font, it increased to 79 words in 1 minute and read 1 word incorrectly. It was seen that both of the participant's reading activities were at the teaching level. While the second participant read 52 words in 1 minute with a total of 2 incorrect readings at the beginning level, in the final reading study, he read 77 words in 1 minute without errors, and his reading level increased from the instructional level to the free reading level. The third participant read 10 words in 1 minute and made 22 reading errors in the first text at the beginner level. In the last text he read, it increased to 14 words in 1 minute, and his reading error decreased to 18 words. It was observed that the third participant remained at the level of anxiety in both reading studies.

In our study, the word recognition rate developed by Ekwall and Shanker (1988) and adapted by Akyol (2011) was used to determine reading levels. On the other hand, in determining the reading levels, the reading accuracy rates were divided into different ratio ranges according to the researchers. Farris, Fuhler, and Walther (2004), Rasinski and Hoffman (2003) read accuracy rates; 89% and below were anxiety (unsuccessful) levels, 90% to 94% were educational levels, and 95% to 100% independent levels (Sert, 2019). If these rates had beentaken as a basis in our study; we would have stated that the first and second participants were independent from the instructional level, while the third participant remained at the anxiety level.

Conclusions and Discussion on Reading Comprehension Level of OpenDyslexic Font

In the fifth sub-objective of the research, the effect of OpenDyslexic font on students' reading comprehension level was investigated. While the first participant's reading comprehension score at the initial level was 59, the final score in the implementation phase increased to 82. It was observed that the second participant increased from 54 points to 78, and the third participant increased from 31 points to 49.

Considering these data, it was seen that the reading comprehension levels of all three participants increased and OpenDyslexic font was found to be effective on reading comprehension. The positive effect of OpenDyslexic font on reading speed and reading accuracy also had positive effects on the secondary result, reading comprehension. Wery and Diliberto (2016) argued that dyslexia, which is characterized by fluent word recognition difficulties and poor decoding skills, may have secondary consequences such as reading comprehension problems, inhibiting the growth of vocabulary and cognitive schemas. Renske de Leeuw (2010) in his study, in which he measured the reading speed of the Dyslexie font with word studies, suggested measuring the reading comprehension skill on texts, as in

our study, and testing the hypothesis that a font that is thought to increase readability will increase reading comprehension as the effort and focus for reading will decrease. Our research findings are also consistent with these studies. As the reading speed and accuracy of our participants increased, their reading comprehension skills improved, and the participants gave more willing and accurate answers to the text questions.

Recommendations

Based on the research findings, recommendations for practice and future research are given below.

Recommendations for Practice

It was observed that all three students had difficulty in reading the informative texts containing foreign names while reading the narrative texts more fluently. In studies to determine the effectiveness of OpenDyslexic font, it may be more useful to monitor the progress of students if the texts are at the same difficulty level in terms of readability. Texts prepared with OpenDyslexic font can also be included in school textbooks.

Recommentations for Further Researches

It was observed that the third participant was more willing to screen reading and read more accurately in online classes due to the pandemic. With the OpenDyslexic font, text-to-speech studies can be conducted that investigate the effect on reading speed and accuracy through screen reading.

Studies can be conducted with larger sample groups to investigate the effect of OpenDyslexic font on fluent reading and reading comprehension on dyslexic Turkish readers.

Studies can be conducted to examine the eye movements of dyslexic students during reading with OpenDyslexic compared to other fonts.

Reading speed and accuracy of dyslexic students can be measured with OpenDyslexic fonts with texts prepared in different sizes, letter and word intervals.

With OpenDyslexic, studies can be made that compare more than one frequently used font with different features.

Studies can be done comparing different age groups on the effect of OpenDyslexic font on reading speed and accuracy.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 50%

Author 2: 50%

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research

Genişletilmiş Türkçe Özet

OpenDyslexic Yazı Tipinin Disleksili Öğrencilerin Akıcı Okuma ve Okuduğunu Anlama Becerilerine Etkisi

Giriş

Okuma, bireylerin akademik, sosyal ve kişisel gelişiminde her geçen gün daha önemli hale gelmektedir. Bununla birlikte okullarda okuma sorunu yaşayan birçok öğrenci bulunmaktadır (Bingöl, 2003). Okuma sorunlarının en önemli sebeplerinden biri"disleksi" olarak bilinmektedir. Disleksi; sözcük düzeyinde okuma, çözümleme ve heceleme problemleri ile sesli okuma akıcılığında oluşan bozukluklarla karakterize olan genetik temelli nörogelişimsel bir okuma bozukluğudur ve genellikle fonolojik yeteneklerde yetersizlik olarak ortaya çıkmaktadır (Rello ve Baeza-Yates, 2013; Hoien ve Lundberg, 2000). Dünya Nöroloji Federasyonu'nun 1968'de yapmış olduğu tanımına göre disleksi, geleneksel öğretime, yeterli zekaya ve sosyokültürel fırsatlara rağmen okumayı öğrenmede zorluk olarak kendisini göstermektedir (Hoien ve Lundberg, 2000).

Disleksili bireylerin okuma güçlüğünün giderilmesi amacıyla tanı ve tedavisinde kullanmak üzere birçok hipotez ortaya atılmıştır. Bu hipotezlerden birisi olan "Magnoselüler Eksiklik Hipotezi", disleksiklerin magnoselüler sistemlerinin farklı yapıda olmasını, yaşadıkları okuma güçlüklerinin sorumlusu olarak göstermektedir. Bu hipotez, magnoselüler sistemin okuma sırasında gözlerin sakkadik (gözün okuma sırasında sıçramalı hareketi) hareketinde oldukça etkin olarak yer almasını temel almaktadır (Vellutino, Fletcher, Snowling, ve Scanlon, 2004; Vender, 2017). Magnoselüler Eksiklik Hipotezi savunucuları, disleksiklerin yaşadıkları okuma güçlüğüne ilişkin olarak magnoselüler sistemin işleyişinin normal düzeninde faaliyette olmamasını iddia etmekte, dayanak olarak disleksiklerdeki görsel dikkat odağı, göz hareketlerinin zamanlanması ve izlenmesinde yaşadıkları sorunları göstermektedirler. Magnoselüler sistemin, görsel hareketi algılama, hareket yönünü algılama, göz hareketinin kontrolü, göz hareketlerinin zamanlanması ve izlenmesi, görsel dikkat odağındaki ve göz hareketlerindeki değişimlerden sorumlu olması onları bu kanıya ulaştırmıştır (De Leeuw, 2010; Stein,

2018; Wilsenach, 2006). Magnoselüler sistemin eksikliği, göz hareketleri üzerindeki kontrolü zorlaştırdığından okuyucunun harflerin yerlerini konumlandıramamasına ve harflerin birbirinin üzerinden kayar şekilde hareketli görmesine sebep olmaktadır (De Leeuw, 2010; Wilsenach, 2006). Harflerin yerlerini değiştirmek disleksiklerde en sık rastlanan durumlardan birisidir. Bu durum, göz hareketlerinin kontrol edilememesi sebebiyle her iki gözü de aynı noktaya yönlendirememekten kaynaklanmaktadır ve bu da 'ters' harf etkilerine yol açmaktadır (Goswami, 2014). Harflerin, sırasının görsel olarak karıştırılması ya da tersinden sıralanması, kelimelerin görsel biçiminin, okumada üzerinde durulan, görsel sözlüğe ya da hafızaya aktarılmamasına dolayısıyla imla becerilerinin kazanılamamasına neden olmaktadır (Wilsenach, 2006).

Bu zorluklara maruz kalan disleksili bireyler, geleneksel öğretim yöntemleri ile olumlu ilerleme kaydedememektedirler. British Disleksi Derneği (2021) ve Bender (2012), disleksili bireylerin standart müdahale yöntemlerine karşı direnç gösterirken, uygun şekilde özel müdahale yöntemleri ile yaşadıkları güçlüklerin hafifletilebileceğini belirtmiştir. Disleksili bireylere özel müdahale yöntemlerinden birisi de uyarlanmış tipografi gibi özel araçların kullanılmasıdır. Zelinkova'ya göre (2003), disleksili öğrencilerin okuma performansı, yazı tipi ve boyutu, satır aralığı veya harf aralığı gibi metnin grafik niteliklerinden önemli ölçüde etkilenmektedir. Disleksik okuyucular, diğer okuyuculara kıyasla kelime tanımada daha fazla efor sarf etmek ve metne daha çok odaklanmak zorunda kalırlar, bu da onları metnin tüm görsel yönlerine karşı daha duyarlı hale getirmektedir (Zikl ve diğerleri, 2015). Bu bulgu, yazarları disleksili bireylerin, metnin görsel özelliklerinin okuma üzerindeki etkisini daha fazla incelemeye yöneltmiştir.

Son dönemde disleksi hakkında yapılan çalışmalar, disleksiklerin daha iyi şartlarda okuma yapabilmelerini sağlamak üzere okudukları metinlerin normal okuyuculara sunulandan farklı nitelikte hazırlanmasının faydalı olabileceği üzerinde durmuşlardır. Bu amaçla, disleksili bireylerin okumalarını kolaylaştırdığı iddia edilen farklı yazı tipleri tasarlanmıştır. Bunlardan birisi de araştırmamıza konu olan OpenDyslexic yazı tipidir.

OpenDyslexic, disleksik bireyler için metinlerin okunabilirliğini artırmak üzere oluşturulmuş açık kaynaklı bir yazı tipidir (Laddusaw ve Brett, 2019). OpenDyslexic yazı tipi, disleksiklerde en çok görülen okuma güçlüklerine yardımcı olmak üzere tasarlanmıştır. Bunların başında 'b' ve 'd' örneğinde olduğu gibi birbirine benzeyen harflerin karıştırılması gelmektedir. OpenDyslexic yazı tipinde bu sorun, harfleri birbirinden ayırt edilebilir kılmak için farklı yönlerde dolgunluk verilerek çözülmeye çalışılmıştır. Laddusaw ve Brett'e (2019) göre harflerin farklı yönlerde dolgunluk kazandırılmış tasarımı ve benzersiz şekilleri, disleksik okuyucunun zihninin harfleri hareket ettirip çevirmesini önlemeye yardımcı olmaktadır.

Bu araştırmada, disleksi tanılı öğrencilerin okuma akıcılığının ve okuduğunu anlama becerilerinin arttırılmasında OpenDyslexic yazı tipinin etkisi incelenmiştir. Bu amaçla OpenDyslexic yazı tipinin okuma güçlüğü olan öğrencilerin; a) sesli okuma hızının artırılmasındaki etkisine, b) okuma doğruluğunun artırılmasındaki etkisine, c) prozodik okuma düzeylerinin artırılmasındaki etkisine, d) okuma düzeylerinin artırılmasındaki etkisine, e) okuduğunu anlama düzeylerinin artırılmasındaki etkisine bakılmıştır.

Yöntem

Bu bölüm altı alt başlıkta açıklanmıştır: (a) araştırmanın deseni, (b) bağımlı ve bağımsız değişken, (c) katılımcılar ve seçimi, (d) veri toplama araçları, (e) verilerin toplanması, (f) verilerin analizi.

Araştırmanın Deseni

Bu araştırmada, okuma güçlüğü olan öğrencilerin akıcı okuma (okuma hızı, okuma doğruluğu, prozodik okuma) ve okuduğunu anlama becerilerinin artırılmasında OpenDyslexic fontun etkisini belirlemek amacıyla deneysel araştırma yöntemlerinden yarı deneysel araştırma yöntemi kullanılmıştır. Disleksi tanısı almış üç öğrencinin katılımıyla gerçekleştirilmiş olan çalışmamızda tek denekli deneysel araştırma desenlerinden denekler arası çoklu yoklama modeli kullanılmıştır. Deneysel araştırmalar başlığı altında, katılımcıların seçilme biçimine göre gerçek/tam deneysel araştırmalar ve yarı deneysel araştırmalar olmak üzere iki grup araştırmadan söz edilmektedir. Tam deneysel ve yarı deneysel araştırmalar arasındaki farkı belirleyen temel unsurlardan birisi katılımcıların yansız atama ile seçilip seçilmediğidir. Tek-denekli deneysel araştırmaların katılımcıları hâlihazırda sorunlu davranışları olan ya da yeni davranışların kazandırılmasına gereksinim duyan katılımcılar arasından seçilmesi nedeniyle araştırma katılımcıları yansız atama yoluyla belirlenememektedir (Aydın, Tekin-İftar, ve Rakap, 2019). Çalışmamızda da okuma güçlüğü olan öğrenciler belirlenip, bu öğrenciler arasından önkoşullara uygun olanlar çalışmaya dahil edilmiştir.

Çoklu yoklama modelleri, bir öğretim ya da davranış değiştirme programının etkililiğini birden fazla durumda değerlendirmeyi amaçlar (Aydın, Tekin-İftar, ve Rakap, 2019). Çoklu yoklama modelleri; (a) davranışlar arası çoklu yoklama modeli, (b) katılımcılar arası çoklu yoklama modeli, (c) ortamlar arası çoklu yoklama modeli olmak üzere üç grupta incelenmektedir. Katılımcılar arası çoklu yoklama modeli, bir bağımsız değişkenin etkililiğinin en az üç farklı katılımcı üzerinde incelendiği bir araştırma modelidir (Tekin-İftar, 2018). Modelin etkili bir uygulamayı, geri çekmeyi ve sürekli başlama düzeyi verisi toplamayı gerektirmemesi uygulama kolaylığı sağlamaktadır (Tekin-İftar, 2018).

Bağımlı ve Bağımsız Değişken

Çalışmanın bağımsız değişkenini OpenDyslexic font oluştururken bağımlı değişkenini ise katılımcıların okuma hızı, okuma doğruluğu, okuma prozodisi ve okuduğunu anlama becerisi oluşturmaktadır.

Katılımcılar ve Seçimi

Bu araştırma 2020-2021 öğretim yılında Aksaray ilinde resmi okullara devam eden, dördüncü sınıfta okuma güçlüğü olan üç öğrenci ile yürütülmüştür. Araştırmaya katılacak öğrencileri belirleyebilmek üzere gerekli izinlerin alınmasının ardından Aksaray Rehberlik ve Araştırma Merkezi'nde özel öğrenme güçlüğü tanılı (ÖÖG) ve skolastik becerilerde karma tip bozukluk alt tanılı dördüncü sınıf öğrenciler tespit edilmiştir. Tespit edilen öğrencilerin okulları ile irtibata geçilerek öğretmen ve velilerinden öğrenci hakkında ön bilgi alınmıştır. Çalışmaya istekli öğrencilerin belirlenmesiyle 10 yaşında iki erkek ve biri kız olmak üzere üç öğrenci çalışmaya alınmıştır.

Veri Toplama Araçları

OpenDyslexic fontun etkililiğinin belirleyebilmek amacıyla veri toplama aracı olarak Milli Eğitim Bakanlığınca 4. sınıf Türkçe ders kitaplarında okutulan metinler kullanılmıştır. Öğrencinin okuma hızını

belirleyebilmek için bir dakikada doğru okuduğu sözcük sayısı kaydedilmiştir. Okuma doğruluğunun belirlenebilmesi için metin içinde okuduğu doğru sözcük sayısı ve yanlış seslettiği sözcükler kaydedilmiştir. Prozodik okuma düzeyinin belirlenebilmesi için Keskin, Baştuğ ve Akyol (2013) tarafından geliştirilen "Prozodik Okuma Ölçeği" kullanılmıştır. Katılımcıların okuma düzeylerinin tespit edilmesi için "Yanlış Analiz Envanteri" kullanılmıştır.

Verilerin Toplanması

Okuma hızı ve prozodi için başlama düzeyi verileri en az üç oturumda kararlılık elde edilinceye kadar birer gün aralıklarla toplanmıştır. Başlama düzeyi verileri için okul ders kitaplarında yazılmış fontta metinler kullanılırken uygulama evresi verileri için metinler OpenDyslexic fonta çevrilmiştir. Uygulama sürecinde OpenDyslexic fonta çevrilmiş beş metin ile çalışma yapılmıştır. Başlama düzeyi verileri için Milli Eğitim Bakanlığı'nın Türkçe ders kitaplarında dördüncü sınıflar için hazırlanmış "Eskiciyle Para Babası", "Pinti", "Güler Yüze ve Gülmeye Dair" adlı metinler kullanılmıştır. Uygulama sürecinde ise "Ah Heidi Neredesin?", "Öğrenme ve Marie Curıe", "İpek Böceği", "Beyin Ne İşe Yarar", "Şakacı Fil" adlı metinler ile çalışma yapılmıştır. Çalışmaların ilk iki haftasında yüz yüze eğitim yapılmıştır. Ancak 2020-2021 eğitim-öğretim yılının bahar döneminde uygulanmaya başlanmış olan araştırma sürecinde tüm dünyayı saran Covid-19 salgını nedeniyle Türkiye'de sokağa çıkma yasağı ilan edilmiştir. Bu nedenle araştırmanın iki haftalık sürecinde uzaktan eğitim yapılmıştır. Yasakların hafifletilmesi ile birlikte uygulama sürecinin son iki haftası da yüz yüze eğitim uygulaması ile tamamlanmıştır. Okuduğunu anlama için başlama düzeyi verisi "Eskiciyle Para Babası" adlı metnin soruları ile toplanmıştır. Uygulama evresi verileri için "Ah Heidi Neredesin?", "Beyin Ne İşe Yarar" adlı metinler kullanılmıştır. "Öğrenme ve Marie Curıe" ve "İpekkelebeği" adlı metinler ile yapılan okuduğunu anlama çalışmaları pandemi nedeniyle canlı ders olarak işlenmiş olup okuduğunu anlama ölçekleri yazılı olarak cevaplandırılamamıştır. Bu nedenle bu metinlerin okuduğunu anlama ölçekleri puanlamaya dahil edilmemiştir. Çalışma, toplamda 23 ders saati olmak üzere 16 oturumda tamamlanmıştır.

Başlama Düzeyi ve Yoklama Oturumları

Çalışmaya başlamadan önce öğrencilere uygulama ve kullanılacak materyaller hakkında bilgi verilmiştir. Okuma metnin bir kopyası araştırmacı tarafından alınmış, diğeri ise öğrenciye sunulmuştur. Öğrenci okumaya motive edilerek hazır olduğunda başlaması söylenmiştir. Öğrenci okumaya başladığı andan itibaren video kayıt başlatılmıştır. Öğrenciye müdahale edilmeden tüm metni okuması sağlanmıştır. Öğrencinin okuyamadığı kelimeler üç saniye beklenildikten sonra araştırmacı tarafından okunmuştur. Öğrencinin satır atlama hataları anında düzeltilmiş, atlanan satır gösterilerek devam etmesi sağlanmıştır. Öğrencinin okuma videosu oturum sonrasında araştırmacı tarafından dikkatle dinlenerek bir dakikada doğru okuduğu kelime sayısı tespit edilmiş, okuma hataları çizelgeye kaydedilmiştir. Öğrencinin okuma videosu birkaç defa dinlendikten sonra prozodik okuma ölçeğine puanlama yapılmıştır. Okuduğunu anlama başlama düzeyi verisi için "Eskiciyle Para Babası" adlı metin ders kitabında yazılmış fontta çalışılmış, uygulama evresi verileri için ise "Ah Heidi Neredesin?", "Öğrenme ve Marie Curıe", "İpek Böceği", "Beyin Ne İşe Yapar" adlı metinler OpenDyslexic fonta çevrilerek sorular cevaplanmıştır. Sorular metinde geçen kelimeleri tahmin etme, metin ile ilgili sorular, metnin konusu ve metnin ana fikri olmak üzere üç etkinlik olarak hazırlanmıştır. Sorular gönüllü öğrenciye okutulmuş ve her öğrencinin kendi kağıdına cevaplaması istenmiştir. Yazma güçlüğü olan

öğrenciler için sorular sözlü olarak cevaplamaları istenmiş, sözel olarak verilen doğru cevaplar ayrıca not alınmıştır.

Verilerin Analizi

Başlama düzeyi için ders kitaplarında kullanılmış fontta metinler ile toplanmış verilerin analizi yapılmıştır. Uygulama evresi için OpenDyslexic fonta çevrilmiş metinler ile veri analizi yapılmıştır. Katılımcıların okuma hızı, okuma doğruluğu, prozodik okuma, okuma düzeyleri ve okuduğunu anlama puanları ile ilgili veriler toplanarak kaydedilmiş ve grafiğe işlenmiştir. Okuma hızı, katılımcının bir dakikada okuduğu kelime sayısından yapılan hata sayısının çıkarılması ile hesaplanmıştır (Deeney, 2010).

Doğruluk, her bir metin için doğru olarak tanımlanan kelime sayısıyla ölçülmüştür. Katılımcının ekleme, atlama, yanlış okuma, hiç okuyamama ya da yardımla okuduğu kelimeler okuma hatası olarak puanlanmıştır. Okuma doğruluğu yüzdesi, doğru okunan kelime sayısı toplam okunan kelime sayısına bölünmüş ve 100 ile çarpılarak hesaplanmıştır (Dowhower, 1987).

Prozodik okuma için Keskin, Baştuğ ve Akyol (2011) tarafından geliştirilen prozodik okuma ölçeğinden alınan puanlar kaydedilerek veriler grafiğe işlenmiştir. Keskin (2012), okuma becerisini yeterince kazanamamış, çok fazla okuma hatası yapan öğrenciler için ölçeğin kullanılmasını uygun görmemektedir. Birinci ve İkinci katılımcının prozodik okuma ölçeği verileri değerlendirmeye alınmıştır. Ancak çok fazla okuma hatası olması nedeniyle üçüncü katılımcının prozodik okuma ölçeği değerlendirilmeye alınmamıştır.

Okuma düzeylerini belirlemek amacıyla kullanılan Yanlış Analiz Envanteri ile kelime tanıma ve okuma düzeyleri tespit edilmiştir. Okuduğunu anlama düzeyini belirlemek için katılımcıların metin sorularına verdikleri cevaplar puanlandırılmıştır. Katılımcıların cevapları her etkinlik için yazılı ve sözlü olarak alınmıştır. Cevaplanmamış sorular ya da hatalı cevaplar puanlandırılmamış, eksik cevaplar her bir soru değerinin yarısı kadarıyla puanlandırılmıştır.

Bulgular

OpenDyslexic Fontun Okuma Hızına Olan Etkisine İlişkin Bulgular

Araştırmanın birinci alt amacında OpenDyslexic fontun disleksili öğrencilerin okuma hızına olan etkisi araştırılmıştır. Araştırmaya dahil edilen katılımcıların okuma hızlarına bakıldığında birinci katılımcının başlama düzeyinde ortalama okuma hızı 47 kelimeden 64 kelimeye yükselmiştir. Birinci katılımcının okuma hızında başlama düzeyine göre %48'lik bir artış görülmüştür. İkinci katılımcının ortalama okuma hızı 55 kelimeden 70 kelimeye çıkmış, okuma hızında %27'lik bir artış görülmüştür. Üçüncü katılımcının ise ortalama okuma hızı 8 kelimeden 12 kelimeye yükselmiştir. Üçüncü katılımcının okuma hızında %50'lik bir artış görülmüştür. Bu sonuçlar değerlendirildiğinde katılımcıların üçünün de okuma hızlarının arttığı görülerek OpenDyslexic font etkili bulunmuştur.

