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Contents / İçindekiler

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Letter from the Chief Editor/Baş Editörden Mektup

Dear Readers,

The first issue of TAY Journal 2025 includes articles on differentiated mathematics homework, ecological systems theory, educational digital comics, design thinking, flipped classroom model, cartoons in social studies class and “mineral hunters: an adventure on the trail of geology”. Quasi-experimental design, exploratory sequential mixed method, document review, exploratory sequential mixed method and quantitative method based on bibliometric analysis were used in the articles related to primary school education, mathematics education, Turkish education and social studies education. We would like to thank our authors who sent their original works to our journal, our referees for their detailed reviews and reports, the academicians who took part in our editorial and editorial advisory boards and who did not spare their help in every step of the articles, Dr. Lecturer Murat Baş (Editor), who meticulously prepared the articles for publication, Research Assist. Eylem Çoban (Copy Editing Editor) and Research Assist. Esra Nihlenur Şen (Copy Editing Editor). We hope that our journal will contribute to scientific accumulation and we look forward to your comments and suggestions.

Değerli Okuyucularımız,

TAY Journal 2025 yılının ilk sayısında; farklılaştırılmış matematik ev ödevleri, ekolojik sistemler kuramı, eğitsel dijital çizgi romanlar, tasarım odaklı düşünme, ters yüz sınıf modeli, sosyal bilgiler dersinde çizgi filmler konularını içeren ve bir projeden üretilen “mineral avcıları: jeolojinin izinde bir macera” başlıklı makaleleri içermektedir. İlkokul eğitimi, matematik eğitimi, Türkçe eğitimi, sosyal bilgiler eğitimi ile ilgi olan makalelerde yarı deneysel desen, keşfedici sıralı karma yöntem, doküman incelemesi, açımlayıcı sıralı karma yöntem ve bibliyometrik analize dayalı nicel yöntem kullanılmıştır. Özgün eserlerini dergimize gönderen yazarlarımıza, detaylı incelemeleri ve raporları için hakemlerimize, editör ve yayın danışma kurullarımızda yer alan ve makalelerin her bir adımında yardımlarını esirgemeyen akademisyenlere, makaleleri titizlikle yayına hazırlayan Dr. Öğretim Üyesi Murat Baş'a (Editör), Araş. Gör. Eylem Çoban'a (Dizgi ve Mizanpaj Editörü) ve Araş. Gör. Esra Nihlenur Şen'e (Dizgi ve Mizanpaj Editörü) teşekkür ederiz. Dergimizin bilimsel birikime katkı sağlamasını diler, görüş ve önerilerinizi bekleriz.

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The Effect of Differentiated Mathematics Homework on 4th Grade Primary Students' Attitudes Towards Homework*

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*This article was produced from Nilay Ceylan Durmaz's doctoral dissertation supervised by Prof. Dr. Neşe Işık Tertemiz.

Abstract

The purpose of the current study is to examine the effects of homework designed with a differentiated method and traditional homework on the attitudes of 4th grade primary school students towards homework in mathematics. A quasi-experimental design with a pre-test-post-test control group, one of the quantitative research methods, was used in the study. The study group consists of 25 experimental and 26 control group students continuing their education in the 4th grade at a state primary school in Kayseri province in the 2023-2024 school year. In the study, the "Attitude Scale towards Mathematics Homework" developed by Bora (2018) and a "Semi-Structured Interview Form" were used as data collection tools. Differentiated homework designed by the researcher was given to the experimental group, and traditional homework was given to the control group for 10 weeks. At the end of the study, a significant difference was found in the post-test results of the experimental and control group students in favour of the experimental group. In addition, it was determined that there was a significant difference between the within-groups post-test scores for both the control and experimental group students and this difference was higher in the experimental group. The findings obtained from the interviews also supported the quantitative findings. Within the scope of the research, changes in students' attitudes and experiences towards homework in the transition from primary to secondary school can also be analysed.

Keywords: Differentiated mathematics homework, primary school mathematics education, differentiated homework, differentiated instruction, attitude towards homework.

Introduction

Homework, which is one of the extracurricular activities in the learning process, plays an important role in the school years and includes the tasks that teachers want students to do outside the school. Homework is assigned to help students learn by conducting research and thinking more deeply about subjects outside the school (Gün, 1995). Homework, which provides students with an opportunity to practice what they have learned, is an important tool in education for teachers and school administrators (Zentall & Goldstein, 1999). In our country, teachers generally acknowledge that homework plays an important role in education. Moreover, extracurricular activities are an important tool for effectively incorporating the influence of environmental and family factors, which are crucial elements in shaping students' minds (Albayrak et al., 2004). In a study, it was found that teachers believe that homework is not only important for learning school subjects but also for developing a good study routine (Holte, 2016). Through homework, students can be taught to fulfil individual responsibilities and develop a study routine. In addition, homework serves as a tool to develop students' intellectual abilities, foster creative and critical thinking and promote self-directed learning (Algani & Alhaıja, 2022). The purposes of homework are stated as follows:

a) Practicing skills,

b) Enhancing the learning experience,

c) Increasing responsibility, self-confidence and time management,

d) Establishing and maintaining communication between schools and parents,

e) Following instructions related to homework,

f) Informing parents about activities at school and in the classroom,

g) Maintaining classroom policies (Epstein, 2001; as cited in Pfeiffer, 2018).