OpenDyslexic Fontun Okuma Doğruluğuna Olan Etkisine İlişkin Bulgular

Araştırmanın ikinci alt amacında OpenDyslexic fontun okuma güçlüğü olan öğrencilerin okuma doğruluğuna olan etkisi araştırılmıştır. Birinci katılımcının başlama düzeyindeki ortalama okuma doğruluğu yüzdesi %95,02 iken, uygulama evresi ortalama okuma doğruluğu yüzdesi %97,32'ye yükselmiştir. Bu verilere bakıldığında birinci katılımcının okuma doğruluğu yüzdesi başlama düzeyi veri ortalamasına kıyasla uygulama verileri ortalamasında %2,3'lük bir artış görülmüştür. İkinci katılımcının

başlama düzeyindeki ortalama okuma doğruluğu yüzdesi %96,11 iken, uygulama evresi ortalama okuma doğruluğu yüzdesi %98,93'e çıkmıştır. İkinci katılımcının okuma doğruluğu yüzdesi başlama düzeyi veri ortalamasına kıyasla uygulama verileri ortalamasında %2,82'lik bir artış görülmüştür. Üçüncü katılımcının başlama düzeyindeki ortalama okuma doğruluğu yüzdesi %31,24 iken, uygulama evresi ortalama okuma doğruluğu yüzdesi %38,97'ye yükselmiştir. Bu veriler incelendiğinde üçüncü katılımcının okuma doğruluğu yüzdesi başlama düzeyi veri ortalamasına kıyasla uygulama verileri ortalamasında %7,73'lük bir artış görülmüştür.

Özetle araştırmaya dahil edilen katılımcıların üçünün de okuma doğruluk düzeyi artmış ve OpenDyslexic font etkili bulunmuştur. Birinci ve ikinci katılımcının doğru okuma oranı yüksek iken üçüncü katılımcının metin içinde çok fazla okuma hatası yaptığı görülmüştür. Üçüncü katılımcının ters çevirmeden kaynaklanan okuma hatalarını en çok "en, ne" gibi tek heceli, kısa sözcükler oluşturmaktadır. Katılımcının okuma doğruluğu verileri incelendiğinde bazen tek heceli kelimelerde bile okuma hatası yaparken bazen de 4-5 heceli kelimeleri tek seferde doğru okuduğu gözlemlenmiştir.

OpenDyslexic Fontun Prozodik Okumaya Olan Etkisine İlişkin Bulgular

Araştırmanın üçüncü alt amacında OpenDyslexic fontun öğrencilerin prozodik okumalarına olan etkisi araştırılmıştır. Birinci katılımcının başlama düzeyindeki ortalama prozodik okuma puanı 33 iken uygulama evresindeki ortalama prozodik okuma puanı 53'e yükselmiştir. İkinci katılımcının ortalama prozodik okuma puanı 32 iken uygulama evresindeki ortalama prozodik okuma puanı 53'e yükseldiği görülmüştür. Bu verilere bakıldığında ilk iki katılımcının prozodik okuma düzeylerinin arttığı görülmüş ve OpenDyslexic fontun prozodik okuma üzerinde etkili olduğu bulunmuştur. Üçüncü katılımcının metin içinde çok fazla okuma hatası yapması nedeniyle prozodik okuma ölçeği tutulamamıştır.

Birinci ve ikinci katılımcının okuma hızının ve okuma doğruluğunun artmasıyla, metinleri daha akıcı, özgüvenli okudukları, seslerini daha iyi kullanmaya başladıkları gözlemlenmiştir. Bunun sonucunda da katılımcıların prozodi okuma puanları yükselmiştir.

OpenDyslexic Fontun Okuma Düzeyine İlişkin Bulgular

Araştırmanın dördüncü alt amacında OpenDyslexic fontun öğrencilerin okuduğunu anlama düzeyine etkisi araştırılmıştır. Birinci katılımcı başlama düzeyinde okuduğu ilk metinde 1 dakikada 48 kelime okumuş ve 3 okuma hatası yapmıştır. Uygulama evresinin OpenDyslexic fonta çevrilmiş olarak okuduğu son metninde 1 dakikada 79 kelime okumuş ve 1 kelime hatalı okuma yapmıştır. Katılımcının her iki okuma çalışmasında da öğretim düzeyinde olduğu görülmüştür. İkinci katılımcı başlama düzeyinde toplam 2 hatalı okuma ile 1 dakikada 52 kelime okumuş iken son okuma çalışmasında hatasız olarak 1 dakikada 77 kelime okumuş, okuma düzeyi öğretim düzeyinden serbest okuma düzeyine çıkmıştır. Üçüncü katılımcı başlama düzeyinde okuduğu ilk metinde 1 dakikada 10 kelime okumuş ve 22 okuma hatası yapmıştır. Okuduğu son metninde 1 dakikada 14 kelimeye çıkmış, okuma hatası ise 18 kelimeye düşmüştür. Üçüncü katılımcının her iki okuma çalışmasında da endişe düzeyinde kaldığı görülmüştür.

OpenDyslexic Fontun Okuduğunu Anlama Düzeyine İlişkin Bulgular

Araştırmanın beşinci alt amacında OpenDyslexic fontun öğrencilerin okuduğunu anlama düzeyine etkisi araştırılmıştır. Birinci katılımcının başlama düzeyindeki okuduğunu anlama puanı 59 iken uygulama evresindeki son puanı 82'ye yükselmiştir. İkinci katılımcının 54 puandan 78'e, üçüncü katılımcının ise 31 puandan 49'a yükseldiği görülmüştür. Bu verilere bakıldığında üç katılımcının da

okuduğunu anlama düzeylerinin arttığı görülmüş ve OpenDyslexic fontun okuduğunu anlama üzerinde etkili bulunmuştur.

Tartışma ve Sonuç

Türkiye'de yazı tipinin disleksi tanılı çocukların okuma hızları üzerine etkisini inceleyen bir çalışmaya rastlanmıştır. İleri (2020), disleksi tanılı çocukların eğitiminde kullanılmak üzere en uygun yazı tipinin tespit edilmesini amaçladığı yüksek lisans tez çalışmasında elektrookülografi (EOG) yöntemini kullanmıştır. 23 disleksi tanısı konmuş ve 13 disleksili olmayan toplam 36 bireyin, hazırlanan farklı punto ve yazı karakterlerini içeren metinleri okurken eş zamanlı olarak EOG sinyalleri kaydedilmiştir. Araştırma sonucunda, her iki grupta da Times New Roman ile hazırlanmış metinlerde ortalama okuma süreleri artarken, BonvecoCF yazı tipi ile hazırlanmış metinlerde ortalama okuma süreleri düşmüştür. Bu sonuç, kullanılan yazı tipinin disleksi tanılı öğrencilerin okuma hızına etkisi olduğu çıkarımıyla araştırmamızın bulgusunu destekler niteliktedir.

İngiliz Disleksi Derneği'nin yayını da araştırma bulgumuzu destekler niteliktedir. İngiliz Disleksi Derneği, yazılı materyallerde bazı disleksik kişilerin yaşadığı görsel stresi önlenmek ve okumayı kolaylaştırmak için uygun yazı tipi ve arka plan rengi seçimini, şeffaf olmayan kalın kağıt kullanımı gibi unsurların önemini ortaya koymaktadır (Dyslexia Style Guide, 2021). Hughes ve Wilkins (2000), okuma güçlüğü çeken çocukların görsel strese daha duyarlı olduklarını ve metin boyutunun öğrencilerin okuma hızlarını büyük ölçüde etkilediğini iddia etmektedir. Görsel stres, okuma sırasında hayali şekiller, metnin hareketi ve renkleri, bozuk veya bulanık baskı ve genel görsel tahriş gibi hoş olmayan görsel semptomlarla kendini gösterir (Zikl ve diğerleri, 2015). Bu bulgu, araştırmacıları metnin görsel özelliklerinin disleksili bireylerde okuma üzerindeki etkisini daha fazla incelemeye yöneltmiştir. Ülkemizde de OpenDyslexic fontun disleksili bireylerin okuma hızına etkisini belirleyebilmek adına daha fazla ve kapsamlı çalışmalara ihtiyaç vardır.

OpenDyslexic'in okuma doğruluğuna etkisini araştıran Zikl ve diğerleri, (2015), araştırma sonucunda OpenDyslexic font ile hata oranları özellikle çok sık hata yapan öğrencilerde biraz daha düşük çıkmış, bu sonuç OpenDyslexic fontun ciddi okuma güçlüğü çeken öğrencilerde daha etkili olabileceğini düşündürmüştür. Wery ve Diliberto (2016) makalesinde, OpenDyslexic font ile yapılan çalışmaların okuma doğruluğunda hiçbir gelişme göstermediğini ortaya koymuştur. Araştırmamıza yakın bir diğer çalışma olan De Leeuw (2010), Dyslexie yazı tipiyle okumanın okuma hatalarını azalttığını tespit etmiştir.

Araştırmamızda okuma düzeylerinin belirlenmesinde Ekwall ve Shanker (1988) tarafından geliştirilen, Akyol (2011) tarafından uyarlanan kelime tanıma oranı kullanılmıştır. Buna karşın okuma düzeylerinin belirlenmesinde okuma doğruluğu oranları araştırmacılara göre farklı oran aralıklarına ayrılmıştır. Farris, Fuhler, ve Walther (2004), Rasinski ve Hoffman (2003) okuma doğruluk oranlarını; %89 ve altını endişe (başarısız) düzeyi, %90 ile %94 arasını öğretimsel düzey, %95 ile %100 bağımsız düzey olarak belirlemiştir (Sert, 2019). Çalışmamızda bu oranlar baz alınmış olsaydı; birinci ve ikinci katılımcının öğretimsel düzeyden bağımsız düzeye çıktığını, üçüncü katılımcının endişe düzeyinde kaldığını ifade etmiş olurduk.

OpenDyslexic fontun okuma hızı, okuma doğruluğu üzerindeki olumlu etkisi ikincil sonuç olan okuduğunu anlama üzerinde de olumlu etkilere sebep olmuştur. Wery ve Diliberto (2016), akıcı kelime tanıma güçlükleri ve zayıf kod çözme becerileri ile karakterize edilen disleksinin okuduğunu anlama

sorunları, kelime dağarcığının ve bilişsel şemaların büyümesini engellemesi gibi ikincil sonuçlar doğurabileceğini savunmuştur. Renske de Leeuw (2010), Dyslexie yazı tipinin okuma hızını kelime çalışmaları ile ölçtüğü çalışmasında, çalışmamızda olduğu gibi metinler üzerinde okuduğunu anlama becerisinin ölçülmesini, okunabilirliği arttırdığı düşünülen bir yazı tipinin okuma için harcanan çabanın ve odağın azalacağı için okuduğunu anlamayı arttıracağı hipotezinin test edilmesini önermiştir. Araştırma bulgularımız da bu çalışmalarla örtüşmektedir. Katılımcılarımızın okuma hızı ve doğruluğu arttıkça okuduğunu anlama becerileri gelişmiş, katılımcılar metin sorularına daha istekli ve doğru cevaplar vermiştir.

Öneriler

Araştırma bulguları temel alınarak uygulamaya ve ileriteki araştırmalara yönelik öneriler aşağıda verilmiştir.

Uygulamaya Yönelik Öneriler

Üç öğrencinin de hikaye edici metinleri daha akıcı okurken özellikle içinde yabancı isimlerin bulunduğu bilgi verici metinleri okumakta zorlandıkları gözlemlenmiştir. OpenDyslexic fontun etkililiğini belirlemek amacıyla yapılacak çalışmalarda, metinlerin okunabilirlik açısından eş zorluk düzeyinde olması öğrencilerin gelişimini izlemek adına daha faydalı olabilir.

Okul ders kitaplarında OpenDyslexic yazı tipi ile hazırlanmış metinlere de yer verilebilir.

İlerideki Araştırmalara Yönelik Öneriler

Pandemi nedeniyle online olarak yapılan derslerde üçüncü katılımcının ekran okumasına karşı daha istekli olduğu ve daha doğru okuduğu gözlemlenmiştir. OpenDyslexic font ile ekran okuma üzerinden okuma hızı ve doğruluğuna etkisini araştıran metin okuma çalışmaları yapılabilir.

Disleksili Türkçe okuyucular üzerinde, OpenDyslexic fontun akıcı okuma ve okuduğunu anlamaya etkisini araştırmaya yönelik daha büyük örneklem gruplarıyla çalışmalar yapılabilir.

Disleksili öğrencilerin, okuma sırasında OpenDyslexic ile diğer fontlara göre göz hareketlerini inceleyen çalışmalar yapılabilir.

Disleksili öğrencilerin, OpenDyslexic font ile farklı punto, harf ve kelime aralıklarında hazırlanmış metinlerle okuma hızı ve doğruluğu ölçülebilir.

OpenDyslexic ile sık kullanılan ve farklı özelliklerdeki birden fazla yazı tipini karşılaştıran çalışmalar yapılabilir.

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"Plickers", The Fun State of Assessment and Evaluation: The Experiences of Social Studies Pre-Service Teachers

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Abstract

In COVID-19 pandemic process, teachers paid effort to use Web 2.0 tools to make their classes interactive and more interesting in distance education. Central institutions have also planned and implemented various in-service trainings to support usage of technology by teachers. In the 2021-2022 academic year, distance education was terminated and face-to-face education was readopted. It can be argued that it is not acceptable to return to learning-teaching process in the classrooms without technology after two years of technology-based progress experienced with all the stakeholders of education. For this reason, it is important to make effective use of various web 2.0 tools in face-to-face education in order for students to experience and internalize technology as a teaching tool. In this context, the aim of this study is to reveal the opinions of social studies pre-service teachers as regards the Plickers application that they experienced with secondary school students. Document analysis was used in the study. In this context, the reflective texts were used as a data source where 24 pre- service teachers shared their application experiences in the portfolios they prepared in the Information Technologies in Social Studies course. The obtained data were analyzed by document analysis consisting of review, detailed examination and interpretation steps. As a result of the study, it was determined that the preparation and application processes of Plickers were experienced as "easy" and that its advantages outnumber disadvantages.

Keywords: Social studies, plickers, web 2.0, assessment and evaluation, pre-service teachers.

Introduction

The way technology affects several aspects of society is concretely observable; however, its effects on educational institutions are much less visible (Keengwe, 2018: xi). Scientific studies on the use of technology in education from past to present have revealed that using these technologies in the learning-teaching process will provide significant gains for students. However, although the use of technology in education is always desirable, it is out of question in a significant part of the world due to the lack of necessary infrastructure. In the rest of the world, it has always been left to the choice and understanding of teachers. However, due to the COVID-19 pandemic in 2020, the use of technology in education has become a necessity rather than a choice. While the countries with a high level of welfare and developed technological infrastructure got through this process between 2020 and 2022 more smoothly, the inequality of opportunity in education in other countries deepened even more in this process. As a matter of fact, according to UNICEF's (2021) New Remote Learning Readiness Index findings, it has been revealed that, with a few exceptions, countries with high gross national income are better prepared for a possible new distance education process compared to low-income countries. However, the pandemic process faced in the last quarter of 2019 caught many countries off guard. According to UNICEF's (2020) report, by 2020, for at least 463 million of the world's school-age children who constitute approximately 30%, distance education through internet, radio and television broadcasts is not accessible. In 2022, as we enter the third year of the pandemic, schools are not yet fully opened in 23 countries that are home to 405 million school-age children (UNICEF, 2022).

In countries that can implement distance education, teachers have tried to focus on practices that will make students active in the classes. Chen, Harris, and Shang (2009) mentioned the importance of utilizing web 2.0 technologies to cope with the challenges of providing active learning to students in virtual learning environments. Contrary to popular belief, web 2.0 is much more than a set of 'cool' new technologies and services (Anderson, 2007). Web 2.0 is all about using collective intelligence (O'Reilly, 2007). Web refers to the second generation of the Web, where content is created with users and includes

workable, user-centered web applications and services (Wilson et al., 2011). Stating that the emergence of Web 2.0 technologies adds new dimensions to the potential of technologies that facilitate learning, Sachs (2014: 419) argued that technology would be an integral part of learning in the 21st century and web 2.0 would help facilitate this process.

The most prominent feature of Web 2.0 technologies is to strengthen the communication between users and to facilitate their socialization (Chen, Harris & Shang, 2009). However, the most distinctive characteristic of Web 2.0 technologies is that they are based on interaction. In Ketelhut's study (2019: 24), participatory interactive technology was described as "a great way to use visual and auditory learning styles to reach students with different learning abilities". Web 2.0 tools have several different categories such as animation, digital story, classroom management, and social networking. Yet, another category that will be discussed in this study is measurement and evaluation. Only through measurement and evaluation it is possible to know whether learning is realized in education Chng & Gurvitch, 2018). In this context, types of evaluation can be specified as diagnostic, formative and assessment-oriented. It can be argued that measurement and evaluation processes in educational institutions are mostly carried out with traditional methods, and that web 2.0 tools are used rarely at every stage of the learning-teaching process, especially at the measurement and evaluation phase. Şenyurt and Şahin (2022) found in their study that the knowledge of teachers regarding web 2.0 tools is limited and that they rarely use these tools. The reason for the limited knowledge of teachers and their rare usage of application is that they do not encounter courses related to these contents before their career begins. Aldır (2014) found in his study conducted on this subject that pre-service teachers did not take the courses related to these contents at a sufficient level during the undergraduate period. In the literature there are studies conducted with secondary school students (Arzfi et al., 2022; Cin Şeker, 2020; Korkmaz et al., 2019; Tuncer & Şimşek, 2019; Yaylak, 2017) and university students (Masita & Fitri, 2020; Mshayisa, 2020; Wood, Brown & Grayson, 2017; Zengin, Bars & Şimşek, 2017) as regards Plickers application.

Several studies have been performed to determine the opinions and attitudes as regards Plickers application. However, this study is different in that it includes the following process: social studies pre-service teachers first learned Plickers as a student in the relevant course and then experienced it in their courses and midterms. Secondly, they used the application as an intern teacher (within the scope of Teaching Practice I course) with secondary school students. Therefore, the study includes the views of pre- service teachers as regards the application as well as their observations on the impact of the application on secondary school students.

In this context, the aim of the study is to reveal the experiences of pre-service teachers on the Plickers application that they carried out with secondary school students within the scope of Information Technologies in Social Studies course opened in the Social Studies Teaching program of a state university. In this context, answers to the following questions were sought in the study:

What are the opinions of the pre-service teachers as regards the preparation process of the Plickers application?

What are the opinions of pre-service teachers as regards the implementation process of the Plickers application?

What are the observations of pre-service teachers as regards the implementation process of the Plickers application?

What are the opinions of pre-service teachers as regards the advantages

that Plickers application can provide to students?

What are the difficulties faced by pre-service teachers during the implementation process?

Method

Research Model

In this study, which aims to display the experiences of social studies pre-service teachers related to Plickers web 2.0 application, document analysis, a qualitative research method, was used. Document analysis includes the examination of written sources which consist of information on the topic to be studied (Yıldırım and Şimşek, 2018). Student activities during classes, a personal letter, school records, a work of art, newspapers and other documents can be very valuable and explanatory for qualitative studies (Yin, 2011). Bogdan and Biklen (2022) also stated that the texts written for class assignments are potentially rich data sources which are frequently used by researchers. However, the use of documents as a data source does not mean that they are less valuable than observations and interviews (Merriam, 2015). In this context, document analysis was preferred in the study in order to be able to benefit from the reflective texts in the portfolios prepared by the pre-service teachers in the 2021-2022 and 2022-2023 academic years in which they conveyed their experiences about the phenomenon discussed. On the other hand, the in-class application and reflective text creation tasks related to the relevant application were not given in the first place with the prospect that they would be used for research. Actually, the same tasks were given to the pre- service teachers by the researcher/trainer for applications such as Voki, Powtoon and Quiver Vision 3D Augmented Reality. In this context, it can be argued that the model of the study coincides with the document review.

Study Group

The study group of the research consisted of reflective texts in the portfolios prepared by 24 senior students within the relevant course at Social Studies Teaching Program of a public university in 2021-2022 and 2022-2023 academic years. However, since the findings of the research were planned to be supported by direct quotations from these reflective texts, the portfolio notes that can provide information about the gender of the writers of the texts and their inclination to technology is shown in Table 1. Details on the course information from which the portfolios were obtained are given under the title Data Collection Tools and Process.

Table 1. *Information about the participants*

Nickname	Gender	Portfolio Score	Academic Year	n	%
Aybike		100	2021-2022		
Ayça		95	2021-2022		
Aylin		85	2021-2022		
Begüm		87	2021-2022		
Esin		95	2021-2022		
Gamze		75	2021-2022		
Ömür		95	2021-2022		
Seda		100	2021-2022		
Selin	Female	95	2021-2022	17	71
Sanem		100	2021-2022		
Sude		88	2021-2022		
Sonay		100	2021-2022		
Ayten		100	2022-2023		
Farah		100	2022-2023		
Gizem		100	2022-2023		
Lale		100	2022-2023		
Sema		98	2022-2023		
Fazıl		100	2021-2022		
Hayri		100	2021-2022		
Mete		90	2021-2022		
Aras	Male	92	2021-2022	7	29
Tuğrul		65	2021-2022		
Abdullah		63	2022-2023		
Ercan		93	2022-2023		
Total				24	100

As indicated in Table 1, there are a total of 24 pre-service teachers, 17 female and 7 male, whose opinions are given on portfolios in the study. 17 of the teacher candidates prepared their portfolios in the fall semester of the 2021-2022 academic year, and 7 of them in the 2022-2023 academic year.

Data Collection Tools and Process

The data source used in the study is the portfolios prepared for the SBÖ011 Information Technologies in Social Studies course opened by the researcher in the Fall semesters of the 2021-2022 and 2022-2023 academic years in the Social Studies Teaching program of the Faculty of Education of a public university. Information Technologies in Social Studies course is included in the Social Studies Teaching Undergraduate Program as an elective course which includes the use of technology and technology-based activities in social studies teaching and applications to increase the technological competencies of pre-service teachers (YÖK, 2019). In other words, the purpose of this course is to transfer technological pedagogical content knowledge and competencies that social studies pre-service teachers need in the 21st century, to develop their skills for web 2.0 applications that they can use in face-to-face and distance education, and to enable them to adapt what they have learned to social studies teaching. In the first two weeks of the course, basic concepts related to technology, software types, Fatih Project, EBA platform and theoretical information about the existence and importance of technology in the Social Studies Curriculum were discussed. In the

following weeks, interactive board (Padlet, Mentimeter), augmented reality (Quiver Vision, Space 4D+, Dinosaur 4D+), digital storytelling (Powtoon, Storyjumper), measurement and evaluation (Plickers, Quizizz, Kahoot, Puzzle Maker), digital cartoon and animation (Pixton, Vyond, Animaker, Voki), classroom management (ClassDojo, Edmodo), mind map (Mindomo, Wisemapping) and, finally, presentation preparation applications (Voicethread, PowerPoint, Prezi) were covered. The objective of these courses was to perform step-by-step applications with students and to teach pre-service teachers how to use web 2.0 applications in their social studies classes. Within this perspective, they were asked to add the materials they prepared for each application in their portfolios (in pdf format).

In the sixth week of the course, Plickers application was introduced to the pre- service teachers and an implementation consisting of 20 questions was performed. Then, step-by-step development and application process was realized with pre-service teachers in computer environment. In the seventh week of the course, which was the midterm week, the pre-service teachers took an exam consisting of 25 multiple choice questions using Plickers. Thus, it was ensured that pre-service teachers would experience Plickers both in the classroom and in the real exam environment. In addition, the experiences used in the research were obtained from the application assignments. Since the pre-service teachers were positioned at specified schools for internship within the scope of Teaching Practice I course, they were asked to prepare a total of 15 questions in 3 sets consisting of 5 questions each at the end of the existing learning areas/units in the schools and apply them to the students with Plickers. Pre-service teachers were requested to place in their portfolios classroom images showing that they carried out the application, the questions they prepared in the Plickers application, and their evaluation results. In addition, they were expected to reflect on a structured form their experiences, observations, emotions and opinions as regards the pre-implementation and implementation processes, as well as the advantages and disadvantages of the application, based on their personal experiences. Pre-service teachers prepared these forms in Word program, added them to their portfolios, and handed them at the end of the semester. In this context, 30 pre-service teachers who took the course in the 2021-2022 academic year and 20 pre-service teachers who took the course in the 2022-2023 academic year carried out this practice in the schools they were positioned for internship. Thus, teachers and students of at least 20 classrooms (approximately 700 students) were able to experience this practice. In the study, the texts of 24 pre-service teachers who fully prepared the reflection task within the framework of the above-mentioned titles were used. 26 pre-service teachers who performed the application incompletely or did not perform it at all were not included in the study. The information about the grade level at which the pre-service teachers performed the Plickers application and the learning areas of the social studies course are given in Table 2.

Photo 1. Images from Plickers apps

Table 2. *Grade level and learning domain where the application was carried out*

Grade Level	n	%
5th grade	9	37
6th grade	8	33
7th grade	6	25
8th grade	1	4
Total	17	99/100
Learning Domain	f	%
Culture and Heritage	17	63
People, Places and Environments	8	29
Science, Technology and Society	1	4
A National Epic: Either Independence or Death!	1	4
Total	27	100

As indicated in Table 2, 9 of the pre-service teachers implemented the application at 5th grade social studies course, 8 pre-service teachers implemented the application at 6th grade social studies course, 6 pre-service teachers implemented the application at 7th grade social studies course, and 1 pre-service teacher implemented the application at 8th grade Turkish Republic Revolution History and Kemalism course. Considering that some participants performed the implementation in multiple learning fields, Culture and Heritage became the most preferred learning field with 63% in terms of Plickers application. The most important reason for obtaining this result is that Culture and Heritage is the second learning area of the Social Studies Course Curriculum, and the application and reflection tasks are given in the weeks covering this learning area. As a result of the evaluation of the porfolios, it was concluded that the Plickers experience of the pre-service teachers is significant for other teachers and those doing research in the related field. Therefore, it was decided to include these files in the scope of the study and to use them as data sources.

Analysis of the Data

Document analysis, one of the data analysis methods, was used in the research. Bowen (2009: 27) defined document analysis as "a systematic procedure for reviewing and evaluating both printed and electronic materials". In the analysis of the data, Corbin and Strauss's (2008) three-stage document analysis process including review, detailed examination and interpretation was used. The documents were reviewed and coded, then analyzed in detail and subjected to content analysis by reaching the themes. The findings obtained from the analyzes were interpreted by turning them into tables and integrating direct quotations.

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Since only document review was used in this study, it is not subject to ethics committee approval.

Findings

Findings of the study are given in tables and supported by direct quotations, as seen below. Like every application, Plickers requires some preliminary action such as writing questions on the application, forming classrooms, assigning students, printing out the QR codes, and organizing them according to the class list. As the pre-service teachers benefited from the free-of-charge basic features of the application, they had to prepare the required 15 questions in three folders. Considering the foregoing, the views of the pre-service teachers regarding the difficulty level of the preparation phase of the Plickers application are shown in Table 3.

Table 3. *Opinions of the participants on the pre-application preparation phase of Plickers*

Preparation Process	n	%
Easy	20	84
Difficult	2	8
Partly difficult	2	8
Total	24	100

As seen in Table 3, 84% of pre-service teachers evaluated the preparatory phase of Plickers as "easy". Expressing that she progressed more easily as she spent time in the application, Aylin explained this situation as follows: "I had a hard time preparing the application at first. As I spent time in the application, I learned better." Begüm similarly stated that she had difficulties during the preparation process: "Even though the preparation of the application was difficult and demanding, the application process was very easy." Selin stated that the preparation process was easy: "The preparation phase was not difficult, it was prepared easily." Sude also emphasized the simplicity of the preparation process as follows: "There was no difficulty in preparing the questions in the Plickers application." Ercan, on the other hand, drew attention to the partial difficulty of the preparation process of the application: "The preparation process takes some time. It is more difficult than other applications. It is necessary to take the names and surnames of the students one by one from the class list and upload them to the application. It's a bit of a hassle in that regard."

The application process can be generally summarized as follows: opening the Plickers application on the smart board, distribution of QR codes to the identified students, informing students about how the application will take place, starting the test, after making sure that all students have read the questions, scanning through the phone the QR codes on which the answers are reflected, after making sure that answers of all students are scanned, ending the scanning process on the phone and showing the correct answers to the students. Then, after each question is answered, the test is finished. The opinions of the pre-service teachers regarding the difficulty level of the implementation process are given in Table 4.

Table 4. *Opinions of the participants on the implementation process of Plickers*

Implementation Process: Difficulty Level	n	%
Easy	15	62
Difficult	4	17
Difficult at first, easy later	5	21
Total	17	100

According to Table 4, 62% of pre-service teachers think that the application process of Plickers is easy, 21% think that the application is difficult at first but gets easier as it is used, and 17% describe

this process as difficult. Thinking that the application process was easy, Aylin explained it as follows: "It was easy to implement in the classroom. Since the class is crowded, not many activities can be done normally, but thanks to the Plickers application, activities were easily held in crowded classes. The students liked the activity very much and they wanted to apply it to other subjects as well. I think that I will use this application frequently both in my education life and after I become a teacher." Sanem, on the other hand, stated that although it was difficult at first, it became easier as she used it: "For me, the application process is fun. I learned a different application; it will be an application that I can use in my teaching life. At first we were a bit of a callow when applying it to the 5/C class. It was a lengthy application. Later, we were able to make an easier and more comfortable application when using it with the 5/D class." Similarly, Ömür explained that he had difficulties in using the application in the first place: "We had difficulties in using the application in the classroom at first. Unlike us, the students immediately understood and adapted to the situation. We discussed the questions clearly and had the opportunity to see evidently why they did wrong. It's been a nice experience for me. And the students loved it, too."

Expressing that the implementation process was difficult, Esin described the process she went through as follows: "For me, the implementation process was difficult. It was hard to explain and show the application to the students. It was difficult to manage the class, to prevent the students from talking among themselves. Although I explained to the students the nature of the application, I lost time because they did not keep the QR code properly while reading." Seda stated that she had similar difficulties: "At the beginning of the application process, it was not easy to activate the Google account via the smart board. During the application, as a result of difficulties in reading QR codes of some student and the students interacting with each other too much, there were problems in directing them to the next question." The findings regarding the classroom observations of the pre-service teachers who experienced the implementation process are shown in Table 5.

Table 5. *Classroom observations of the participants on Plickers' implementation process*

Implementation Process: Observations	f	%
Towards Emotional Impact		
Fun	22	44
Excited	6	12
Pleased	4	8
Be amazed by the app	1	2
Behavior Oriented		
Students' willingness to repeat	9	18
Application Oriented		
Students adapt quickly to the application	6	12
Environment Oriented		
Creating a competitive environment	2	4
Total	50	100

When Table 5 is examined, it can be seen that all pre-service teachers evaluated the application process on Plickers as entertaining despite the various difficulty levels mentioned in Table 4. In addition, some of the pre-service teachers received a request from the students to prepare another Plickers practice after the application, and some teachers pointed out that the students could adapt to the application quickly. Quotations from the reflection assignments of the pre-service teachers about the fun and enjoyable aspects of the process are given below.

Ayça stated that an entertaining environment was created: "Plickers application not only created competition among students; it also increased their interest and motivation. It was clear that

the students enjoyed a lot." Similarly, Aylin stated that the students wanted to perform the application in other courses as well: "they had a fun time… The students really loved the activity they wanted to do it on other subjects as well. I think that I will use this application frequently both in my education life and after I become a teacher." Begüm also stated that the students wanted to use the application again and were excited when they first saw it: "Students liked it very much. … The students were very excited at first. They asked whether they would do it again." Fazıl said: "It was very fun and nice. We had a fun time with the students." Gamze expressed the impact of the application on the students as follows: "… the interest of the students was enormous. Especially the Plickers application attracted the attention of the students. They wanted me to run it all the time." Ayten conveyed her observations as follows: "When I used this application in the classroom, I saw the thrill and happiness in the eyes of the students closely. The whole class was having fun and learning at the same time in a competitive environment." Hayri explained his observations as follows: "Students' interest in the program was extremely high. They were already experienced because they had done it before. They were asking my colleagues for another Plickers activity. I answered those requests. In general, the interest of the students skyrocketed thanks to the use of such activities in the classroom environment." Sonay, on the other hand, described the students' willingness towards the application as follows: "The application process was quite enjoyable. I was very happy, especially as the students were pleased when they answered the questions correctly. Also, students were delighted when their names appeared on the board. They preferred solving questions instead of going to recess. The students said that they wanted to solve more questions even though we had run out of them."

Regarding the Plickers application, another issue that pre-service teachers are asked to include in their reflection assignments is to indicate the advantages and disadvantages of the application. The relevant findings are given in Tables 6 and 7.

Table 6. *Opinions of the participants on the advantages of the Plickers application*

Advantages of Plickers App	f	%
Students Oriented		
See students' assessment results instantly	16	16
Increasing students' interest and motivation towards the lesson	13	13
Attracting attention and motivation towards the lesson	12	12
Ensuring learning because the subject includes repetition	10	10
Creating curiosity in students	2	2
Supporting the development of decision making skills	1	1
Teacher Oriented		
Identifying the missing points of the students	9	9
Ensuring all students participate in the lesson	9	9
Facilitating teachers in assessment	8	8
Compliance with the principle of economy	6	6
Usefulness	2	2
Saving time	1	1
Learning Environment Oriented		
Creating a fun learning environment	6	6
Creating a competitive environment among students	4	4
Total	99	99/100

According to Table 6, pre-service teachers expressed the advantages of Plickers application in three categories, namely students, teachers, and learning environment. Accordingly, advantages of the application are stated as students being able to see the evaluation results quickly, increasing their interest and motivation towards the class, attracting their attention and motivation towards the class, and easily identifying the problematic areas suffered by each of the students. Aybike listed the advantages of the application as follows: "It allows for the students to have fun compared to classical

measurement and evaluation. It becomes clear which subjects students have difficulty in learning and which subjects they do not understand in general and on an individual basis." Selin indicated the benefits provided by the application as follows: "It was appreciated by the students and they participated with pleasure. The application activated the students and motivated the lesson. The fact that it was a different application attracted their attention, so the interest in the course increased even more. The application was appreciated by the teacher, and it contributed to the evaluation of the students." Sanem stated that the application allowed the students to learn bu having fun, that the practice teacher observed and liked this application, adding that she would also use it in the future. The findings obtained from the statements of the pre-service teachers regarding the disadvantages of the application are given in Table 7.

Table 7. *Opinions of the participants on the difficulties encountered in the implementation process of Plickers*

Disadvantages of Plickers App	f	%
Sourced from Students		
Difficulty in practice due to the large number of students	7	14
Difficulty detecting scanned QR codes	6	12
Students have difficulty keeping their QR codes	6	12
Making classroom management difficult	6	12
Causing cheating among students	5	10
Students have difficulty in understanding the application	5	10
Causing noise	4	8
Application takes too much time	3	6
Students in the back row have difficulty seeing the questions	1	2
Sourced from Application		
There is a quota of questions due to the paid application	7	14
Total	50	100

As can be seen from Table 7, it is seen that the disadvantages of the application are mostly student-related, which are based on the overcrowdedness of the classrooms. The pre-service teachers listed the disadvantages of the application as difficulty in tracking which student's QR code was read or not during the application process, inability to read the answer as the fingers of the students are on the QR code while lifting it towards the scanner, the competition environment it creates among students, the uproar occurring in the classroom when they give the correct answer, which makes classroom management difficult, and the difficulty of establishing control due to the number of students, thus causing some students to cheat. Regarding the subject, Aybike said: "The large class size made it difficult for students to understand. It can also lead to activities such as cheating." Esin stated: "It was difficult to manage the classroom and prevent students from talking to one another. Even though I explained the nature of the application to the students, I wasted time because they did not keep the code properly while reading the QR code." Sonay, on the other hand, explained the disadvantages of the application as follows: "My class had 42 pupils. In crowded classrooms, there may be noise problems which compromise classroom management. In addition, students are likely to interact too much, so they can cheat."

When Tables 6 and 7 and the direct quotations reflected from pre-service teachers are examined, it can be seen that the application has several advantages and that they outnumber its disadvantages. Pre-service teachers stated 99 (f) opinions as regards the advantages of the application whereas 50 (f) opinions indicated its disadvantages.

Discussion and Conclusion

In this study, which aimed to reveal the experiences of social science pre-service teachers regarding the Plickers Web 2.0 application that they carried out with secondary school students in social

studies classes, conclusions based on findings, comparison of the findings with the literature, and recommendations are provided below.

It has been revealed that teachers evaluated the preparation and implementation processes of Plickers application as "easy". Zengin, Bars and Şimşek (2017) showed in their study conducted with mathematics pre-service teachers that Plickers was applicable in classes. As a result of the study, it was found out that all pre-service teachers found Plickers application process fun. It has been determined that the application, which provides an enjoyable measurement and evaluation environment, is asked to be repeated frequently by the students. Similarly, Chou (2022), in his study with primary school students, revealed that when the application is adopted as a formative assessment tool, it contributes to an enjoyable learning environment. López García (2016), Wood, Brown, and Grayson (2017) and Mshayisa (2020) also concluded in their studies that the participants found the Plickers application user-friendly.

According to the pre-service teachers, the advantages of Plickers application for students are that it increases their interest and motivation towards the class, improves learning as it allows for repeating the topics, ensures that exam results are quickly viewed, and increases attention and motivation towards the course. In addition, it was found out that the application offered some advantages to the teachers. As such, it allows for the teachers to quickly identify the topics that are not completely learned by the students, engages all students actively to the class, and facilitates assessment. In addition, the application provided an entertaining environment and created a competitive environment among students. In their study, Zengin, Bars and Şimşek (2017) concluded that mathematics pre-service teachers listed the advantages of as follows: it facilitates assessment for teachers, provides detailed and instantaneous analysis results, saves time, and increases students' participation and motivation in the class. Yaylak (2017) found out that Plickers application implemented in social studies course provided a fun learning environment, created enthusiasm among the students, increased class participation, and provoked the desire to use the application again. In her study conducted with university students, Mshayisa (2020) determined that Plickers increased student participation and helped them in evaluation. Wood, Brown and Grayson (2017), in their study on academics and university students, showed that Plickers made the interaction between lecturers and students a pleasant experience. Kent (2019) emphasized that with this application students could perform quick self- evaluations, and teachers could obtain instant assessments as to the topics that the students were good and bad at. Masita and Fitri (2020) found in their study conducted with teachers and students on English teaching that the application could assist formative assessment by providing teachers quickly with student responses and assessment data. They also concluded that it increased student motivation and participation. Chou (2022) demonstrated that Plickers usage positively affected learning performance of students by entertaining them and increasing active participation. Tuncer and Şimşek (2019) found out that Plickers application positively affected academic success in secondary school students. Korkmaz et al. (2019) conducted a study on eighth grade students and concluded that exams conducted through Plickers caused less anxiety than the classical exams, that it positively affected their academic achievement, and that students were pleased to see their results instantly. López García (2016) similarly found that providing a quick real-time assessment and motivating students are the prominent features of Plickers application. On the other hand, the fact that Plickers does not require any device for students, in other words, its affordability can be described by teachers as a factor facilitating its use (Krause, O'Neil & Dauenhauer, 2017; Wood, Brown, & Grayson, 2017).

It has been found out that the disadvantages of Plickers application mostly stem from students, the main reason being the overcrowded classrooms. It is stated that the classroom size makes it difficult to control whether QR codes are scanned. When students give a correct answer, they cheer over which leads to uproar and cheating among students. In addition, it was concluded that class population complicates class management in such situations. Based on the opinions of the pre-service teachers in the study, it was determined that the advantages of the Plickers application outnumber its disadvantages. Chng and Gurvitch (2018) also revealed that teachers think that the pros of the practice are more than its cons.

Recommedations

Similar to the application in this study, it can be recommended for pre-service teachers that they learn Plickers and other applications and experience them in internship schools by including courses on Web 2.0 technologies in social studies in particular and in all teaching programs in general, especially in the fourth grade which includes teaching practice courses. Thus, it can be ensured that pre-service teachers experience the application and make more use of it in their professional lives, and that students and teachers become familiar with such applications at an earlier stage. On the other hand, in-service training activities and TÜBİTAK-funded education projects involving Web 2.0 tools which target active teachers should be encouraged. Finally, due to the fees of various Web 2.0 tools, the opportunities offered by these tools cannot be utilized sufficiently because free versions only allow access to their basic content. In this respect, it can be ensured that universities cover the license fees of this application to grant full access and make them available for pre-service teachers. A similar action can be taken by the Ministry of National Education and its usage by teachers can be encouraged.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 100%

Support and Thanks

I would like to thank my students for patiently enduring all the tasks I gave during the course included in this research. It was all in order to graduate them with better skills.

Conflict Statement

There is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Ölçme ve Değerlendirmenin Eğlenceli Hali "Plickers": Sosyal Bilgiler Öğretmen Adaylarının Deneyimi

Giriş

Web 2.0 teknolojilerinin en belirgin özelliği kullanıcılar arasında iletişimi güçlendirerek onların sosyalleşmelerini sağlamaktır (Chen, Harris & Shang, 2009). Ancak Web 2.0 teknolojilerinin en ayırt edici özelliği etkileşim temelli olmalarıdır. Ketelhut'un (2019: 24) çalışmasında bir katılımcı etkileşimli teknolojiyi "farklı öğrenme yeteneklerine sahip öğrencilere ulaşmak için görsel ve işitsel öğrenme stillerini kullanmanın harika bir yolu" olarak ifade etmiştir. Animasyon, dijital hikaye, sınıf yönetimi, sosyal ağ gibi çok farklı kategorileri bulunan web 2.0 araçlarının bu araştırma özelinde ele alınacak bir diğer kategorisi ise ölçme ve değerlendirmedir. Eğitimde öğrenmenin gerçekleşip gerçekleşmediği ancak ölçme ve değerlendirme ile bilinebilir (Chng & Gurvitch, 2018). Bu kapsamda amacına göre değerlendirme türleri tanılayıcı, biçimlendirici ve değer biçmeye yönelik yapılabilmektedir. Eğitim kurumlarında ölçme ve değerlendirme süreçlerinin daha çok geleneksel yöntemlerle gerçekleştirildiği; yalnızca ölçme ve değerlendirme aşamasında değil öğrenme-öğretme sürecinin her aşamasında web 2.0 araçlarından çok az yararlanıldığı söylenebilir. Nitekim Şenyurt ve Şahin (2022) gerçekleştirdikleri araştırmada öğretmenlerin web 2.0 araçlarına ilişkin bilgilerinin sınırlı olduğu ve bu araçlardan nadiren yararlandıklarını tespit etmişlerdir. Bu algılarının sınırlı ve uygulama sıklıklarının az olmasının temelinde ise öğretmenlerin hizmet öncesinde bu içeriklere ilişkin derslerle karşılaşmaması yer almaktadır. Buna ilişkin Aldır (2014) yapmış olduğu çalışmada öğretmen adaylarının lisans döneminde bu içeriklere ilişkin dersleri yeterli görmediklerini tespit etmiştir. Alanyazında Plickers uygulamasına ilişkin ortaokul (Arzfi ve arkadaşları, 2022; Cin Şeker, 2020; Korkmaz ve arkadaşları, 2019; Tuncer & Şimşek, 2019; Yaylak, 2017) ve üniversite öğrencileriyle (Masita & Fitri, 2020; Mshayisa, 2020; Wood, Brown ve Grayson, 2017; Zengin, Bars & Şimşek, 2017) Plickers uygulamasına ilişkin görüş ve tutumlarını belirlemeye yönelik çeşitli çalışmalar gerçekleştirilmiştir. Ancak bu çalışma sosyal bilgiler öğretmen adaylarının kendilerinin bir öğrenci olarak Plickers'ı önce öğrenip (derste) daha sonra derste

ve arasınavlarında deneyimlemesinin ardından uygulamayı stajer bir öğretmen olarak (Öğretmenlik Uygulaması I dersi kapsamında) ortaokul öğrencilerine uygulamasını içermesi, hem öğretmen adaylarının uygulamaya ilişkin görüşlerinin hem de ortaokul öğrencileri üzerindeki etkilerine ilişkin gözlemlerine yer verilmesi açısından diğer çalışmalardan ayrılmaktadır. Bu kapsamda araştırmanın amacı, bir devlet üniversitesinin Sosyal Bilgiler Öğretmenliği programında açılan Sosyal Bilgilerde Bilişim Teknolojileri dersi kapsamında öğretmen adaylarının ortaokul öğrencileriyle gerçekleştirdikleri Plickers uygulamasına ilişkin deneyimlerini ortaya koymaktır.

Yöntem

Sosyal bilgiler öğretmen adaylarının Plickers web 2.0 uygulamasına ilişkin deneyimlerinin ortaya koyulmasının hedeflendiği bu araştırmada nitel araştırma yöntemlerinden biri dolan doküman incelemesi kullanılmıştır. Doküman incelemesi, araştırılması hedeflenen konu hakkında bilgi içeren yazılı kaynakların analizini kapsar (Yıldırım ve Şimşek, 2018). Derslerdeki öğrenci çalışmaları, kişisel bir mektup, okul kayıtları, bir sanat eseri, gazeteler vb. gibi dokümanlar nitel çalışmalar için oldukça değerli ve açıklayıcı olabilmektedir (Yin, 2011). Bogdan ve Biklen (2022) de sınıf ödevleri için yazılan anlatıların potansiyel olarak zengin veri kaynakları olduğunu ve bunun araştırmacılar tarafından da sıklıkla kullanıldığını ifade etmişlerdir. Bu bağlamda araştırmada 2021-2022 ile 2022-2023 eğitim-öğretim yılında öğretmen adaylarının ders kapsamında hazırladıkları ürün dosyalarında bulunan ve ele alınan olguya dair deneyimlerini aktardığı yansıtıcı metinlerden yararlanıldığı için doküman incelemesi tercih edilmiştir. Araştırmanın çalışma grubunu bir devlet üniversitesinde 2021-2022 ile 2022-2023 eğitim-öğretim yılında Sosyal Bilgiler Öğretmenliği programının dördüncü sınıfında öğrenim gören 24 öğretmen adayının ders kapsamında hazırladıkları ürün dosyalarında yer alan yansıtıcı metinler oluşturmaktadır. Araştırmada veri analiz yöntemlerinden biri olan doküman inceleme kullanılmıştır. Bowen (2009: 27) doküman analizini "hem basılı hem de elektronik materyalleri gözden geçirmek ve değerlendirmek için sistematik bir prosedür" olarak tanımlamıştır. Verilerin analizinde Corbin ve Strauss'un (2008) gözden geçirme, detaylı inceleme ve yorumlama olmak üzere üç aşamalı doküman analizi sürecinden yararlanılmıştır. Dokümanlar gözden geçirilerek önce kodlara daha sonra ise detaylı incelenerek temalara ulaşmak suretiyle içerik analizine tabi tutulmuştur.

Bulgular

Araştırmanın verilerinden hareketle öğretmen adaylarının Plickers uygulamasının hazırlık ve uygulama süreçlerini kolay olarak değerlendirdikleri belirlenmiştir. Ayrıca öğretmen adaylarının tümünün Plickers uygulama sürecinin eğlenceli olduğunu ifade ettikleri görülmüştür. Eğlenceli bir ölçme ve değerlendirme ortamı oluşmasını sağlayan uygulamanın öğrenciler tarafından sıklıkla tekrarlanması isteğinin de oluştuğu tespit edilmiştir. Öğretmen adayları Plickers uygulamasının öğrencilere yönelik avantajlarını öğrencilerin derse karşı ilgi ve motivasyonunu artırması, konu tekrarına fırsat tanıması nedeniyle öğrenmeyi, değerlendirme sonuçlarını hızlıca görüntülemeyi ve derse karşı dikkat çekme ve güdülemeyi sağlaması olarak ifade etmişlerdir. Diğer yandan Plickers uygulamasının dezavantajlarını ise daha çok öğrenci kaynaklı sorunlar olarak nitelendirdikleri ve başlıca sorunun sınıflardaki öğrenci sayısının fazla olmasından kaynaklandığı ifade etmişlerdir.

Tartışma ve Sonuç

Sosyal bilgiler öğretmen adaylarının, ortaokul öğrencileriyle, sosyal bilgiler derslerinde gerçekleştirdikleri Plickers Web 2.0 uygulamasına ilişkin deneyimlerinin ortaya koyulmasının

amaçlandığı bu araştırmada bulgulardan hareketle sonuçlara ve sonuçların alanyazınla karşılaştırılmasına yer verilmiştir.

Öğretmen adaylarının Plickers uygulamasının hazırlık ve uygulama sürecini kolay olarak değerlendirdikleri ortaya koyulmuştur. Zengin, Bars ve Şimşek (2017) matematik öğretmen adaylarıyla gerçekleştirdikleri çalışmada Plickers'ın derslerde uygulanabilir olduğunu ortaya koymuştur. Araştırma sonucunda öğretmen adaylarının tümünün Plickers uygulama sürecinin eğlenceli olduğunu ifade ettikleri belirlenmiştir. Eğlenceli bir ölçme ve değerlendirme ortamı oluşmasını sağlayan uygulamanın öğrenciler tarafından sıklıkla tekrarlanması isteğinin de oluştuğu tespit edilmiştir. Benzer şekilde Chou (2022) da ilkokul öğrencileriyle gerçekleştirdiği çalışmasında uygulamanın biçimlendirici bir değerlendirme aracı olarak benimsendiğinde eğlenceli bir öğrenme ortamına katkı sağladığını ortaya koymuştur. López García (2016), Wood, Brown ve Grayson (2017) ile Mshayisa (2020) da gerçekleştirdikleri çalışmalarda katılımcıların Plickers uygulamasının kullanımının kolay olduğunu düşündükleri sonucuna ulaşmışlardır.

Öğretmen adaylarına göre Plickers uygulamasının öğrencilere yönelik avantajlarının öğrencilerin derse karşı ilgi ve motivasyonunu artırması, konu tekrarına fırsat tanıması nedeniyle öğrenmeyi, değerlendirme sonuçlarını hızlıca görüntülemeyi ve derse karşı dikkat çekme ve güdülemeyi sağlaması olarak ifade ettikleri sonucuna ulaşılmıştır. Ayrıca uygulamanın öğretmenler için de birtakım avantajlar oluşturduğu tespit edilmiştir. Buna göre öğrencilerin eksik olduğu konuların hemen tespit edilmesi, tüm öğrencileri süreçte aktif kılması ve değerlendirmede kolaylık sağlaması uygulamanın öğretmenler için sağladığı avantajlar olduğu ortaya çıkmıştır. Ayrıca uygulamanın eğlenceli bir ortam oluşturmasının yanı sıra ve öğrenciler arasında rekabet ortamı da oluşturduğu sonucuna ulaşılmıştır. Zengin, Bars ve Şimşek (2017) da çalışmalarında matematik öğretmen adaylarının Plickers'ın öğretmenler için değerlendirmeyi kolaylaştırması, ayrıntılı ve anlık analiz sonuçları sunması, zamandan tasarruf sağlaması ve öğrencilerin derse katılımı ve motivasyonlarını artırmasını uygulamanın avantajları olduğunu ifade ettikleri sonucuna ulaşmıştır. Yaylak (2017) da sosyal bilgiler dersinde gerçekleştirdiği Plickers uygulamasının sınıfta eğlenceli bir öğrenme ortamı sağladığını, öğrencilerde heyecan uyandırdığını, derse katılımı artırdığını ve uygulamayı tekrar kullanma isteği oluşturduğunu tespit etmiştir. Mshayisa (2020) da üniversite öğrencileriyle gerçekleştirdiği çalışmada Plickers'ın öğrenci katılımını artırdığını ve kendilerini değerlendirmeye yardımcı olduğunu tespit etmiştir. Wood, Brown ve Grayson (2017) akademisyenler ve üniversite öğrencileriyle gerçekleştirdikleri çalışmalarında Plickers uygulamasının eğitimen ve öğrenciler arasındaki etkileşimi keyifli bir hale getirdiğini ortaya koymuşlardır. Kent (2019) ise uygulama sayesinde öğrencilerin kendilerini hızlı bir şekilde değerlendirebildiklerini, öğretmenlerin de öğrencilerin hangi konularda iyi hangi konularda eksik olduğuna ilişkin anlık değerlendirmeler elde edebildiğini ifade etmiştir. Masita ve Fitri (2020) de İngilizce öğretimine ilişkin öğretmen ve öğrencilerle gerçekleştirdikleri çalışmada uygulamanın öğretmenlere öğrenci yanıtlarını ve değerlendirme verilerini hızlı şekilde sunması ile biçimlendirici değerlendirmeye yardımcı olabileceğini, öğrenci motivasyon ve katılımını da artırdığını tespit etmiştir. Chou (2022) da Plickers kullanımının öğrencilerin eğlenerek ve aktif katılım sağlayarak öğrenme performanslarını olumlu etkilediğini ortaya koymuştur. Tuncer ve Şimşek (2019) de Plickers uygulamasının ortaokul öğrencilerinde akademik başarıyı olumlu yönde etkilediğini tespit etmişlerdir. Korkmaz ve arkadaşları (2019) da sekizinci sınıf öğrencileriyle yaptıkları araştırmada Plickers ile gerçekleştirilen sınavın klasik sınava göre daha az kaygıya neden olduğu, akademik başarılarını olumlu yönde etkilediği ve öğrencilerin kendi sonuçlarını anında görmesinden hoşnut olduğu sonucuna

ulaşmışlardır. López García (2016) da benzer şekilde Plickers'ın gerçek zamanlı hızlı bir değerlendirme sunması ve öğrencileri motive etmesinin uygulamanın öne çıkan özellikleri olduğunu tespit etmiştir. Diğer yandan Plickers'ın öğrenciler için herhangi bir cihaz gerektirmemesi başka bir ifadeyle ekonomik olması öğretmenler tarafından kullanımını kolaylaştırıcı bir faktör olarak nitelendirilebilir (Krause, O'Neil & Dauenhauer, 2017; Wood, Brown ve Grayson, 2017).

Plickers uygulamasının dezavantajlarının daha çok öğrenci kaynaklı olduğu, öğrenci kaynaklı sorunların başlıca nedeninin ise sınıflardaki öğrenci sayısının fazla olmasından kaynaklandığı belirlenmiştir. Nitekim öğrenci sayısının fazla olmasının uygulamada kullanılan karekodlarının taranıp taranmadığını takip etmeyi zorlaştırdığı, öğrencilerin doğru cevaplarında sevinç gösterilerinde bulunması nedeniyle gürültüye ve bazı öğrenciler arasında kopya çekme eyleminin yaşanmasına neden olduğu tespit edilmiştir. Ayrıca öğrenci sayısının bu tür durumlara neden olarak sınıf yönetimini de zorlaştırdığı sonucuna ulaşılmıştır. Araştırmada öğretmen adaylarının görüşlerinden hareketle Plickers uygulamasının avantajlarının dezavantajlarından daha fazla olduğu tespit edilmiştir. Chng ve Gurvitch (2018) de öğretmenlerin uygulamanın artılarının eksilerinden daha fazla olduğunu düşündüklerini ortaya koymuştur.

Öneriler

Araştırmanın sonuçlarından hareketle özelde sosyal bilgiler genelde ise tüm öğretmenlik programlarının özellikle öğretmenlik uygulaması derslerinin bulunduğu dördüncü sınıflarında Web 2.0 teknolojilerine ilişkin derslere yer verilerek öğretmen adaylarının Plickers ve diğer uygulamaları öğrenmesi ve staj okullarında deneyimlemesi önerilebilir. Böylelikle öğretmen adaylarının deneyimlemeleri dolayısıyla mesleki yaşamlarında bu uygulamalardan daha fazla yararlanması ve mevcut öğrenciler ile öğretmenlerin de bu uygulamalarla daha erken karşılaşması sağlanabilir. Diğer yandan halihazırda görev yapan öğretmenlere yönelik Web 2.0 araçlarına ilişkin hizmetiçi eğitimlerin ve TÜBİTAK destekli eğitim projelerinin artırılması önerilebilir. Son olarak çeşitli Web 2.0 araçlarının ücretleri nedeniyle yalnızca temel düzeydeki içeriklerine erişim imkanı vermelerinden dolayı bu araçların sunduğu olanaklardan yeterince yararlanılamamaktadır. Bu doğrultuda uygulamalara tam erişim sağlanabilmesi için üniversitelerin uygulamanın lisans ücretlerini karşılayarak öğretmen adaylarının kullanımına sunması sağlanabilir. Benzer bir faaliyet Milli Eğitim Bakanlığı tarafından da gerçekleştirilerek öğretmenlerin kullanımı teşvik edilebilir.

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An Examination of the Attitudes of Primary School 4th Grade Students Towards Science in Terms of Different Variables

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Abstract
Interest, attitudes and motivation regarding a field have been shown to be one of the factors that influence success. Ensuring a positive interest, attitude and motivation can only be possible by determining these affective states. This study aimed at examining elementary fourth graders' attitudes towards the science course in terms of various variables. The participants were 155 fourth graders studying at an elementary school located in the Nevşehir province in the 2021-2022 academic year. The study was conducted in accordance with the survey method, a qualitative research method. The data were gathered through the Scale of Attitudes Towards the Science and Technology Course developed by Kenar and Balcı (2012). The scale included 12 items rated on a 5-point Likert scale. Paired samples t-test and one-way ANOVA were used in the data analysis. The findings showed that the fourth graders had positive attitudes towards the science course. The students' attitudes towards the science course did not show a significant difference based on gender, and parents' educational level. As a result, students' having positive towards the science course can contribute to the analysis of factors affecting success in this course in further studies.

Keywords: Science course, attitude, primary school.

Introduction

In this age of information and technology, rapid advances and developments lead to the accumulation of scientific knowledge. Due to the characteristics of this age, science has become an active part of our lives. It has played a role in every field of the age, including the birth, development and change of information and technology (Balım et al., 2009).

Starting from birth, human beings try to understand the events, objects and living things around them. They act with a sense of curiosity, strive to be informed about everything they see and feel around them and satisfy their curiosity. Science helps people make sense of and get to know the outside world (Nuhoğlu, 2008).

In addition, it also enables individuals to experience the process of acquiring knowledge and learn about the formation of knowledge. In elementary education, the science course is a class that makes children recognize their physical environment, make effective use of nature and develop scientific thinking skills (Çoban, 2003). It is part of the elementary education curricula as a basic course that develops students cognitively and enhances their creativity. In this course, students acquire the habits of objective thinking and correct decision-making in the context of phenomena and events by examining their environment through scientific methods. In other words, students learn about real life, and thus, can adapt to both natural and social life more easily. Science education provided at elementary education is of great importance in terms of playing an important role in preparing individuals for the future and life, beyond the key role it plays for the following levels of education (Zinicola, 2003).

Most societies, especially developed countries, always struggle to improve the quality of science education. This is because one of the best ways to ensure that individuals have the characteristics to meet the needs of this age is a proper science education. Raising science-literate individuals can only be achieved by encouraging them to have an interest and desire for science. This would be possible when students have positive affective states regarding the science course. Such affective characteristics can be listed as interest, willingness, motivation and attitudes. As a factor that affects learning, attitudes can also be influential on science education. The concept of "attitudes towards science" that has been the

subject of many studies in recent years is defined as a set of feelings, beliefs and values towards an object that is the product of science, a science class at school, or the effect of science on society and scientists (Osborne, 2003). Martin et al. (1998) refers to three important dimensions of science instruction, one of which is attitudes, so that students can have productive learning experiences. Measuring attitudes in the instructional process is useful in terms of getting to know learners' preferences to predict their future behaviour by determining their attitudes in a certain time period, change their attitudes or develop new attitudes (Nuhoğlu, 2008).

As a concept, an attitudes is a judgmental tendency that leads to a positive or negative emotion, thought and behaviour towards a situation, event, object, person or group (Budak, 2000). Since children's attitudes begin to be shaped at an early age, the elementary school period has an important place in the development of positive attitudes towards science (Jewett, 1996). Attitudes can be described as one of the most important affective characteristics that influence learning. They can also be described as the tendency to react positively or negatively to individuals, places, events or ideas (Simpson et al., 1994). Science-literate individuals can have the desired characteristics only by feeling interested in science and developing positive attitudes towards it.

Students' attitudes towards a course can give many insights to educators. As a matter of fact, educators can investigate many behavioural changes through the change in attitudes. Individuals' attitudes towards an event result from their beliefs. Attitudes and beliefs are always related. People tend to act in accordance with their feelings and beliefs. Individuals' attitudes can be predicted based on their behaviours that can be observed (Özgüven, 1998, cited in Akbudak, 2005).

The concept of attitude, the basis of any behaviour, is one of the key concepts affecting learning and is a variable that determines whether individuals will learn better and what subjects or concepts. Attitudes are "individuals' tendency that direct them to exhibit certain behaviours in the face of certain people, objects and events" (Demirel, 2003).

Attitudes towards science are studied to better understand students' behaviours in the context of science. This is because their attitudes play a key role in the process of comprehending, internalising and making sense of the science course and transferring it into real life. Consequently, raising science-literate individuals who can keep up with the requirements of this age can only be possible by developing positive attitudes towards the science course. It is certainly important that this positive attitude develops when students first encounter the science course. If students who experience the science course for the first time in elementary third and fourth grades develop a positive attitude towards science, they will feel positive about the science courses they will take in the rest of their education life. Raising science literate individuals is not a goal specific to the elementary school level, this period is only a start (H. Çavaş & Çavaş, 2016; Hastürk, 2017).

Elementary school students' attitudes are of great importance as explained above. In this respect, this study focused on elementary fourth graders' attitudes towards the science course.

Research Questions

The present study investigated whether elementary fourth graders' attitudes towards the science course showed a difference based on gender and parents' educational status through the following research questions:

- Is there a significant difference between elementary fourth graders' attitudes towards the science course based on their gender?

- Is there a significant difference between elementary fourth graders' attitudes towards the science course based on their mothers' educational status?

- Is there a significant difference between elementary fourth graders' attitudes towards the science course based on their fathers' educational status?

Aim and Significance

In the literature, there are studies investigating the attitudes of elementary school fourth grade students towards the science course. However, most of these studies were conducted in accordance with the previously implemented science curriculum. Therefore, this study has significance in order to keep the current knowledge up-to-date and contribute to the existing literature. Many factors seem to affect an individual's behaviour. These elements can have an influence on behaviours positively or negatively depending on their aspects and types. One of the most important elements among affective states is attitudes. Attitudes have a predictive nature in explaining an individual's reason for performing or not performing a behaviour. In addition, it is an important predictor of the rate of performing a behaviour that an individual has not yet performed. Attitudes towards a situation is one of the characteristics that can guide us in interpreting behaviours towards it. At the same time, individual characteristics related to the same situation may lead to the development of different attitudes. This study aims at determining elementary school fourth grade students' attitudes towards the science course and examining this phenomenon in terms of different variables. For this purpose, it was examined whether individual characteristics had an effect on the students' attitudes.

Method

Research Model

The quantitative research model was employed in this study. Studies in which the data obtained are expressed and measured with numerical values are referred to as quantitative research studies (Ekiz, 2003). Quantitative studies are those arguing that variables can be observed, measured, and analysed objectively. These studies usually aim to prove relationships between variables (Büyüköztürk et al., 2020).

Considering the aim of the study, survey design, a qualitative research method, was used. As for the types of survey research, single survey model was used because the data were collected from the sample with a one-time measurement (Büyüköztürk et al., 2020).

Population and Sample

This study was conducted in an elementary school located in the Nevşehir province in the 2021-2022 academic year. In this context, fourth grade students studying in this elementary school were included in the sample. Among the fourth-graders, 155 volunteered to participated in the study, and were included after the forms and permissions were obtained. Therefore, the sample consisted of 155 fourth grade students.

Table 1*. Distribution of participants based on gender*

Variables	N	%
Male	86	55,5
Female	69	44,5
Total	155	100

Among the students who participated in the study, 86 (55.5%) were male, and 69 (44.5%) were female.

Purposive sampling method was used while determining the sample. According to Büyüköztürk (2020), purposive sampling method enables the selection of groups/cases rich of information depending on the topic of the study and have an in-depth analysis in these groups/cases. This method is generally preferred when researching one or more groups with certain characteristics (Büyüköztürk et al., 2020). While determining the sample, the criterion of researchers' conveniently reaching to participants was taken into consideration.

Data Collection Tool

The data were obtained by administering a scale form to the students in the elementary school where the participants were studying. The scale forms were distributed to the students, they were given one class hour to answer the items, and then the forms were collected.

Data were collected using a scale that is rated on a five-point Likert scale. The scale contained 12 items that were rated as "strongly agree," "agree," "not sure," "disagree," and "strongly disagree." Likert-type rating scales are more widely used to measure psychological characteristics such as attitudes and reveal views in a particular situation (Büyüköztürk et al. 2020).

The "Scale of Attitudes Towards the Science and Technology Course" developed by Kenar and Balcı (2012) was used to determine elementary school fourth graders' attitudes towards science course and find out whether their attitudes differ significantly in terms of different variables. A personal information form was also employed to collect data regarding the participants' characteristics. The form included questions on gender and parents' educational levels that were thought to be related to attitudes towards the science course.

The scale consisting of 12 items were found to have three sub-dimensions as a result of the factor analysis. These sub-dimensions are being interested, enjoying and continuing to study. Being interested includes items of negative attitudes towards the science course. Enjoying contains items of positive attitudes, while continuing to study has items related to the time spent to learn in the science course.

The options graded in the attitude scale were "Strongly Agree (4.20-5.00)", "Agree (3.40-4.19)", "Not Sure (2.60-3.39)", "Disagree (1.80-2.59)", "Strongly Disagree (1.00) -1.79)". Positive items were scored as 5, 4, 3, 2 and 1, respectively, starting from "Strongly Agree", while negative items were reversely scored as 5, 4, 3, 2 and 1 starting from the "Strongly disagree".

Since the scores ranged between 1.00 and 5.00, the students' level of participation in the science course was accepted to be higher as the attitude scores approached 5.00, and lower as it approached 1.00. It was assumed that the students had negative attitudes when the mean of the total scores was below 2.60 points, and positive attitudes when they had a score of 2.60 and above. The results of the factor analysis conducted by the scholars who developed the scale showed that the Kaiser-Meyer-Olkin (KMO) value of the scale was 0.81, and the Barlett test significance value was 0.00. The reliability

coefficient (Cronbach's alpha) was calculated as α=0.83. These values show that it is a valid and reliable scale (Kenar & Balcı, 2010). In the present, the reliability coefficient was re-calculated and Cronbach's alpha coefficient was calculated as α=0.80.

Data Analysis

Findings were analysed by using descriptive statistics. The Kolmogorov-Smirnov test was performed to examine normality in the data. The reason why the Kolmogrow-Smirnow test was used is that the number of participants was more than 30. The Shapiro-Wilk test is recommended when the number of participants is below 30, and the Kolmogrov-Smirnov test when it is 30 and above (Ak, 2008). By performing the Kolmogrov-Smirnov test, the skewness-kurtosis values of the scores were checked. It was found that the skewness kurtosis coefficient was between +1.0 and -1.0 for each variable, and the significance value (p>.05) showed a normal distribution in the data (George & Mallery, 2010 as cited in Erbasan & Ocak, 2017).

The Independent Samples t-test, a parametric test, was used to determine whether the students' attitudes towards the science course differed based on gender. To see whether their attitudes showed a difference based on parents' attitudes, one-way ANOVA was performed.

Ethical Permissions of the Study

In this study, all the rules specified to be followed within the scope of the "Higher Education Institutions Scientific Research and Publication Ethics Directive" were catered to. None of the actions specified under the title of "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, were undertaken.

Findings

The findings obtained in this study are presented in this section.

Table 2. *Descriptive statistics of the students' mean scores in the attitude scale*

Scales	N	Minimum	Maximum	$\bar{x}$	S.S
Attitudes Towards the Science Course	155	2,83	5,00	4,41	0,55

The arithmetic mean $\overline{x}$= 4.41) of the students' scores in the attitude scale coincided with the 4.20-5.00 range (Strongly Agree). Considering that the scores of the items containing negative statements were reversed, it can be argued that the students mostly strongly disagreed with the items containing negative statements about the science course. The lowest mean score was 2.83, which shows that the students' attitudes towards the science course were positive since even the lowest score was above 2.60.

Table 3. *Descriptive statistics of the students' scores regarding their attitudes towards the science course based on gender*

Variable	Gender	N	Minimum	Maximum	$\bar{x}$	ss
Science Course	Female	69	2,83	5.00	4,38	0,57
Attitude Scores	Male	86	3,33	5.00	4,46	0,47

The lowest mean scores of the female and male students regarding their attitudes towards the science course were above 2.60. This shows that both girls and boys had positive attitudes towards the course.

Table 4. *Results of the t-test for the students' scores regarding their attitudes towards the science course based on gender*

Variable	Gender	N	$\bar{x}$	ss	SD	t	p
Science Course Attitude Score	Male	69	4,38	0,57	153	,928	,355
	Female	86	4,46	0,47			
Being interested	Male	69	4,20	0,96	153	,960	,338
	Female	86	4,33	0,77			
Enjoying	Male	69	4,24	0,73	153	1.503	,135
	Female	86	4,40	0,59			
Continuing to study	Male	69	4,87	0,20			
	Female	86	4,76	0,30			

The results of the independent samples t-test presented in Table 4 showed that the attitudes of the elementary fourth graders who participated in this study showed no significant difference based on gender. However, the male students' mean score ($\bar{x}$ =4,46) regarding their attitudes towards the science course were higher than that of the female students ($\bar{x}$ =4,38). In terms of the sub-dimensions "being interested" and "enjoying", there was no significant between the female and male students' attitudes. Yet, a significant difference was observed in the sub-dimension "continuing to study". In other words, while the male and female students had similar states in terms of being interested in and enjoying the science course, they differed when it comes to continuing to study for the course.

Table 5. *Results of One-Way ANOVA for the students' attitudes towards the science course based on mothers' educational level*

	Source of Variance	Sum of squares	SD	Mean Squares	F	p	Difference
Science Course Attitude Scores	Between groups	1,933	3	,644	2,426	,068	
	Within groups	40,108	151	,266			-
	Total	42,041	154				
Being interested	Between groups	9,118	3	3,039	4,325	,066	
	Within groups	106,12	151	,703			-
	Total	115,23	154				
Enjoying	Between groups	3,396	3	1,132	2,650	,051	
	Within groups	64,493	151	,427			-
	Total	67,888	154				
Continuing to study	Between groups	1,319	3	,440	6,761	,001	Elementary School-University* Middle School-High School* Middle School-University*
	Within groups	9,823	151	,065			
	Total	11,143	154				

The results of one-way ANOVA presented in Table 5 revealed a significant difference in the fourth graders' attitudes towards the science course based on mothers' educational level only in the sub-dimension "continuing to study". In other words, mothers' educational level had a significant effect on the students' attitudes towards the science course in the sub-dimension "continuing to study". The mean scores of the students in the attitude scale were $\overline{x}$= 4.80, $\overline{x}$= 4.66, $\overline{x}$= 4.85 and $\overline{x}$= 4.98, for the students whose mothers graduated from an elementary school, middle school, high school and university, respectively Scheffe test was used to determine the source of this significant difference, and the results showed that the difference was in favour of the university graduates when compared to elementary school graduates, the high school graduates when compared to middle school graduates, and university graduates when compared to middle school students. In other words, the students whose mothers were university graduates had more positive attitudes to continuing to study than those whose mothers were elementary and middle school graduates, and the students whose mothers were high school graduates had more positive attitudes than those whose mothers were middle school graduates.

Table 6. *Results of One-Way ANOVA for the students' attitudes towards the science course based on fathers' educational level*

	Source of Variance	Sum of squares	SD	Mean Squares	F	p	Difference
Science Course Attitude Scores	Between groups	12,747	3	4,249	21,902	,001	Elementary School-High School* Middle School-High School* Middle School-University*
	Within groups	29,294	151	,194			
	Total	42,041	154				
Being interested	Between groups	23,903	3	7,968	13,173	,001	Elementary School-High School* Middle School-High School* Middle School-University*
	Within groups	91,335	151	,605			
	Total	115,23	154				
Enjoying	Between groups	17,817	3	5,939	17,911	,001	Elementary School-High School* Middle School-High School* Middle School-University*
	Within groups	50,071	151	,332			
	Total	67,888	154				
Continuing to study	Between groups	,203	3	,068	,93	,426	
	Within groups	10,940	151	,072			
	Total	11,143	154				

The results of one-way ANOVA presented in Table 6 showed a significant difference in the fourth graders' attitudes towards the science course based on fathers' educational level except in the sub-dimension "continuing to study".

There was a significant difference between the elementary school fourth grade students' attitudes towards the science course and their fathers' educational level. The mean scores of the students in the attitude scale were $\overline{x}$ 4.28, $\overline{x}$= 4.07, $\overline{x}$= 4.75 and $\overline{x}$= 4.59, for the students whose fathers graduated from an elementary school, middle school, high school, and university, respectively. Scheffe test was used to determine the source of this significant difference, and the results showed that the difference was in favour of the high school graduates when compared to elementary school graduates,

the high school graduates when compared to middle school graduates, and university graduates when compared to middle school graduates. In other words, the students whose fathers were university graduates had more positive attitudes to continuing to study than those whose fathers were elementary and middle school graduates, and the students whose mothers were university graduates had more positive attitudes than those whose fathers were middle school graduates.

A significant difference was found between the students' attitudes towards the science course in the subdimension "being interested" and their fathers' educational level. The mean scores of the students in the subdimension "being interested" were $\overline{x}$= 4.05, $\overline{x}$= 3.80, $\overline{x}$= 4.71 and $\overline{x}$= 4.52, for the students whose fathers graduated from an elementary school, middle school, high school, and university, respectively. Scheffe test was used to determine the source of this significant difference, and the results showed that the difference was in favour of the high school graduates when compared to elementary school graduates, the high school graduates when compared to middle school graduates, and university graduates when compared to middle school graduates. In other words, the students whose fathers were high school graduates had more interest in the science course than those whose fathers were elementary and middle school graduates, and the students whose fathers were university graduates had more interest in the course than those whose fathers were middle school graduates. In another subdimension "enjoying", there was a significant difference between the students' attitudes and fathers' educational level. The mean scores of the students in this subdimension were $\overline{\overline{x}}$= 4.26, $\overline{\overline{x}}$= 3.89, $\overline{\overline{x}}$= 4.70 and $\overline{\overline{x}}$= 4.53, for the students whose fathers graduated from an elementary school, middle school, high school, and university, respectively. Scheffe test was used to determine the source of this significant difference, and the results showed that the difference was in favour of the high school graduates when compared to elementary school graduates, the high school graduates when compared to middle school graduates, and university graduates when compared to middle school graduates. In other words, the students whose fathers were high school graduates enjoyed the science course more than those whose fathers were elementary and middle school graduates, and the students whose fathers were university graduates enjoyed the course more than those whose fathers were middle school graduates.

Discussion and Conclusion

This study focused on elementary fourth graders' attitudes towards the science course and investigated whether their attitudes differed based on gender and parents educational level.

The findings showed that the students had positive attitudes towards the science course. This is also supported by Ocak and Erbasan (2017) who reported positive attitudes of fourth graders in the context of the science course. Moreover, in the literature, other elementary school grades were also found to have positive or high attitudes towards the science course (Alkan, 2006; Altınok, 2004; Can & Dikmentepe, 2015)

Gender was not found to be a variable that led to a significant difference in the students' attitudes towards the science course. In the literature, most studies similarly revealed no difference in the students' attitudes towards the science course based on gender (Alkan, 2006; Can & Dikmentepe, 2015; Ocak & Erbasan, 2017). However, Uyanık (2017) found a significant difference in the attitudes towards the science course between the male and female students. Apparently, the female students had more positive attitudes towards the course than the male students did.

Parents' educational level were not found to affect the students' attitudes towards the science course positively or negatively. Contrary to this finding, Ocak and Erbasan (2017) observed a significant difference between parents' educational levels and elementary school students' attitudes towards the science course. The attitudes of the students whose parents had Master's or PhD degrees were found to be higher in the context of the science course. Consequently, it can be argued that students' attitudes towards the science course become more positive as their parents' educational level increases.

Recommedations

A replication study can be conducted with elementary third graders, and their attitudes towards the science course can be compared with those of fourth graders.

A more comprehensive study can be conducted to examine the relationship between attitudes and gender by means of students' views on the science course through interviews.

In addition to examining the attitudes of students towards the science course, further research can focus on how effective the perceptions and prejudices of the society are in these attitudes.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author1: 100%

Support and Thanks

Acknowledgements: non available

Conflict Statement

There is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

İlkokul 4. Sınıf Öğrencilerinin Fen Bilimlerine İlişkin Tutumlarının Farklı Değişkenler Açısından İncelenmesi

Giriş

Fen bilimleri dünyayı açıklamada ve tanımlamada önemli bir bilim olmasının yanı sıra bireye bilimsel bilginin elde edilme sürecini yaşatan ve bilginin oluşma sürecini kazandıran bir bilimdir. Fen bilgisi, ilköğretimde çocuğun fiziksel çevresini tanımasını, doğadan etkin bir biçimde yararlanmasını, bilimsel düşünme yeteneğini geliştirmesini sağlayan bir derstir (Çoban, 2003). Fen bilgisi dersi, bireyleri bilişsel yönden geliştiren ve yaratıcılıklarını artıran temel bir ders olarak ilköğretim programlarında yer almaktadır. Bu derste öğrenciler, çevrelerini bilimsel yöntemlerle inceleyerek olgu ve olaylar karşısında nesnel düşünme ve doğru karar verme alışkanlıkları kazanmaktadırlar. Bir başka deyişle, öğrenciler bu derste gerçek yaşamı öğrenmekte; dolayısıyla gerek doğal gerekse sosyal yaşama daha kolay uyum sağlayabilmektedirler. İlköğretim basamağında verilen fen eğitimi, geleneksel anlamda bireyi bir üst öğrenim basamağına hazırlamada oynadığı kilit rolün ötesinde, bireyleri geleceğe ve yaşama hazırlamak gibi önemli bir rolü üstlenmesi bakımından büyük önem taşımaktadır (Zinicola, 2003).

Fen bilimlerine yönelik tutum kavramı öğrencilerin fen ile ilgili davranışlarını daha iyi anlamak ve tahmin etmek üzere çalışılmaktadır. Çünkü bireyin fen bilimleri dersine karşı olan tutumu fen bilimleri dersini anlama, anlamlandırma, içselleştirme ve yaşama aktarma süreçlerinde başrolü oynamaktadır. Tüm bu durumlar göz önüne alındığında fen bilimleri öğretim programında istenen çağın gereksinimlerine ayak uydurabilen ve fen okuryazarı birey yetiştirmek ancak fen bilimleri dersine öğrencilerin olumlu tutum geliştirmesi ile sağlanabilir. Tabi ki bu olumlu tutumun öğrencilerin fen bilimleri dersi ile ilk karşılaştıkları zaman gelişmesi oldukça önemlidir. İlkokulda 3 ve 4. sınıfta ilk kez fen bilimleri dersi ile karşılaşan öğrenciler bu yıllarda fen bilimleri dersine karşı olumlu tutum geliştirdikleri takdirde, ilerde eğitim hayatında karşılaşacakları fen derslerine karşıda olumlu bir zemin

hazırlamış olacaklardır. Fen okuryazarı yetiştirmek ilkokul kademesine özgü bir amaç değildir, ilkokul fen okuryazarı geliştirmek için sadece bir başlangıçtır (H. Çavaş ve Çavaş, 2016; Hastürk, 2017).

İlkokul öğrencilerinin tutumları yukarıda da açıklandığı gibi önem arz etmektedir. Bu araştırmanın konusu ise "Fen bilimleri dersini alan İlkokul 4. sınıfta öğrenim gören öğrencilerin fen bilimleri dersine karşı tutumları incelenmek"şeklinde belirlenmiştir. Bu amaç doğrultusunda şu problemlere yanıt aranmıştır.

Problem Durumu

Bu araştırmada ilkokul 4. Sınıf öğrencilerin fen bilimlerine dersine yönelik tutumlarının cinsiyet, anne eğitim durumu ve baba eğitim durumu değişkenleri açısından farklılık gösterip göstermediği sorusuna yanıt aranmıştır.

Alt Problemler

- İlkokul 4. sınıf öğrencilerinin fen bilimleri dersine yönelik tutumları ile cinsiyetleri arasında anlamlı bir farklılık var mıdır?

- İlkokul 4. sınıf öğrencilerinin fen bilimleri dersine yönelik tutumları ile anne eğitim düzeyleri arasında anlamlı bir farklılık var mıdır?

- İlkokul 4. sınıf öğrencilerinin fen bilimleri dersine yönelik tutumları ile baba eğitim düzeyleri arasıdan anlamlı bir farklılık var mıdır?

Yöntem

Bu araştırmada nicel araştırma modeli kullanılmıştır. Araştırma sonucunda elde edilen verilerin sayısal değerler ile ifade edildiği ve ölçüldüğü çalışmalara nicel araştırmalar denir. (Ekiz, 2003). Bu çalışma Nevşehir ili merkez ilçesinde yer alan bir ilkokulda 2021-2022 eğitim öğretim döneminde yapılmıştır. Bu kapsamda bu ilkokulda öğrenim görmekte olan 4. sınıf öğrencileri çalışma grubuna dâhil edilmiştir. Bu ilkokulda öğrenim gören 4. sınıf öğrencilerinden 155'i araştırmaya gönüllü olarak dâhil olmayı istemişler ve daha sonra form ve izinler alınarak araştırmaya dâhil olmuşlardır. Bu yüzden çalışma grubu 155 tane 4. sınıf öğrencisinden oluşmaktadır. Araştırmada yer alan öğrencilerin 86'sı (%55,5) erkek öğrenci ve 69'i (%44,5) kız öğrenciden oluşmaktadır.

Veriler, araştırmanın örneklemini oluşturan öğrencilerin eğitim görmekte olduğu ilkokulda öğrencilere ölçek formu uygulanarak elde edilmiştir. Öğrencilere ölçek formları dağıtılıp, yanıtlamaları için bir ders saati kadar süre verilmiş ve sonrasında toplanmıştır.

Çalışmada ölçek kullanılarak veri toplanılmıştır. Ölçekte beşli likert tipinde derecelendirme ölçeğinden yararlanılmıştır. Ölçek formunda katılımcıların yanıtlayacağı 12 adet ifade bulunmaktadır. Katılımcılar bu ifadelere beşli likert tipine uygun olarak hazırlanmış "tamamen katılıyorum" "katılıyorum" "kararsızım" "katılmıyorum" "hiç katılmıyorum" seçeneklerini seçerek cevap vermişlerdir.

Araştırmanın amacı doğrultusunda uygulanan ölçek beşli likert tipi 12 maddeden oluşmaktadır. Ölçek maddelerine yapılan faktör analizi sonucunda 3 alt boyut belirlenmiştir. Bu alt boyutlar İlgi duyma, zevk alma ve çalışmayı devam ettirme olarak belirlenmiştir. İlgi duyma alt boyutu fen bilimleri dersine yönelik olumsuz tutum ifadelerini içermektedir. Zevk alma alt boyutu fen bilimleri dersine karşı

olumlu tutum ifadelerini içermektedir. Çalışmayı devam ettirme fen bilimleri dersini öğrenmek için harcanan süreyi ifade eden maddeleri içermektedir.

Tutum ölçeğinde yer alan maddelerin cevap seçenekleri, "Tamamen Katılıyorum (4.20-5.00)", "Katılıyorum (3.40-4.19)", "Kararsızım (2.60-3.39)", "Katılmıyorum (1.80-2.59)", "Hiç Katılmıyorum (1.00-1.79)" şeklinde belirlenmiştir. Olumlu maddeler "Tamamen Katılıyorum" kategorisinden başlayarak sırayla 5,4,3,2,1 olarak, olumsuz maddeler ise ters puanlama sistemi ile "Hiç Katılmıyorum" kategorisinden başlayarak 5,4,3,2,1 olarak puanlanmıştır.

Araştırma sonucunda elde edilen bulgular, betimsel istatistiklerden faydalanılarak çözümlenmiştir. Çalışmada normalliğin bilinmesi amacıyla Kolmogorov-Smirnov testi uygulanmıştır.

Fen Bilimleri dersine yönelik tutumlarının cinsiyet değişkenine göre anlamlı bir farklılık gösterip göstermediğini tespit etmek amacıyla parametrik testlerden bağımsız örneklem t testi (Independent Samples T Test) kullanılmıştır. Anne-baba eğitim düzeyi değişkeni açısından anlamlı bir farklılık olup olmadığını test etmek amacıyla ise tek yönlü varyans analizi (One-Way Anova) kullanılmıştır.

Araştırmanın Etik İzinleri

Yapılan bu çalışmada "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında uyulması belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan "Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler" başlığı altında belirtilen eylemlerden hiçbiri gerçekleştirilmemiştir.

Bulgular

Bu kısımda çalışmada elde edilen verilere ilişkin bulgulara yer verilmiştir.

İlkokul 4. sınıf öğrencilerinin Fen Bilimleri dersine yönelik tutum ölçeğinin sonucunda tutumlarının aritmetik ortalaması ($\overline{x}$=4,41) 4.20-5.00 aralığında bir başka deyişle "Tamamen Katılıyorum" düzeyinde olduğu tespit edilmiştir. Olumsuz ifadeler içeren maddelerin puanlarının ters çevrildiğini düşünüldüğünde ise öğrencilerin fen bilimlerine karşı olumsuz ifadeler içeren maddelere en çok "Hiç Katılmıyorum" yanıtını verdiği söylenilebilir. Verilerin aritmetik ortalamasına bakıldığında ise en düşük değerin 2,83 olduğu görülmektedir. En düşük değer bile 2,60'ın üzerinde olduğu için öğrencilerin fen bilimleri dersine karşı tutumlarının olumlu yönde olduğu söylenebilir.

İlkokul 4. sınıf öğrencilerinin Fen Bilimleri dersine yönelik tutumları, cinsiyet açısından ele alındığında kızlar ve erkeklerin ayrı ayrı en düşük tutum ortalamalarının 2,60'ın üstünde olduğu belirlenmiştir. Bu durum kızların ve erkeklerin fen bilimlerine karşı olumlu tutum sahibi olduğunu göstermektedir.

4. sınıf öğrencilerinin fen bilimleri dersine karşı tutumlarının cinsiyet değişkenine göre farklılaşıp farklılaşmadığını anlamak için bağımsız örneklem t testi kullanılarak analiz yapılmış ve 4. sınıf öğrencilerinin fen bilimleri dersine yönelik tutum ortalamalarının cinsiyet değişkenine göre anlamlı düzeyde farklılaşmadığı sonucu elde edilmiştir. Bunun yanısıra erkek öğrencilerin ($\overline{x}$=4,46) fen bilimleri dersine yönelik tutum ortalamalarının, kız öğrencilere ($\overline{x}$=4,38) göre daha yüksek olduğu görülmektedir. Alt boyutlar incelendiğinde ise ilgi duyma ve zevk alma alt boyutlarında yer alan ifadelere kız ve erkek öğrencilerin verdiği cevaplar arasında da bir anlamlı farklılık olmadığı görülmektedir. Fakat çalışmayı devam ettirme alt boyutunda anlamlı bir farklılık bulunmuştur. Başka

bir deyişle kız ve erkek öğrenciler fen bilimleri dersine karşı ilgi duyma ve zevk alma özelliklerinde benzer özelliklere sahiplerken, çalışmaya devam ettirme alt boyutunda benzer özelliklere sahip olmadıkları belirlenmiştir.

4. sınıf öğrencilerinin fen bilimleri dersine karşı tutumlarının, annelerinin eğitim düzeyi açısından farklılaşıp farklılaşmadığını anlamak için tek yönlü varyans analizi kullanılmış ve 4. sınıf öğrencilerinin fen bilimlerine karşı tutumlarının, annelerinin eğitim düzeyi grup değişkeni açısından karşılaştırıldığında sadece çalışmayı devam ettirme alt boyutunda anlamlı bir fark olduğu tespit edilmiştir. Diğer bir ifadeyle ilkokul 4. sınıftaki öğrencilerin fen bilimlerine dersine karşı olan tutumlarının çalışmayı devam ettirme alt boyutunun üzerinde, annelerinin eğitim seviyesinin anlamlı bir etkisi bulunmaktadır. İlkokul $\overline{x}$= 4,80, Ortaokul $\overline{x}$ = 4,66, Lise $\overline{x}$ = 4,85 ve Üniversite $\overline{x}$ = 4,98'dir. Bu ortalamalar arasında anlamlı farkın hangi eğitim seviyelerinin lehine olduğunu açıklamak için yapılan Scheffe testi analizi neticesinde İlkokul ile Üniversite arasında Üniversite, Ortaokul ile Lise arasında Lise lehine ve Ortaokul ile Üniversite arasında Üniversite lehine olduğu görülmektedir. Diğer bir ifadeyle anne eğitim seviye üniversite olan öğrencilerin anne eğitim seviyesi ilkokul ve ortaokul olan öğrencilere göre ve anne eğitim seviyesi lise olan öğrencilerin ise anne eğitim seviyesi ortaokul olan öğrencilere göre daha yüksek çalışmyı devam ettirme isteğine sahip oldukları söylenebilir.

4. sınıf öğrencilerinin fen bilimleri dersine karşı tutumlarının, babalarının eğitim düzeyi değişkeni açısından farklılaşma olup olmadığını belirlemek amacıyla tek yönlü varyans analizi yapılmış ve 4. sınıf öğrencilerinin fen bilimlerine karşı tutumları, babalarının eğitim düzeyi grup değişkeni açısından karşılaştırıldığında çalışmayı devam ettirme alt boyutu hariç diğer değişkenler açısından anlamlı bir fark olduğu görülmektedir.

Sonuç ve Tartışma

Bu çalışmada ilkokul 4. sınıf öğrencilerinin fen bilimleri dersine yönelik tutumları araştırılmışve tutumlarının cinsiyet, anne-baba eğitim düzeyi özellikleri açısından değişkenlik gösterip göstermediği araştırılmıştır. Araştırmanın bulguları incelendiğinde, 4. sınıf öğrencilerinin fen bilimleri dersine yönelik olumlu yönde tutuma sahibi oldukları belirlenmiştir. Aynı alanda yapılan çalışmalara bakıldığında Ocak ve Erbasan (2017)'ın yapmış olduğu "4. sınıf Öğrencilerinin Fen Bilimleri Dersine Yönelik Tutumları ve Epistemolojil inançları" adlı çalışmalarında öğrencilerin fen bilimleri dersine yönelikolumlu tutuma sahip olduklarına sonucuna ulaştıkları görülmektedir.

Araştırmanın sonuçlarından biri de tablo 3'e göre öğrencilerin fen bilimleri dersine yönelik tutumlarının cinsiyet değişkenine göre farklılık göstermediğidir. Alan yazına bakıldığında öğrencilerin fenbilimleri dersine yönelik tutumlarını cinsiyet değişkeni açısından inceleyen diğer çalışmalarda da (Alkan, 2006; Can ve Dikmentepe, 2015; Ocak ve Erbasan, 2017) öğrencilerin fen bilimlerineyönelik tutumlarının cinsiyet değişkenine göre farklılık göstermediği sonucuna ulaşılmıştır.

Çalışmanın bir diğer alt problemi olan öğrencilerin fen bilimleri dersine yönelik tutumlarının anne-baba eğitim düzeyine etkisine bakıldığında ise anne–baba eğitim düzeyinin öğrencilerin fen bilimleri dersine yönelik tutumlarını olumlu veya olumsuz yönde etkilemediği görülmüştür. Alan yazın incelendiğinde bu alandaki Ocak ve Erbasan (2017)'ın yapmış olduğu çalışmalarında ilkokul öğrencilerinin anne ve babaların eğitim düzeyi ile fen bilimleri dersine yönelik tutumları arasında anlamlı farklılık olduğu görülmektedir. Bu anlamlı farklılığın yönünebakıldığın da ise annesi ve babası yüksek lisans/doktora mezunu olan öğrencilerin fen bilimleri dersine karşı tutumları daha yüksek

çıkmıştır. Bu sonuç doğrultusunda ebeveynlerin eğitim durumu arttıkça öğrencilerin fen bilimlerine yönelik tutumlarının da olumlu yönde etkilendiği söylenebilir.

Öneriler

Çalışma 3. sınıf öğrencileri ile yapılarak fen bilimleri dersi ile yeni karşılaşmış öğrencilerin tutumlarına ilişkin bir çalışma yapılabilir ve bu çalışma kapsamında 4. sınıf öğrencilerinin tutumları ile karşılaştırılabilir.

Cinsiyet değişkeninin tutuma yönelik ilişkisini daha derinlemesine incelemek adına öğrencilerin fen bilimleri dersine yönelik düşüncelerinin görüşme yoluyla incelendiği daha ayrıntılı bir çalışma yürütülebilir.

Öğrencilerin fen bilimleri dersine yönelik tutumlarının incelenmesinin yanı sıra tutumlarının olumlu veya olumsuz yönde olmasının fen bilimleri dersine yönelik toplumda var olan algıların ve önyargıların ne kadar etkili olduğunun tespiti üzerine çalışmalar yapılabilir.

Analysis of Secondary School Mathematics Curriculum Learning Outcomes by TIMSS-2019 Cognitive Domain Skills

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Abstract
This study aimed to analyze the learning outcomes in the 2018 secondary school mathematics curriculum according to TIMSS-2019 cognitive domain skills by using qualitative research method and document analysis. The study evaluated a total of 215 learning outcome statements in the Secondary School (5th, 6th, 7th, 8th Grades) Mathematics Curriculum published by the Board of Education and Discipline according to learning domains and grade level, taking into account TIMSS cognitive domain skills. Since some of the learning outcome statements in the curriculum contain more than one level, 268 outcome statements were categorized. According to the findings obtained from the research, approximately 28% of all learning outcome are in knowing, 48% in applying, and 24% in reasoning cognitive domains. The cognitive domain of knowing is mostly observed in the 5th grade learning outcomes. The applying domain is mostly observed in the 7th grade. The reasoning domain is observed at the highest rate in the 8th grade while it is observed with the lowest rate in the 5th grade. Remarkably, the applying cognitive domain is included the most in all learning domains in the distribution of the cognitive characteristics of the learning outcomes based on the learning domains. While the cognitive domain of reasoning takes place in the data processing learning domain at the highest rate; the cognitive domain of knowing is mostly located in the learning domain of numbers and operations.
Keywords: Secondary school curriculum, secondary school mathematics course, cognitive domain skills, TIMSS.

Introduction

The education program is the totality of all planned educational activities that are implemented to ensure that students can reach pre-identified educational goals (Başaran & Çınkır, 2013). The implemented education programs significantly affect the quality of education (Erden, 1998), therefore, it is crucial to ensure their efficiency and functionality. The curriculum, described as the most important sub-program of the education program, is a mechanism of experiences including all intra and extracurricular activities planned to bring the objectives determined at the grade level related to a lesson in line with the aims of the education program (Kartal & Yazgan, 2016). The information in the curriculum about which content to teach and how to evaluate according to the teaching objectives and grade levels makes the curriculum a roadmap for teachers (Büyükkaragöz, 1997; Bobbitt, 2017; Ersoy, 2006; Goodlad, 1979).

Today, the rapid advances in information has pointed to the need to train qualified individuals who can keep up with this transformation, which in turn has signalled the significance of updating the education and training field to meet this change. Countries constantly update their curricula and adapt their teaching objectives to internationally accepted criteria to train qualified individuals in a rapidly changing world (Özkaya, 2021). International examinations are used as criteria for determining the quality of curricula (Hook, Bishop & Hook, 2007). Trends in International Mathematics and Science Study (TIMSS), which evaluates the curriculum in the field of science and mathematics, is one of the exams with a wide application area that allows international comparisons. While TIMSS measures the performance of 4th-8th grade students in mathematics and science, it also provides information on how student achievement has changed over this period. Thus, the countries participating in the exam can follow their own developments on the one hand, they have the opportunity to compare their results with other countries on the other (MoNE, 2016). Countries also have the opportunity to review their curricula and shape education reforms accordingly (Hiebert et al., 2003; Johansson & Hansen, 2019; MoNE, 2016). As a matter of fact, it can be claimed that the content of international exams is taken as

criteria in the structuring of learning domains and learning outcomes while adapting the curricula by the Ministry of National Education [MoNE] in Türkiye (MoNE, 2018).

Unlike the previous programs, a student-centered education approach was adopted while structuring the recent mathematics curriculum in Turkey. The mathematics program, which was renewed in 2018 ultimately, focused on the development of students' mathematical literacy, the correct use of the meaning and language of mathematics, reasoning, estimation, making associations, recognizing the relationship between mathematics and art and valuing mathematics. In line with these goals, significant changes were made in the content of the curriculum (learning domains and learning outcomes), the emphasized in-class teacher-student roles, teaching methods, materials and measurement-evaluation methods (Bozkurt, Küçükakın & Öksüz, 2021). Many academic studies were carried out to show the effectiveness of these changes and updates and how the stakeholders in the teaching process were affected by these changes. For instance, some studies examined the primary and secondary school mathematics curricula by considering the criteria in the TIMSS exam (Delil, Özcan & Işlak, 2020; İncikabı, Mercimek, Ayanoğlu, Aliustaoğlu & Tekin, 2016; Kılıç, Aslan-Tutak & Ertaş, 2014).

The study conducted by İncikabı et al. (2016) evaluated the learning outcomes in the secondary school mathematics curriculum according to the TIMSS 2015 cognitive domain criteria before the 2018 update of the Ministry of National Education. According to the study, the knowing domain was mostly observed in the 5th grade learning outcomes, the applying domain was found the most in the 7th grade curriculum, and reasoning domain was more dominant in the 6th grade. In their study at the secondary school level, Kılıç et al. (2014), on the other hand, determined that the 5th grade learning outcomes in both the 2009 and 2013 curricula are predominantly in the cognitive domain of reasoning. While the 2009 curriculum focused on the cognitive domain of reasoning in the 6th and 8th grade learning outcomes, it was observed that this weight shifted to the applying cognitive domain in the 2013 curriculum. On the other hand, while the learning outcomes at the 7th grade focused on the applying cognitive domain in the 2009 curriculum, the reasoning cognitive domain made up most of the acquisitions in the 2013 curriculum. Delil et al. (2020) evaluated the learning outcomes in the 2018 primary school mathematics curriculum according to TIMSS 2019 cognitive domain and content domains and determined that 58% of all the learning outcomes were in knowing, 32% in applying and 10% in reasoning. In addition, it was observed that the number of learning outcomes at the level of knowing decreased, while the number of acquisitions at the reasoning level increased as students moved from the 1st to 4th grade.

The obtained data show that some countries participating in TIMSS exams are more successful when they adapt their mathematics curriculum according to TIMSS cognitive domains (Delil et al., 2020). From this point of view, it is believed that it is significant to examine the compatibility of the learning outcomes in the curriculum with the TIMSS framework.

This research aimed to examine the learning outcomes in the secondary school mathematics curriculum according to the grade level and learning areas, taking into account the TIMSS cognitive domain skills. The research problem and sub-problems are as follows.

What is the distribution of the learning outcomes in the secondary school mathematics curriculum according to TIMSS cognitive domain skills?

I. What is the distribution according to the grade level when the learning outcomes in the secondary school mathematics curriculum are examined in terms of TIMSS cognitive domain skills?

II. What is the distribution according to learning domains when the learning outcomes in the secondary school mathematics curriculum are examined in terms of TIMSS cognitive domain skills?

Method

Research Model and Data Sources

Qualitative research methods were adopted in this study and document analysis was performed. Documents are subjected to in-depth analysis in order to answer the research problem in document analysis, (Yıldırım & Şimşek, 2013). The data of this research consisted of the Secondary School (5th, 6th, 7th and 8th Grades) Mathematics Curriculum published by the Board of Education and Discipline in 2018 and the cognitive domains included in the TIMSS 2019 mathematics framework.

Data Analysis

Descriptive analysis was used in the analysis of the data. While analyzing the data, the achievements in the fifth grade number learning domain were coded first by both researchers according to the TIMSS cognitive domain levels. Then, these codings were compared and the percentage of agreement was calculated. Initially, the percentage of agreement between encoders was 77% (Miles & Huberman, 1994) for learning outcomes in regards to numbers. After working on some outcome classifications together, the researchers categorized all outcomes independently of each other. The researchers came together again for the differences that emerged in the coding, which were discussed until a consensus was reached. The final agreement rate among encoders was 92%. Considering this rate as sufficient for the study, 215 achievements in the program were categorized according to grade level and learning domains.

According to TIMSS 2019, the cognitive domain is divided into three as knowing, applying and reasoning. Each cognitive domain is divided into sub-dimensions within itself. Table 1 presents the explanations of the cognitive domains used in coding and included in the TIMSS 2019 mathematics framework.

Table 1. *Cognitive domains according to TIMSS 2019 (Mullis & Martin, 2017)*

Knowing	Recognize	Recognize numbers, expressions, quantities, and shapes. Recognize entities that are mathematically equivalent (e.g., equivalent familiar fractions, decimals, and percents; different orientations of simple geometric figures).
	Classify/order	Classify numbers, expressions, quantities, and shapes by common properties.
	Compute	Carry out algorithmic procedures for +, −, ×, ÷, or a combination of these with whole numbers, fractions, decimals, and integers. Carry out straightforward algebraic procedures.
	Retrieve	Retrieve information from graphs, tables, texts, or other sources.
	Measure	Use measuring instruments; and choose appropriate units of measurement.
	Recognize	Recognize numbers, expressions, quantities, and shapes. Recognize entities that are mathematically equivalent (e.g., equivalent familiar fractions, decimals, and percents; different orientations of simple geometric figures).
Applying	Determine	Determine efficient/appropriate operations, strategies, and tools for solving problems for which there are commonly used methods of solution.
	Represent/Model	Display data in tables or graphs; create equations, inequalities, geometric figures, or diagrams that model problem situations; and generate equivalent representations for a given mathematical entity or relationship.
	Implement	Implement strategies and operations to solve problems involving familiar mathematical concepts and procedures
Reasoning	Analyze	Determine, describe, or use relationships among numbers, expressions, quantities, and shapes. .
	Synthesize	Link different elements of knowledge, related representations, and procedures to solve problems.
	Evaluate	Evaluate alternative problem solving strategies and solutions
	Draw Conclusions	Make valid inferences on the basis of information and evidence.
	Generalize	Make statements that represent relationships in more general and more widely applicable terms.
	Justify	Provide mathematical arguments to support a strategy or solution.

Table 2 presents the sample codings in which the learning outcomes in the secondary school mathematics curriculum are classified according to the TIMSS cognitive domains.

Table 2. *Sample outcomes by cognitive domains*

Knowing	Recall	M.6.3.3.1. Recognize the center, radius and diameter by drawing a circle.
	Recognize	M.6.1.4.1. Recognizes integers and displays them on the number line.
	Classify/order	M.6.1.4.2. Compares and sorts integers.
	Compute	M.6.1.1.2. Performs four operations with natural numbers, taking into account the operation priority.
	Retrieve	-
	Measure	M.6.3.3.2 Determines that the ratio of a circle's length to its diameter is a constant value by measuring.
Applying	Determine	M.5.1.2.7. Determines and uses the appropriate strategy in mental multiplication and division with natural numbers.
	Represent/Model	M.8.3.2.3. Creates the image of polygons resulting from translations and reflections.
	Implement	M.7.1.5.4. Solves percentage problems.
Reasoning	Analyze	M.6.3.5.2. Relates liquid measuring units with volume measuring units.
	Synthesize	M.6.1.6.1. Relates the concept of fraction to division operation.
	Evaluate	M.5.1.4.2. Solves and sets up problems that require addition and subtraction with fractions whose denominators are equal or one multiple of the other's denominator.
	Draw Conclusions	M.8.5.1.3. Explains that the probability value of each output is equal in events with equal chance and this value is 1/n.
	Generalize	M.7.2.1.3. Expresses the rule of the number patterns with a letter, finds the desired term of the pattern whose rule is expressed with a letter.
	Justify	-

There are a total of 215 learning outcomes in the curriculum; 56 for the 5th grade, 59 for the 6th grade, 48 for the 7th grade and 52 for the 8th grade. However, examination of these learning outcomes showed that some of the learning outcomes were found in more than one cognitive domain. For example, related to the learning outcome "Forms the Pythagorean relation and solves the related problems", the idea that the students will obtain the Pythagorean relation by making inferences based on knowledge and evidence was determined as the level of inference, while solving the related problems was determined as the applying level. In this case, the outcome includes both levels. Hence, while there are 215 learning outcomes in the curriculum, a total of 268 learning outcomes statements were categorized in this study. The explanations provided under the learning outcomes were taken into account while determining the cognitive domain of the learning outcomes but these explanations were not included in the classification. Sample learning outcomes for each step are provided in the table above. Since no learning outcomes were found for retrieval and justification steps, these steps were left blank in the table. While determining the learning outcomes, the classification was made by taking into account what the student knew before and what he had to know/do in order to achieve this outcome. For example, for the acquisition of 'drawing a circle to recognize its centre, radius and diameter' in the recall step, the student must first remember the circle. Therefore, this achievement is considered in both recall and recognition categories.

Findings

Findings Regarding the Distribution of TIMSS Cognitive Domain Skills by Grade Level

Table 3 presents the classification of the learning outcomes in the mathematics curriculum according to the TIMSS cognitive domain skills based on the grade level. While creating the table, the learning outcomes at each grade level were matched with the relevant cognitive domain(s). The frequency of cognitive domains at a specific grade level is shown as a percentage.

Table 3. *Distribution of learning outcomes at each grade level according to TIMSS-2019 cognitive domain skills*

Cognitive Domains	Sub Dimensions	Grade Level				Grand Total
		5th Grade f(%)	6th Grade f(%)	7th Grade f(%)	8th Grade f(%)	
Knowing	Recall	1 (1,3)	1 (1,4)	2 (3,1)	0 (0)	4 (1,4)
	Recognize	16 (21,9)	5 (7)	1 (1,5)	8 (13,3)	30 (11,1)
	Classify/Order	5 (6,8)	2 (2,8)	1 (1,5)	0 (0)	8 (2,9)
	Compute	18 (24,6)	2 (2,8)	6 (9,5)	3 (5)	29 (10,8)
	Retrieve	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Measure	3 (4,1)	1 (1,4)	0 (0)	0 (0)	4 (1,4)
	Total	43 (58,9)	11 (15,4)	10 (15,8)	11 (18)	75(27,9)
Applying	Determine	12 (16,4)	5 (7)	8 (12,6)	5 (8,3)	30 (23,2)
	Represent/Model	3 (4,1)	6 (8,4)	7 (11,1)	13 (21,6)	29 (22,4)
	Implement	9 (12,3)	27 (38)	23 (36,5)	11 (18,3)	70 (54,2)
	Total	24 (32,8)	38 (53,5)	38 (60,3)	29 (47,5)	129(48,1)
Reasoning	Analyze	5 (6,8)	13 (18,3)	8 (12,6)	13(21)	39 (14,5)
	Synthesize	0 (0)	6 (8,4)	4 (6,3)	5 (8,3)	15 (5,5)
	Evaluate	1 (1,3)	0 (0)	0 (0)	1 (1,5)	2 (0,3)
	Draw Conclusions	0 (0)	3 (4,2)	2 (3,1)	2 (3,3)	7 (2,6)
	Generalize	0 (0)	0 (0)	1 (1,5)	0 (0)	1 (0,3)
	Justify	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Total	6 (8,2)	22 (30,9)	15 (23,8)	21 (34)	64(23,8)
	Grand Total	73 (27,2)	71 (26,4)	63(23,5)	61(22,7)	268 (100)

As Table 3 shows, a total of 268 learning outcomes were evaluated at all grade levels. The distribution of these learning outcomes according to TIMSS-2019 cognitive domains was as follows: 27%. 9 (f=75) knowing, 48.1% (f=129) applying and 23.8% (f=64) reasoning. Recognize and Compute sub-dimensions of Knowing were found to constitute approximately 80% of the learning outcomes. There were no learning outcomes in the sub-dimension of Recall. In the applying domain, the sub-dimension of Implement constituted 54.2% (f=70) of the learning outcomes. Determine and Represent/Model sub-dimensions constituted 45.6% of the Implement sub-dimension with approximately the same percentage. The reasoning domain comprised 23.8% (f=64) of the total learning outcomes. The Analyze sub-dimension (f=39) was the most common learning outcomes in the domain of reasoning. On the other hand, there were no learning outcomes for the Justify sub-dimension.

The fifth grade learning outcomes examined according to TIMMS cognitive domain skills were 73 in total. These learning outcomes were the most concentrated in the domain of knowing with a rate of 58.9%. Applying was included in the program at a rate of 32.8% and reasoning at a rate of 8.2%. When the sub-dimensions of the learning outcomes were examined, it was seen that the most learning outcomes are in the Compute and Recognize sub-dimensions, similar to the general outlook. These sub-dimensions were followed by the Classify/Order (6.8%) sub-dimension. While Measure was represented by 4.1% and Recall by 1.3%, there were no learning outcomes at the level of Retrieve. Determine sub-dimension (16.4%) was the most represented sub-dimension in the applying domain followed by Implement (12.3%) took place. The least represented sub-dimension at this grade level was Represent/Model (4.1%). The reasoning domain was generally the least represented cognitive domain (8.2%) at the Grade 5 level. Among the existing learning outcomes, it was the most represented in the Analyze sub-dimension (6.8%). Evaluate sub-dimension was represented with only 1 outcome (1,3). There were no learning outcomes in the sub-dimensions of Synthesize, Draw Conclusions, Generalize and Justify.

Examination of the learning outcomes at the sixth grade level showed that there were 71 learning outcomes in total. These learning outcomes were in the domain of applying with a rate of 53,5% the most followed by the reasoning domain with 30,9%. The least number of learning outcomes was in the domain of knowing (15,4%). When the learning outcomes were evaluated in terms of their distribution to the sub-dimensions, similar to the general outlook, the Impalement sub-dimension of the applying cognitive domain was the most represented learning outcome in the program with a representation rate of 38%. This was followed by the Analyze sub-dimension (18,3%) in the reasoning domain. Represent/Model and Synthesize were 8,4% at the relevant grade level; Recognize and Determine were represented by 7%. In addition, it was seen that the number of learning outcomes related to the sub-dimensions of Recall, Classify/order, Compute, Measure and Draw Conclusions was quite low. Similar to the fifth grade level, there were no learning outcomes in Retrieve, Generalize and Justify. In addition, the Evaluate sub-dimension, represented by 1 learning outcome in the 5th grade, had no related learning outcomes at the 6th grade level.

There were 63 learning outcomes in the 7th grade. These learning outcomes overlapped with the applying domain (60,3%) the most. Reasoning made up 23,8%, and knowing made up 15,8% of the learning outcomes. Similar to the general outlook, the sub-dimension of Implement (36.5%) had the most learning outcomes. The domain of reasoning had learning outcomes mostly related to Analyze (12.6%). In the domain of knowing, Compute (9.5%) was the most common sub-dimension. There were

very few gains in sub-dimensions such as Recall, Recognize, Classify/order, Synthesize, Draw Conclusions, and Generalize while there were no learning outcomes in the sub-dimensions of Retrieve, Measure, Evaluate and Justify. Examination of the 8th grade learning outcomes pointed to 61 learning outcomes in total. The remarkable point was the fact that applying constituted approximately half of the learning outcomes in the cognitive domain in the distribution. The least number of learning outcomes was identified in the knowing domain. The reasoning domain had a distribution of 34%. When all of the sub-dimensions were examined, the sub-dimensions of Analyze, Represent/Model, Implement and Recognize were found to be prominent. On the other hand, it was determined that there were no learning outcomes in the sub-dimensions of Recall, Classify/order, Retrieve, Measure, Generalize and Justify.
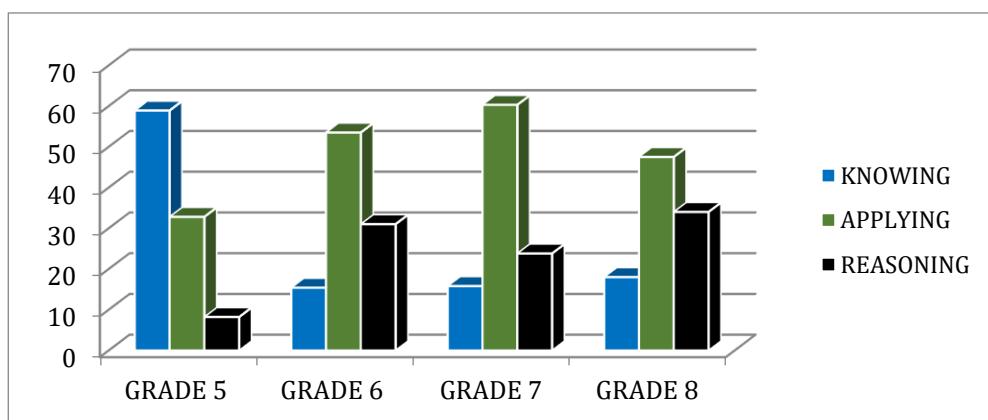

Figure 1. Distribution of cognitive domains of TIMSS by grade level (%)

Figure 1 presents the distribution of the learning outcomes associated with the TIMSS-2019 cognitive domains by grade levels as a percentage. It was observed that the learning outcomes at the knowing level were mostly at the fifth grade level (58,9%), while it constituted fifteen percent of all learning outcomes at the other grade levels. The applying cognitive domain, which corresponded to the highest learning outcomes among all levels, was represented the most at the 7th grade level. The ratio of learning outcomes at the applying level was close to each other at all grade levels except for the fifth grade. The cognitive domain of reasoning was observed the least at the fifth grade and the most at the eighth grade. In addition, it is observed that the ratio of learning outcomes corresponding to the level of reasoning increased with the grade level. While this rate was 8% at the fifth grade level, it was 30% in the sixth grade, 24% in the seventh grade and approximately 34% in the eighth grade.
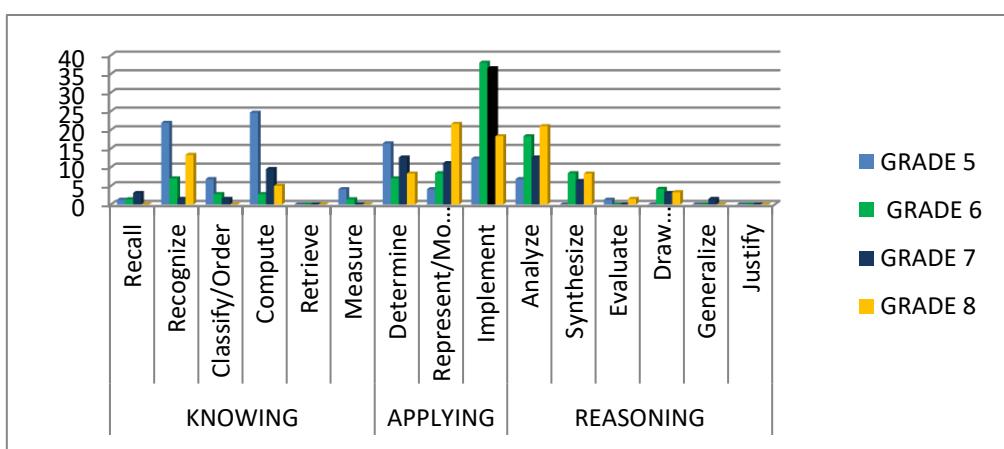

Figure 2. Distribution of sub-dimensions in TIMSS cognitive domains by grade level (%)

Figure 2 presents the distribution of the learning outcomes in the mathematics program according to the sub-dimensions of TIMSS cognitive domains at the grade level. The sub-dimensions of Recognize, Compute, Determine, Represent/Model, Implement and Analyze were weightrf in the distribution of learning outcomes.

Findings Regarding the Distribution of TIMSS Cognitive Domain Skills by Learning/Content Domains

Secondary School Mathematics Curriculum consists of five learning domains: Numbers and Operations, Algebra, Geometry and Measurement, Data Processing, and Probability. In the domain of Numbers and Operations, the concept of percentage, operations on natural numbers, fractions, integers, ratio-proportion, basic level sets, exponential numbers, radical numbers, rational and irrational numbers are taught. Learning outcomes related to algebra learning domain first start in the 6th grade and include number patterns, algebraic expressions, properties of equality and equations, first-order equations with one unknown and inequalities. In the Geometry and Measurement domain, the subjects of line, line segment, ray, polygons, length and area measurement, circle, prism, angles, geometric objects, prisms and transformation geometry are covered. The learning outcomes related to Data Processing start in the 5th grade and students are expected to create research questions that require data collection, to represent and interpret the data appropriate to these questions with tables, frequency tables and column charts. In addition, there are learning outcomes related to the calculation and interpretation of mean, median and peak value concepts and line and circle graphics. Probability learning domain is covered only in 8th grade. At this level, students are expected to identify possible situations and events with different probabilities, examine events with equal probability, and calculate the probabilities of simple events. Table 4 provides the distribution of learning outcomes in each learning domain in the 2018 secondary school mathematics curriculum according to TIMSS 2019 cognitive areas. The learning outcomes in each learning domain were associated with the cognitive domain and its sub-dimensions according to the learning domains. The data in the table were represented as frequency and percentage.

Table 4. *Distribution of learning domains in secondary school mathematics curriculum according to TIMSS cognitive domains*

Cognitive Dmains	Sub Dimensions	Numbers and Operations f (%)	Algebra f (%)	Geometry and Measurement f (%)	Data Processig f (%)	Probability f (%)	Total f (%)
Knowing	Recall	2 (1,7)	0	2 (1,8)	0	0	4 (1,4)
	Recognize	15 (12,9)	2 (7,6)	13 (12,1)	0	0	30(11,1)
	Classify/order	5 (4,3)	0	3 (2,8)	0	0	8 (2,9)
	Compute	23 (19,8)	1 (3,8)	5 (4,6)	0	0	29(17,2)
	Retrieve	0 (0)	0	0 (0)	0	0	0 (0)
	Measure	0 (0)	0	4 (3,7)	0	0	4 (1,4)
	Total	45 (38,7)	3 (11,5)	27 (25,2)	0	0	75(27,9)
Applying	Determine	14 (12)	1 (3,8)	12 (11,2)	1(7,1)	2 (40)	30(11,1)
	Represent/Model	4 (3,4)	7 (26,9)	15 (14)	3(21)	0	29(17,2)
	Implement	40 (34,5)	6 (23)	20 (18,6)	3 (21)	1 (20)	70(26)
	Total	58 (50)	14(53,)	47 (43,9)	7(50)	3 (60)	129(48)
Reasoning	Analyze	11 (9,4)	7(26,9)	18 (16,8)	3 (21)	0	39(14,5)
	Synthesize	1 (0,8)	1 (3,8	11 (10,2)	1 (7,1)	1 (20)	15(5,5)
	Evaluate	1 (0,8)	0	0 (0)	1 (7,1)	0	1(0,3)
	Draw Conclusions	0 (0)	0	4 (3,7)	2 (14,2)	1 (20)	7(2,6)
	Generalize	0 (0)	1 (3,8)	0 (0)	0	0	1(0,3)
	Justify	0 (0)	0	0 (0)	0	0	0(0)
	Total	13 (11,2)	9(34,6)	33 (30,8)	7 (50)	2 (40)	64(23,8)
	Grand Total	116 (100)	26 (100)	107(100)	14(100)	5(100)	268(10)

Looking at the program in general, it can be argued that the learning outcomes were mostly in the learning domains of Numbers and Operations and Geometry and Measurement Algebra and Data Processing learning domains constituted approximately 15% of the program; Probability learning domain was included in the program at a rate of about 2%.

Examination of the cognitive levels of the learning outcomes in each learning domain showed that 39% of the 116 learning outcomes in the learning domain of numbers were at the level of knowing, 50% at the level of applying and 11% at the level of reasoning. In the sub-dimensions, it was determined that half of the learning outcomes in the number learning domain were associated with the Implement sub-dimension of the applying cognitive domain. It was seen that the Compute and Recognize sub-dimensions in the knowing cognitive domain constituted the majority of the learning outcomes. On the other hand, no learning outcomes were associated with the sub-dimensions of Retrieve and Measure. It can be argued that Implement and Determine sub-dimensions were most prominent in the applying cognitive domain. The Analyze sub-dimension was most dominant in the reasoning cognitive domain. While Synthesize and Evaluate sub-dimensions were included at low levels, there were no learning outcomes in the sub-dimensions of Draw Conclusions, Generalize and Justify.

In Algebra learning domain, the applying cognitive domain was included the most while the knowing cognitive domain was included the least. Recognize and Compute were given little place in the cognitive domain of knowing and there were no learning outcomes in Classify/order and Retrieve and Measure sub-dimensions. The sub-dimensions of Represent/Model and Implement were predominant in the applying cognitive domain. The sub-dimension of Determine was included very little. In the

reasoning cognitive domain, Analyze sub-dimension stood out as it constituted the majority of the learning outcomes. While Synthesize and Generalize were included very little, there were no learning outcomes in Evaluate, Draw Conclusions and Justify sub-dimensions

Of the 107 learning outcomes in Geometry and Measurement, 25.2% of the learning outcomes were at the level of knowing, 43.9% at the level of applying and 30.8% at the level of reasoning. There were some differences in terms of sub-dimensions. According to the distribution with a more homogeneous structure compared to other learning areas, the sub-dimensions of Recognize (12.1%) in the knowing cognitive domain, Implement in the applying cognitive domain (18.6%) and Analyze in the reasoning cognitive domain (16.8%) were the most prominent. No learning outcomes were found in the sub-dimension of Retrieve in the knowing cognitive domain, and in the sub-dimensions of Evaluate, Generalize and Justify in the reasoning cognitive domain.

It can be argued that the distribution of learning outcomes in Data Processing learning domain differed from the other learning domains. It was noteworthy that there were no learning outcomes in the knowing cognitive domain. Showing a homogeneous distribution, the learning outcomes included the cognitive domains of applying and reasoning. In the applying cognitive domain, the sub-dimension of Represent/Model and Implement were dominant, while the sub-dimension of Analyze was more prominent in the reasoning cognitive domain. Just as in the geometry learning domain, no learning outcomes were found in the Generalize and Justify sub-dimensions in the reasoning cognitive domain.

The distribution of the cognitive levels of the learning outcomes in the probability learning domain was similar to those in data processing learning. There were no learning outcomes in the knowing cognitive domain in this learning domain, and in general, the learning outcomes were the least. There were no learning outcomes in the Represent/Model sub-dimension in the applying cognitive domain. On the other hand, in the reasoning cognitive domain, it was observed that there was one learning outcome each from the Synthesize and Draw Conclusions sub-dimensions. There were no learning outcomes in the sub-dimensions of Analyze, Evaluate, Generalize and Justify.
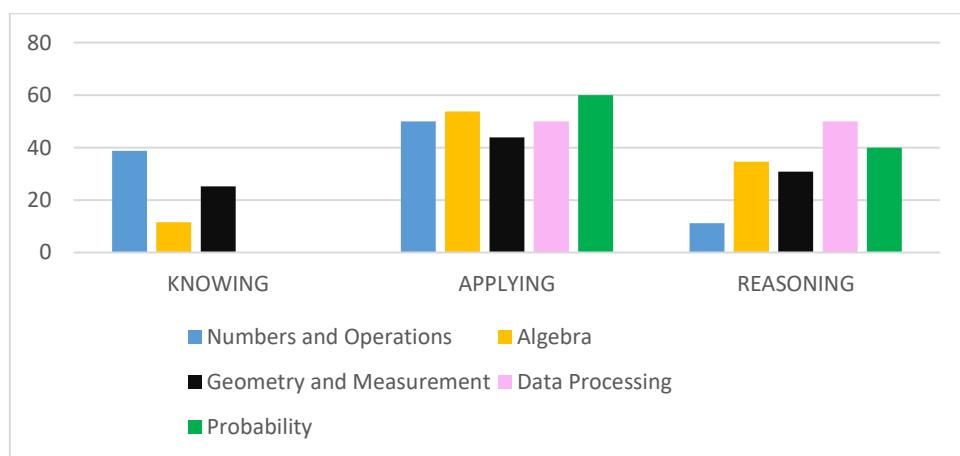

Figure 3. Change of TIMSS 2018 cognitive domains according to mathematics learning domains

Figure 3 shows the change of TIMSS cognitive domains according to the learning domains in the secondary school mathematics curriculum. The cognitive domain of knowing was mostly observed in Numbers and Operations, the cognitive domain of application was mostly seen in the learning domain of Probability, and the cognitive domain of reasoning was found the most in the learning domain of Data Processing.
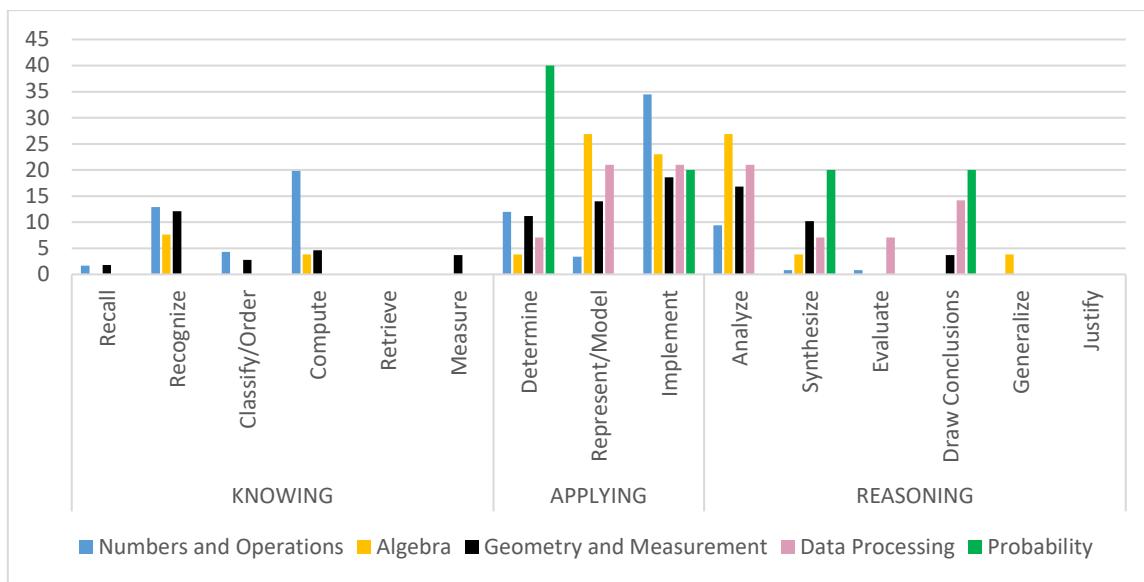
Figure 4. Change of cognitive sub-dimensions according to mathematics learning domains

Figure 4 presents the distribution of cognitive sub-dimensions within the learning outcomes of each learning domain. In general, the cognitive sub-dimensions of the learning outcomes of each learning domain were found to be concentrated on Recognize, Compute, Determine, Represent/Model, Implement, Analyze, Synthesize and Draw Conclusions sub-dimensions. There were no learning outcomes of any learning domain in the Retrieve and Justify sub-dimensions while a very low rate of learning outcomes were observed in Recall, Classify/order, Measure, Evaluate, and Generalize sub-dimensions.

Regarding the sub-dimensions, the learning outcomes related to the Recall sub-dimension of the knowing cognitive domain were concentrated on Numbers and Operations (12,9%) and Geometry and Measurement (12,1%). The Compute sub-dimension were mostly related to Numbers and Operations (19,8%) while Algebra (3,8%) and Geometry and Measurement (4,6%) learning domains were close to each other and less frequent in this dimension. There were very few learning outcomes in the areas of Numbers and Operations (1,7%) and Geometry and Measurement (1,8%) in the Recall sub-dimension. In the cognitive sub-dimension of Measure, there were few (3,7%) learning outcomes only in the domain of Geometry and Measurement. There were no learning outcomes related to this step related to Retrieve sub-dimension.

Based on the examination of the learning outcomes in the curriculum in general, it was determined that the learning domains in the applying cognitive domain had a close distribution and constituted approximately half of the learning outcomes. There were learning outcomes belonging to all learning domains in the Determine sub-dimension. In this sub-dimension, Probability learning domain stood out with the high level of learning outcomes. In the Represent/Model sub-dimension, Algebra and Data Processing learning domains were more prominent followed by Geometry and Measurement learning domain. Although there were very few learning outcomes regarding the Numbers and Operations learning domain, there were no learning outcomes in the Probability learning domain. A homogeneous distribution was striking in the Implement sub-dimension. While the most learning outcomes were found in the field of learning Numbers and Operations and Algebra, the least learning outcomes were observed in the Probability learning domain.

Looking at the sub-dimensions of the reasoning cognitive domain, it can be argued that the learning outcomes were concentrated in the Analyze sub-dimension. The Analyze sub-dimension had the highest rate in Algebra (34,4%) followed by Data Processing (21%), Geometry and Measurement (16,8%), and Numbers and Operations (9,4%). There were no learning outcomes in the Probability learning domain. In the Synthesize sub-dimension, Probability and Geometry and Measurement learning domains were prominent. In Draw Conclusions sub-dimension, as in the Synthesize sub-dimension, there were learning outcomes in Data Processing learning domain in addition to Probability and Geometry and Measurement learning domains. In the Evaluate sub-dimension, very few learning outcomes were found in the Numbers and Operations and Data Processing learning domains. Similarly, in the Generalize sub-dimension, there were only a small number of learning outcomes related to Algebra learning domain. There were no learning outcomes in any learning domain in the Justify sub-dimension.

Discussion and Conclusion

This study which explored the learning outcomes in the 2018 secondary school mathematics curriculum according to TIMSS-2019 cognitive domain skills determined that 28% of the learning outcomes were at the level of knowing, 48% at the level of applying, and 24% at the level of reasoning. When the distribution of the questions used in the TIMSS 2019 exam was examined according to cognitive domains, it was concluded that 35% of the 8th grade questions were at the level of knowing, 40% were at the level of applying and 25% at the level of reasoning (Mullis & Martin, 2017). Accordingly, it can be argued that based on TIMSS, the program included the cognitive domain of knowing and reasoning at lesser levels while it included the cognitive domain of applying at higher levels. Examination of the studies conducted abroad showed that the learning programs of the countries with lower achievement in TIMSS had low cognitive levels. For example, Ndlovu & Mji (2012) reported that not enough attention was paid to aligning the South African mathematics curriculum with TIMSS assessment frameworks in terms of cognitive level definitions. Puncova & Valentova (2020) examined the achievements in the field of data analysis learning in the mathematics curriculum of Singapore, which had a high achievement in TIMSS, and Slovakia, which had a lower level achievement. As a result, it was concluded that Slovakia's achievements lagged far behind Singapore in terms of cognitive level. The present study also concluded that shifting the content of the achievements towards the reasoning level could positively affect academic achievement in the following years.

Based on the evaluation conducted in terms of grade level, it was determined that the learning outcomes for knowing – applying – reasoning in the fifth grade were 58,9%, 32,8% and 8.2%, respectively. In their study where they evaluated the learning outcomes in the Primary School Mathematics Curriculum, Delil, Özcan, and Işık (2020) reported that 58% of all learning outcomes were at the level of knowing, 32% at the level of applying, and 10% at the level of reasoning. Similarly, comparing Irish and Turkish primary school mathematics curricula, Çil (2022), reported that approximately 62% of the primary school learning outcomes of the program in Turkey were at the level of knowing. Considering the result obtained from the present study, it can be argued that the learning outcomes at the level of knowing were dominant for the 5th grade, as in the primary school curriculum. Considering that the fifth grade is the year when secondary school is just started and the foundation of secondary school information is laid, it is normal to have learning outcomes similar to the primary school curriculum. This was also reported by İncikabı et al., (2016) who analyzed the 2013 mathematics

curriculum and by Kılıç, Tutak and Aktaş (2014) who examined the 2009 mathematics curriculum. As a matter of fact, these studies concluded that the learning outcomes at the level of knowing were predominant in the fifth grades in the mathematics curriculum published in 2009 and 2013.

Examination of the learning outcomes in the sixth grade showed that the learning outcomes at the level of knowing were 15,4%, at the level of applying were 53,5% and at the level of reasoning were 30,9%. It was observed that most of the knowledge-based learning outcomes since primary school years switched to implementation with a very sharp transition in the sixth grade. Moreover, the learning outcomes for reasoning, which did not reach 10% in the fifth grade, increased to 30% as well. This sharp transition can have a negative impact on students. Instead, learning outcomes at the level of applying and reasoning should be included at an adequate level starting from primary school. İncikabı, Özgelen Tjoe (2012) examined the distribution of numbers and biology subject domains in the Turkey and USA curricula, since these learning domains created the biggest difference in the TIMSS results of both countries. They reported that the learning outcomes levels were different in terms of both grade level and cognitive field level, and that these differences may affect success.

It was determined that 60% of the learning outcomes included applying cognitive domain in the seventh grade, Reasoning made up 23,8%, and knowing made up 15i8% of the learning outcomes. When the seventh grade learning outcomes were examined, it was seen that the students were geared to solve problems related to the mathematical subjects and concepts they learned. In this context, it is normal to focus on applying. The 8th grade learning outcomes had similar applying and reasoning rates, while knowing remained at only 10%. The studies examining the 2013 and 2009 curricula concluded that the learning outcomes related to the knowing were higher both in the 7th and 8th grades (İncikabı et al., 2016; Kılıç, Tutak & Aktaş, 2014). In this direction, the examination of the 2019 TIMSS report showed that Turkey achieved higher scores compared to previous years, and that the achievement in reasoning questions increased especially in mathematics lessons (TIMSS, 2019). This result may be one of the positive results of shifting the learning outcomes to the level of reasoning.

On the other hand, it is expected that students who have completed the learning outcomes at the applying and reasoning level and who have completed the 8th grade will be able to easily solve routine and non-routine problems related to the mathematics that they have learned so far. In this direction, examination of the Central Examination Report for Secondary Education Institutions (MoNE, 2022) published by the Ministry of National Education in 2022 shows that the average of correct answers in the 20-question mathematics test of the students who took LGS (High School Entrance Exam) in 2022 was 4,74. Considering that approximately 85% of 8th grade students participate in LGS (MEB, 2022), it can be argued that LGS gives more accurate results than TIMSS about the general condition of all students. It is also known that the LGS results for 2019 and 2020 were similar (MEB, 2022). Hence, how the learning outcomes in the program are reflected in the classroom environment should be explored. For example, studies reporting the analysis of the questions in the textbooks prepared in line with these learning outcomes based on the cognitive level reported that the majority of these questions are based on the level of knowing-applying, and the number of questions at the level of reasoning is not sufficient (Tutak & Farımaz, 2022; Taşpınar Şener & Bulut, 2022; Yılmaz, Ay &Aydin, 2021). For example, Yılmaz, Ay, and Aydın (2021) reported that the questions in the textbooks on Data Processing learning domain are related to the applying cognitive domain, but that the learning outcomes are weighted on the level of reasoning. Yakar (2020) examined the secondary school 5th Grade Mathematics Textbook, the

curriculum objectives and whether the learning outcomes were consisted with the explanations of the outcomes. Accordingly, it was determined that some of the program outcome or outcome explanations were not included at all in the course book, and some of them were not addressed properly. Taşpınar Şener and Bulut (2022) reported that the number of questions at the level of reasoning in the 8th grade mathematics textbook was insufficient and suggested that the objectives should also be revised since the textbooks are developed by taking into account the learning outcomes in the curriculum. However, the present study found that the learning outcomes at the 8th grade reasoning level were already high. In their study, Taşpınar Şener and Bulut (2022) reported that the way of presenting the units in the textbook is not arranged in such a way that the students can interpret and draw conclusions on their own, and the 'show and do' technique is adopted, with each step given in the book. In this case, even if the learning outcomes were at the level of reasoning, their reflection in the books may have been different. Therefore, the way the textbooks deal with the learning outcomes becomes more important. From this point of view, it is thought that there is a need for studies that explain how the learning outcomes at the analysis level are handled in the textbook. Güzel, Bozkurt, and Özmantar (2020) reported that the aims of the activities in the textbooks were perceived differently by the teachers and that different cognitive levels emerged. Therefore, it is an important issue how teachers perceive the learning outcomes in the curriculum and how they reflect it to the classroom environment.

Examination of the sub-dimensions of knowing, applying and reasoning levels showed that the highest number of learning outcomes in the knowing cognitive domain were at the level of Compute and Recognize. To reach levels of applying and reasoning, students need to be familiar with mathematical operating procedures and be fluent in calculations. It is important to be able to do certain basic calculations to solve all types of problems (Mullis & Martin, 2017). In this context, it is natural to have higher number of learning outcomes at these levels. As a matter of fact, a similar result was found in the 2013 curriculum (İncikabi et al., 2017). In the applying cognitive domain, the highest number of learning outcomes was in Implement sub-dimension followed by Represent/Model. In general, when the learning outcomes in applying were examined, it was found that some learning outcomes required solving problems by using existing knowledge. The problems used in TIMSS exams can be from real life situations, as well as from algebraic expressions, functions, equations, geometry or all mathematics topics in statistics (Mullis & Martin, 2017). This study demonstrated that there are learning outcomes at the level of applying for all learning domains (Numbers and Operations, Algebra, Geometry and Measurement, Data Processing, and Probability) which is parallel to TIMSS practice. Within the reasoning domain, the learning outcomes are concentrated at the Analyze level. Although learning outcomes were found at the analysis level of all the examined grades, the highest rate was found in the 8th grade. As the cognitive levels of the students increase, they should encounter high-level learning outcomes. At the same time, it is desirable that this level is high in terms of associating students with the mathematical knowledge they have learned. Learning outcomes at the Synthesize level were also found in the 6th, 7th and 8th grades. The number of other learning outcomes in reasoning is extremely few. Doğan (2020) examined the learning outcomes in the Primary School Mathematics Curriculum according to the solo classification, and similarly stated that the learning outcomes for the students should include the learning outcomes that appeal to higher level mental skills. Learning outcomes at the level of evaluation and generalization are especially needed. As a matter of fact, previous studies showed that the students cannot even make appropriate evaluations about their own problem solutions (Deringöl, 2006; Gökkurt, Örnek, Hayat & Soylu, 2015). In addition, one of the important skills that

students should acquire during the transition from arithmetic to algebra and even in the pre-algebra period is the skill of generalization (Baki, 2008; Kaput, 1998). However, students have difficulties in the process of generalizing their problem solutions (Baştürk, 2021). In this context, it is important that the learning outcomes at all levels in the cognitive domain of reasoning should be incorporated at the secondary school level.

Recommedations

Compared to TIMSS, the secondary school curriculum in Turkey addressed the cognitive domain of knowing and reasoning at lower rates while it included the cognitive domain of applying at higher rates. In this direction, it is thought that it would be beneficial to revise the program in a way to include cognitive domains in a more balanced way. In addition, the findings obtained in this study brought to mind the question of how the learning outcomes are actually reflected in the classroom environment. In this context, studies can be conducted to reveal how the learning outcomes at the reasoning level are addressed in the textbooks. In addition, to what extent the teachers reflect these learning outcomes to the classroom environment can be explored by examining the problems and materials prepared by the teachers in line with the learning outcomes.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author1: 50%

Author2: 50%

Support and Thanks

Acknowledgements: non available

Conflict Statement

There is no material or individual organic connection with the people or institutions involved in the research and there is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

Ortaokul Matematik Dersi Öğretim Programı Kazanımlarının TIMSS-2019 Bilişsel Alan Becerisine Göre Analizi

Giriş

Eğitim programı, öğrencilerin önceden belirlenmiş eğitim amaçlarına ulaşabilmesi için uygulanan planlı eğitsel etkinliklerin tümüdür (Başaran & Çınkır, 2013). Eğitim programının en önemli alt programı olarak nitelendirilen öğretim programı ise, eğitim programının amaçları doğrultusunda, bir dersle ilgili olarak sınıf düzeyinde belirlenen hedefleri kazandırmaya yönelik planlanmış, okul içi ve dışını kapsayan tüm etkinlikleri sergileyen yaşantılar düzeneğidir (Kartal & Yazgan, 2016).

Türkiye'de son dönem matematik öğretim programları yapılandırılırken önceki programlardan farklı olarak, öğrenci merkezli bir eğitim anlayışı benimsenmiştir. Son olarak 2018 yılında yenilenen matematik programı öğrencilerin matematiksel okuryazarlıklarının geliştirilmesine, matematiğin anlam ve dilinin doğru bir şekilde kullanımına, akıl yürütme, tahmin etme, ilişkilendirme yapma, matematiğin sanatla olan ilişkisini fark etme ve matematiğe değer verme gibi hedeflere odaklanmıştır. Yapılan bu değişim ve güncellemelerin etkiliği ve öğretim sürecindeki paydaşların bu değişimlerden nasıl etkilendiğini ortaya koymak amacıyla pek çok akademik çalışma yapılmıştır. Örneğin bazı çalışmalarda ilkokul ve ortaokul matematik dersi öğretim programları TIMSS sınavındaki kriterler göz önüne alınarak incelenmiştir (Delil, Özcan & Işlak, 2020; İncikabı, Mercimek, Ayanoğlu, Aliustaoğlu & Tekin, 2016; Kılıç, Aslan-Tutak &Ertaş, 2014). Bu çalışmalardan biri olan İncikabı ve arkadaşlarının (2016) çalışmasında ortaokul matematik dersi öğretim programındaki kazanımları, Milli Eğitim Bakanlığı'nın 2018 yılı güncellemesinden önce TIMSS 2015 bilişsel alan kriterlerine göre değerlendirmiştir. Çalışmaya göre bilme alan en fazla oranda beşinci sınıf kazanımlarında, uygulama alanı en fazla yedinci sınıf müfredatında, muhakeme alanı ise en fazla altıncı sınıfta yer almıştır.. Delil ve diğerleri (2020) ise 2018 yılı ilkokul matematik dersi öğretim programındaki kazanımları TIMSS 2019 bilişsel alan ve öğrenme alanlarına göre değerlendirmiştir. Bu çalışmada tüm kazanımların %58'i bilme,

%32'si uygulama ve %10'u akıl yürütme basamağında olduğu belirlenmiştir. Ayrıca 1. sınıftan 4. sınıfa doğru gidildikçe bilme düzeyindeki kazanım sayılarının azaldığı, akıl yürütme basamağındaki kazanım sayılarının ise arttığı görülmüştür.

Elde edilen veriler TIMSS sınavlarına katılan bazı ülkelerin matematik öğretim programlarını TIMSS bilişsel alanlarına göre düzenlediklerinde daha başarılı olduklarını göstermektedir (Delil ve diğerleri, 2020). Buradan hareketle öğretim programında yer alan kazanımların TIMSS çerçevesi ile ne kadar uyumlu olduğunun incelenmesinin önemli olduğu düşünülmektedir.

Bu araştırmanın amacı TIMSS bilişsel alan becerileri dikkate alınarak, ortaokul matematik dersi öğretim programındaki kazanımların sınıf düzeyine ve öğrenme alanlarına göre incelemesini yapmaktır. Araştırmanın problemi ve alt problemler aşağıdaki şekildedir.

Ortaokul matematik dersi öğretim programındaki kazanımların TIMSS bilişsel alan becerilerine göre dağılımı nasıldır?

I.   Ortaokul matematik dersi öğretim programındaki kazanımlar TIMSS bilişsel alan becerileri açısından incelendiğinde sınıf düzeyine göre nasıl bir dağılım göstermektedir?

II.   Ortaokul matematik dersi öğretim programındaki kazanımlar TIMSS bilişsel alan becerileri açısından incelendiğinde öğrenme alanlarına göre nasıl bir dağılım göstermektedir?

Yöntem

Bu çalışmada nitel araştırma yöntemleri benimsenmiş ve doküman analizi yapılmıştır. Verilerin analizinde betimsel analiz kullanılmıştır. Veriler analiz edilirken öncelikle, beşinci sınıf düzeyi sayılar öğrenme alanındaki kazanımlar her iki araştırmacı tarafından TIMSS bilişsel alan seviyelerine göre kodlanmıştır. Daha sonra bu kodlamalar karşılaştırılarak uyum yüzdesi hesaplanmıştır. Kodlayıcılar arasındaki son uyum oranı %92 olmuştur. Bu oranın çalışma için yeterli olacağından hareketle programdaki 215 kazanım sınıf seviyesi ve öğrenme alanlarına göre sınıflandırılmıştır.

Kazanımlar incelendiğinde bazı kazanımların birden fazla bilişsel alanda bulunduğu belirlenmiştir. Örneğin 'Pisagor bağıntısını oluşturur, ilgili problemleri çözer' kazanımında, öğrencilerin Pisagor bağıntısını bilgi ve kanıta dayalı çıkarım yaparak elde edeceği düşüncesi ise sonuç çıkarma düzeyi olarak belirlenirken, ilgili problemleri çözme, uygulama düzeyi olarak belirlenmiştir. Bu durumda, kazanım her iki düzeyi de barındırmaktadır. Bu şekilde müfredatta 215 kazanım ifadesi yer alırken, bu çalışmada toplamda 268 kazanım ifadesi sınıflandırılmıştır. Kazanımların hangi bilişsel alanda bulunduğu belirlenirken kazanımın altında yapılan açıklamalar dikkate alınmıştır ancak bu açıklamalar sınıflamaya dahil edilmemiştir.

Bulgular

Öğretim programı incelendiğinde, toplam 268 tane kazanım bulunduğu tespit edilmiştir. Bu kazanımların TIMSS-2019 bilişsel alanlarına göre dağılımı %27.9 (f=75) bilme, %48.1 (f=129) uygulama ve %23.8 (f=64) akıl yürütme şeklindedir. Alt boyutlardan bilme alanının tanıma ve hesaplama alt boyutunun kazanımların yaklaşık %80'ini oluşturduğu görülmektedir. Bilgi alma alt boyutunda ise hiçbir kazanımın olmadığı belirlenmiştir. Uygulama alanında ise uygulama alt boyutu kazanımların %54,2 (f=70)'sini oluşturmaktadır. Diğer alt boyutlardan karar verme ve sunma-modelleme alt boyutları yaklaşık olarak aynı yüzdelikle uygulama alt boyutunun %45,6'sını

oluşturmaktadır. Akıl yürütme alanı toplam kazanımların %23,8 (f=64)'ini oluşturmuştur. Analiz alt boyutu (f=39) akıl yürütme alanında en çok karşılaşılan kazanım olmuştur. Buna karşın doğrulama alt boyutunu karşılayan kazanım bulunmamaktadır.

TIMMS bilişsel alan becerilerine göre incelenen beşinci sınıf kazanımları toplam 73'tür. Bu kazanımların en fazla %58,9 oranıyla bilme alanında yer aldığı görülmektedir. Uygulama %32,8 oranında, akıl yürütme ise % 8,2 oranında programda yer almıştır. Kazanımların alt boyutlarına bakıldığında ise genel görünüme benzer şekilde en çok kazanımın hesaplama ve tanıma alt boyutlarında olduğu görülmektedir. Bu alt boyutları sıralama-sınıflama (%6,8) alt boyutu takip etmektedir. Ölçme %4,1, hatırlama %1,3 oranında temsil edilirken bilgi alma düzeyinde hiçbir kazanımın olmadığı görülmektedir. Uygulama alanında karar verme alt boyutu (%16,4) en çok temsil edilen alt boyuttur. Karar vermeden sonra uygulama alt boyutu (%12,3) yer almıştır. Bu sınıf seviyesinde en az temsil edilen alt boyut ise sunma-modelleme (%4,1) olmuştur. Akıl yürütme alanı genel olarak 5. sınıf seviyesinde en az temsil edilen bilişsel alandır (%8,2). Var olan kazanımlardan en fazla analiz alt boyutunda temsil edilmiştir (%6,8). Değerlendirme alt boyutu yalnızca 1 kazanımla (1,3) temsil edilmiştir. Sentez, sonuç çıkarma, genelleme ve doğrulama alt boyutlarında ise herhangi bir kazanımın olmadığı belirlenmiştir.

Altıncı sınıf düzeyindeki kazanımlar incelendiğinde, toplam 71 kazanımın olduğu belirlenmiştir. Bu kazanımların en fazla %53,5 oranıyla uygulama alanında yer aldığı görülmektedir. Uygulamadan sonra akıl yürütme alanı %30,9 oranında bulunmuştur. En az kazanımın bilme alanında yer aldığı belirlenmiştir (% 15,4). Kazanımlar alt boyutlara dağılımları açısından değerlendirildiğinde ise genel görünüme benzer şekilde uygulama bilişsel alanının uygulama alt boyutu %38'lik temsil oranıyla programda en çok temsil edilen kazanım olmuştur. Bunu akıl yürütme alanından analiz alt boyutu (%18,3) takip etmiştir. İlgili sınıf düzeyinde sunma-modelleme ve sentez %8,4 oranında; tanıma ve karar verme %7 oranında temsil edilmiştir. Ayrıca hatırlama, sıralama-sınıflama, hesaplama, ölçme ve sonuç çıkarma alt boyutlarıyla ilişkili olan kazanım sayısının oldukça az olduğu görülmüştür. Beşinci sınıf düzeyine benzer olarak bilgi alma, genelleme ve doğrulamada hiçbir kazanımın olmadığı belirlenmiştir. Ayrıca 5. sınıfta bir kazanımla temsil edilen değerlendirme alt boyutunda 6. Sınıf düzeyinde hiçbir kazanım bulunmamaktadır.

7. sınıfta 63 tane kazanım bulunmaktadır. Bu kazanımlar daha çok uygulama (%60,3) alanıyla örtüşmüştür. Akıl yürütme %23,8, bilme alanı ise kazanımların %15,8'ini oluşturmuştur. Alt boyutlara bakıldığında genel tabloya benzer şekilde uygulama (%36,5) alt boyutu en çok kazanımın bulunduğu alt boyuttur. Akıl yürütme alanında en çok analiz (%12,6) kazanımlarının bulunduğu görülmektedir. Bilme alanında ise en çok hesaplama (%9,5) alt boyutuna yer verilmiştir. Hatırlama, tanıma, sıralama-sınıflama, sentez, sonuç çıkarma, genelleme gibi alt boyutlarda çok az kazanım bulunduğu belirlenmiştir. Bilgi alma, ölçme, değerlendirme ve doğrulama alt boyutlarında hiçbir kazanımın olmadığı görülmektedir.

8.sınıf kazanımları incelendiğinde değerlendirmeye alınan toplam 61 kazanım bulunmaktadır. Kazanımların dağılımında dikkat çeken uygulama bilişsel alanının kazanımların yaklaşık olarak yarısını oluşturmasıdır. En az kazanım bilme basamağındadır. Akıl yürütme basamağı ise %34 oranında dağılım göstermiştir. Alt boyutların tamamına bakıldığında analiz, sunma-modelleme, uygulama ve tanıma alt boyutları öne çıkmaktadır. Buna karşın hatırlama, sıralama-sınıflama, bilgi alma, ölçme, genelleme ve doğrulama alt boyutlarında hiçbir kazanımın olmadığı belirlenmiştir.

Her bir öğrenme alanındaki kazanımların bilişsel düzeylerine bakıldığında sayılar öğrenme alanındaki 116 kazanımın %39'unun bilme, %50'sinin uygulama ve %11'inin akıl yürütme düzeyinde olduğu görülmektedir. Alt boyutlarda ise sayılar öğrenme alanındaki kazanımların yarısının uygulama bilişsel alanının uygulama alt boyutu ile ilişkilendirildiği belirlenmiştir. Bilme bilişsel alanında hesaplama ve tanıma alt boyutlarının kazanımlarının büyük bölümünü oluşturduğu görülmektedir. Buna karşın bilgi alma ve ölçme alt boyutlarıyla hiçbir kazanım ilişkilendirilmemiştir. Uygulama bilişsel alanında uygulama alt boyutunun ve karar verme alt boyutlarının ön plana çıktığı söylenebilir. Akıl yürütme bilişsel alanında analiz alt boyutunun ağırlıkta olduğu görülmektedir. Sentez ve değerlendirmeye çok az yer verilirken sonuç çıkarma, genelleme ve doğrulama alt boyutlarında ise hiçbir kazanım bulunmamaktadır.

Cebir öğrenme alanında en fazla uygulama en az bilme bilişsel alanına yer verildiği görülmektedir. Bilme bilişsel alanında tanıma ve hesaplamaya çok az yer verilirken sınıflama, bilgi alma ve ölçmede hiçbir kazanım bulunmamaktadır. Uygulama bilişsel alanında sunma-modelleme ve uygulama alt boyutlarının ağırlıkta olduğu görülmektedir. Karar verme alt boyutuna ise çok az yer verilmiştir. Akıl yürütme bilişsel alanında ise analiz alt boyutu kazanımların çoğunluğunu oluşturmasıyla göze çarpmaktadır. Sentez ve genellemeye çok az yer verilirken değerlendirme, sonuç çıkarma ve doğrulama alt boyutlarında hiçbir kazanım bulunmamaktadır.

Geometri ve ölçme öğrenme alanındaki 107 kazanımın %25,2'si bilme, %43,9'u uygulama ve %30,8'i akıl yürütme düzeyindedir. Alt boyutlar açısından bazı farklılıklar göze çarpmaktadır. Diğer öğrenme alanlarına göre daha homojen bir yapıda olan bu dağılıma göre bilme bilişsel alanında tanıma (%12,1), uygulama bilişsel alanında uygulama (%18,6) ve akıl yürütme bilişsel alanında da analiz (%16,8) alt boyutları ön plana çıkmaktadır. Bilme bilişsel alanında bilgi alma alt boyutu, akıl yürütme bilişsel alanında değerlendirme, genelleme ve doğrulama alt boyutlarında kazanıma rastlanmamıştır.

Veri işleme öğrenme alanındaki kazanımların dağılımının diğer öğrenme alanlarına göre farklılıklar gösterdiği söylenebilir. Bilme bilişsel alanında hiçbir kazanımın olmaması dikkat çekicidir. Kazanımlar homojen bir dağılım göstererek uygulama ve akıl yürütme bilişsel alanları kazanımların yarısını oluşturacak şekilde yer almaktadır. Uygulamada sunma-modelleme ve uygulama alt boyutu ön plana çıkarken akıl yürütme bilişsel alanında analiz alt boyutu ön plandadır. Akıl yürütme bilişsel alanında tıpkı geometri öğrenme alanında olduğu gibi genelleme ve doğrulama alt boyutlarında kazanıma rastlanmamıştır.

Olasılık öğrenme alanında bulunan kazanımların bilişsel düzeylerinin dağılımı veri işleme öğrenme alanındakine benzer bir nitelik taşımaktadır. Genel olarak en az kazanımın bulunduğu bu öğrenme alanında bilme bilişsel alanında hiçbir kazanımın olmadığı görülmüştür. Uygulama bilişsel alanında sunma-modelleme alt boyutunda kazanımın olmadığı belirlenmiştir. Akıl yürütme bilişsel alanında ise sentez ve sonuç çıkarma alt boyutlarından birer tane kazanım olduğu görülmüştür. Analiz, değerlendirme, genelleme ve doğrulama alt boyutlarında ise hiçbir kazanım yoktur.

Tartışma ve Sonuç

Sınıf düzeyi açısından değerlendirildiğinde, beşinci sınıfta bilme – uygulama – akıl yürütmeye yönelik kazanımların sırasıyla %58,9-%32,8-%8,2 olduğu tespit edilmiştir. Bu çalışmadan elde edilen sonuca bakıldığında, 5. sınıf için de ilkokul müfredatında olduğu gibi bilme düzeyindeki kazanımların ağırlıkta olduğu söylenebilir.

Altıncı sınıftaki kazanımlar incelendiğinde, bilme düzeyindeki kazanımların %15,4 uygulama düzeyinin %53,5 ve akıl yürütme düzeyinin %30,9 oranında olduğu görülmektedir. İlkokul yıllarından bu yana bilme düzeyi ağırlıklı kazanımların, altıncı sınıfta çok keskin bir geçişle çoğunluğunun uygulama basamağında yer aldığı görülmektedir.

Yedinci sınıfta ise, kazanımların %60'lık kısmını uygulama basamağının oluşturduğu tespit edilmiştir. Akıl yürütme %23,8, bilme alanı ise kazanımların %15,8'ini oluşturmuştur. Yedinci sınıf kazanımları incelendiğinde, öğrencilerin öğrendikleri matematiksel konu ve kavramlara yönelik problemler çözmesinin hedeflendiği görülmektedir. Bu bağlamda uygulama basamağının ağırlıkta olması olağan bir durumdur. 8. sınıftaki kazanımlarda ise, uygulama ve akıl yürütme basamaklarındaki kazanımların benzer oranda, bilme düzeyinin yalnızca %10'luk bir dilimde kaldığı tespit edilmiştir. 2013 ve 2009 öğretim programlarının incelendiği çalışmalara bakıldığında, bilme düzeyine yönelik kazanımların hem 7. sınıfta hem de 8. sınıfta daha yüksek olduğu görülmektedir (İncikabı vd., 2016; Kılıç, Tutak & Aktaş, 2014). Bu doğrultuda, 2019 TIMSS raporuna bakıldığında, Türkiye'nin önceki yıllara göre daha yüksek skora ulaştığı, özellikle matematik dersinde akıl yürütme sorularına yönelik başarının arttığı bilinmektedir (TIMSS, 2019). Bu sonuç, kazanımların akıl yürütme düzeyine kaydırılmasının olumlu sonuçlarından biri olabilir.

Bir diğer yandan, uygulama ve akıl yürütme düzeyindeki kazanımları tamamlamış, 8. sınıfı bitiren öğrencilerin, öğrendikleri matematik konularına yönelik rutin ve rutin olmayan problemleri rahatlıkla çözebiliyor olmalarını beklenir. Bu doğrultuda, MEB'in 2022 yılında yayımladığı Ortaöğretim Kurumlarına İlişkin Merkezi Sınav Raporu (MEB, 2022) incelendiğinde, 2022 yılında LGS'ye giren öğrencilerin 20 soruluk matematik testindeki doğru cevap ortalamalarının 4,74 olduğu görülmektedir. LGS'ye 8. sınıftaki öğrencilerin yaklaşık %85'inin katıldığı düşünüldüğünde (MEB, 2022), LGS 'nin öğrencilerin tamamının genel durumu hakkında TIMSS'e göre daha doğru sonuçlar verdiği söylenebilir. Ayrıca 2019 ve 2020 yılları LGS sonuçlarının da benzer olduğu bilinmektedir (MEB,2022). Bu durumda, programdaki kazanımların sınıf ortamına nasıl yansıdığı sorusu akla gelmektedir. Örneğin bu kazanımlar doğrultusunda hazırlanan ders kitaplarındaki soruların bilişsel düzeye göre analizini bildiren çalışmalar, soruların büyük çoğunluğunun bilme- uygulama düzeyi ağırlıklı olduğunu, akıl yürütme düzeyindeki soru sayısının yeterli olmadığını bildirmektedir (Tutak & Farımaz, 2022; Taşpınar Şener ve Bulut, 2022; Yılmaz, Ay &Aydın, 2021). Örneğin Yılmaz, Ay ve Aydın (2021) veri işleme alanına yönelik ders kitaplarındaki soruların uygulama bilişsel alanına yönelik olduğunu, fakat kazanımların akıl yürütme düzeyi ağırlıklı olduğunu bildirmişlerdir. Yakar (2020), Ortaokul 5. sınıf Matematik Ders Kitabını, öğretim programı kazanımlarını ve kazanımların açıklamalarını karşılama durumunu incelemiştir. Buna göre, ders kitabında program kazanım veya kazanım açıklamalarından bazılarına hiç yer verilmediği, bazılarının ise gerektiği gibi ele alınmadığı tespit edilmiştir. Taşpınar Şener ve Bulut (2022) yaptıkları çalışmada, 8. sınıf matematik ders kitabında akıl yürütme düzeyindeki soru sayısının yetersiz olduğunu, ders kitaplarının, öğretim programındaki kazanımlar dikkate alınarak oluşturulduğu bilindiğine göre, kazanımların da revize edilmesi gerektiğini bildirmişlerdir. Fakat bu çalışmada, 8. sınıf akıl yürütme düzeyindeki kazanımların zaten yüksek oranda olduğu ortaya çıkmıştır. Taşpınar Şener ve Bulut (2022) çalışmalarında, ders kitabının üniteleri sunma biçiminin öğrencilerin kendi kendilerine yorumlayıp sonuç çıkarabileceği şekilde düzenlenmediğini, her adımın kitapta verilerek 'gösterip yaptırma' tekniğinin benimsendiğini bildirmişlerdir. Bu durumda, kazanımlar akıl yürütme düzeyinde olsa bile, kitaplara yansıması farklı olmuş olabilir. Dolayısıyla ders kitaplarının, kazanımları ele alma biçimi önem kazanmaktadır. Buradan hareketle özellikle analiz düzeyindeki kazanımların ders

kitabında nasıl ele alındığını bildiren çalışmalara ihtiyaç olduğu düşünülmektedir. Güzel, Bozkurt ve Özmantar (2020), ders kitaplarındaki etkinliklerin amaçlarının öğretmenler tarafından farklı algılandığını ve farklı bilişsel seviyelerin ortaya çıktığını bildirmişlerdir. Dolayısıyla, öğretmenlerin de müfredattaki kazanımları nasıl algıladıkları ve sınıf ortamına nasıl yansıttıkları önemli bir konudur.

Bilme, uygulama ve akıl yürütme düzeylerinin alt boyutlarına bakıldığında, bilme alanı içerisinde en fazla kazanımın hesaplama ve tanıma düzeyinde çıktığı tespit edilmiştir. Uygulama ve akıl yürütme düzeylerine ulaşmak için, öğrencilerin matematiksel işlem prosedürlerini tanımaları ve akıcı bir şekilde hesap yapıyor olmaları gerekmektedir. Tüm problem türlerini çözmek için belli temel hesaplamaları yapabilmek önemlidir (Mullis & Martin, 2017). Bu bağlamda, tanıma ve hesaplama düzeyindeki kazanımların yüksek oranda olması doğal bir durumdur. Nitekim 2013 yılı öğretim programında da benzer bir sonuçla karşılaşılmıştır (İncikabı vd., 2017). Uygulama alanı içerisinde ise en fazla kazanımın uygulama basamağında, daha sonra ise sunma-modelleme basamağında yer aldığı tespit edilmiştir. Genel olarak uygulama basamağındaki kazanımlara bakıldığında, mevcut bilgileri kullanarak problem çözmeyi gerektiren kazanımlar olduğu görülmüştür. TIMSS sınavlarında da kullanılan problemler, gerçek yaşam durumları içerisinden olduğu gibi, cebirsel ifadeler, fonksiyonlar, denklemler, geometri veya istatistik alanlarına yönelik tüm matematik konularından olabilmektedir (Mullis & Martin, 2017). Bu çalışmada da, tüm öğrenme alanlarına yönelik (sayılar ve işlemler, cebir, geometri ve ölçme, veri işleme, olasılık) uygulama basağında kazanımların olduğu görülmektedir. Bu durum TIMSS uygulamalarıyla paralellik göstermektedir. Akıl yürütme alanı içerisinde, kazanımların analiz düzeyinde yoğunlaştığı görülmektedir. İncelenen tüm sınıflara ait analiz düzeyinde kazanımlara rastlanmış olsa da, en yüksek oran 8. sınıfta çıkmıştır. Öğrencilerin bilişsel seviyeleri arttıkça üst düzey kazanımlarla karşılaşmaları gerekmektedir. Aynı zamanda, öğrencilerin öğrendikleri matematiksel bilgileri ilişkilendirmeleri bakımından bu düzeyin yüksek oranda çıkması istenen bir durumdur. Sentez düzeyindeki kazanımlara da 6, 7. ve 8. sınıflarda rastlanmıştır. Akıl yürütme alanındaki diğer kazanımlar ise son derece az sayıdadır. Doğan (2020) İlkokul Matematik Öğretim Programındaki kazanımların solo sınıflandırmasına göre incelediği çalışmasında benzer şekilde öğrencilerin ulaşması hedeflenen kazanımlarda daha üst düzey zihinsel beceri basamaklarına hitap eden kazanımlara yer verilmesi gerektiği belirtmiştir. Özellikle değerlendirme ve genelleme düzeyindeki kazanımlara ihtiyaç duyulduğu düşünülmektedir. Nitekim yapılan çalışmalara bakıldığında, öğrencilerin kendi problem çözümlerinde bile uygun değerlendirmelerde bulunamadıkları ortaya konmuştur (Deringöl, 2006; Gökkurt, Örnek, Hayat & Soylu, 2015). Ayrıca, aritmetikten cebire geçiş sürecinde ve hatta cebir öncesi dönemde öğrencilerin kazanması gereken önemli becerilerden birinin de genelleme yapmadır (Baki, 2008; Kaput, 1998). Fakat öğrencilerin problem çözümlerini genelleme sürecinde zorlandıkları da bilinmektedir (Baştürk, 2021). Bu bağlamda, akıl yürütme alanına yönelik diğer düzeylere ait kazanımların ortaokul düzeyinde yer alması önemlidir.

Öneriler

Bu çalışma ortaokul programının, TIMSS'e göre bilme ve akıl yürütme bilişsel alanına daha az, uygulama bilişsel alanına daha fazla yer verdiğini ortaya koymuştur. Bu doğrultuda programın bilişsel alanları daha dengeli biçimde içerecek şekilde revize edilmesinin faydalı olacağı düşünülmektedir. Ayrıca elde edilen bulgular kazanımların sınıf ortamına ne düzeyde yansıtıldığı sorusunu akla getirmiştir. Bu bağlamda, özellikle akıl yürütme düzeyindeki kazanımların ders kitaplarında nasıl ele alındığını ortaya çıkaracak çalışmalar yapılabilir. Ayrıca kazanımlar doğrultusunda öğretmenlerin

hazırladığı problemler, materyaller incelenerek öğretmenlerin bu kazanımları ne düzeyde sınıf ortamına yansıttığı incelenebilir.