Homework is expected to contribute to the more effective management of students' mental processes by allowing them to review the knowledge they acquire during their learning process. The effectiveness of this process depends largely on students' attitudes towards homework and how these attitudes are shaped. The way students perceive homework can play a determining role in their motivation and thus directly affect learning outcomes. Therefore, improving students' attitudes towards homework is of strategic importance for educators.

Research on Homework

Homework is seen as an important part of the education system. Homework is considered an effective tool for students to acquire knowledge outside the classroom and to reinforce what they have learned in the classroom (Cooper, 2001). However, opinions in national and international studies on whether homework should be assigned or not vary widely. Studies on this subject mainly focus on the impact of homework on academic success and its contribution to students' learning processes (Cooper, 2001; Demir, 2013; Epstein & Van-Voorhis, 2001; Işık Tertemiz, 1991; Jamal & Rizvi, 2021). Indeed, there are studies that strongly emphasize the importance of homework as a tool to support student learning, especially in lower-performing schools where students lag behind in fundamental mathematics concepts (Cooper et al., 2006; Maltese et al., 2012; Trautwein & Köller, 2003). In these studies, it is particularly emphasized that assigning homework is important as a solution to many difficulties that contribute to poor learning and performance (Graven, 2016).

Contrary to these studies that claim homework is effective on academic success, the report titled "Education in Eastern Europe and Central Asia: Findings from PISA", published in July 2021, presents a comparison of Türkiye's frequency of assigning homework with that of other countries in the region in the section titled "Time Spent on Out-of-School Learning". According to the report, Türkiye ranks fifth among Eastern European and Central Asian countries in terms of the amount of homework assigned to students. The countries ranking above Türkiye are, in order, Kazakhstan, Romania, Croatia and Bulgaria. However, as a striking finding, Türkiye is the only country among these five countries that ranks below the Organisation for Economic Co-operation and Development [OECD] average (World Bank, 2021).

Table 1.

Out-of-School Learning Time (OECD, 2019)

Country	Homework or other assignments given by teachers	Paid or unpaid one-on-one tutoring	Attending commercial courses paid for by the family	Studying with parents or other family members	Total time (hour/week)
Bulgaria	3	5	1	5	5
Croatia	4	1	2	1	8
Kazakhstan	12	1	3	1	17
Romania	5	5	0	5	6
Türkiye	7	1	2	1	11
OECD average	5	5	1	5	7

Despite the high amount of homework assigned to students in Türkiye, only 61.3% of students were able to reach the minimum performance level in mathematics according to the 2022 Programme for International Student Assessment [PISA] results (Ministry of National Education [MoNE], 2022).

It can be said that homework is a factor influential not only on academic success but also on students' affective characteristics and daily lives. When viewed from a positive perspective, teachers state that homework increases family involvement and strengthens students' interest in lessons (Epstein & Van-Voorhis, 2001). On the other hand, Kohn (2006) argues that homework creates an unnecessary burden on students, causing excessive stress and burnout. According to Kohn (2006), the impact of homework on academic success is exaggerated and children need to spend more time resting, playing and socializing in their free time. In a study conducted by Demir (2013), some teachers stated that giving more homework than necessary negatively affected the family life of students. In the study, it was observed that primary school teachers mostly assign homework for the purpose of revision.

In relation to the effects of homework on parents, Çetinkaya and Uzunkol (2019) stated that homework encourages parents to get involved in the educational process, but at the same time, it creates an additional responsibility for them. In their study, they emphasized that especially working parents are unable to dedicate time to their children's homework, and this can lead to family conflicts. The challenges and time constraints families face while helping with homework also show that this process may not always be a positive experience (Çetinkaya & Uzunkol, 2019). Hattie (2013) referred to 116 studies from around the world, which show that homework has almost no impact on children's learning in primary school. Furthermore, some studies have shown that homework can have a negative effect due to children developing strategies to do as little as possible, experiencing physical and emotional fatigue and losing interest in school (Hattie, 2013; as cited in Holte, 2016). In a study examining the impact of homework on academic success in Türkiye, it was concluded that there is no significant difference between assigning homework to students or not. The study also stated that although this finding contradicts the general consensus in the literature that homework has positive effects on success, it may be related to the quality of the homework given (Kapıkıran & Kıran, 1999). Although most teachers acknowledge the importance of homework, they do not pay enough attention to the planning and implementation processes of homework (Hallam, 2004; as cited in Turanlı, 2009). This highlights the need for homework to be assigned based on students' individual needs and teachers' unique evaluations, rather than general assumptions. In other words, it is crucial that homework be designed to accommodate individual student differences, be carefully evaluated and be followed by detailed feedback to students. Moreover, a teacher's attitude towards homework can influence both students and parents to take it more seriously, as it reflects the importance placed on homework (Hallam, 2004; as cited in Turanlı, 2009).

Homework and Attitude

In the examination of the effects of homework, another factor of interest besides academic success is children's attitudes towards homework. The term attitude is understood as an evaluative tendency (positive or negative) that conditions the subject to perceive and

respond in a certain way in light of objects (people, groups, ideas, situations, etc.). It is a learned tendency, not innate, and while it can change, it is relatively stable (Suárez et al., 2019). The subject of interest in the current study is how much students enjoy their homework. In this regard, the study focuses on students' attitudes towards the homework assigned in mathematics class because it is believed that primary school students' attitudes towards homework play an important role in their academic success and the effectiveness of their learning processes. Research shows that positive attitudes towards homework increase the frequency and quality of students' homework completion, thereby improving learning outcomes (Cooper et al., 2006).

Although gender is not included as a variable in the current study and time allocated for homework is not addressed, some studies suggest that girls may put more effort into the assigned homework and have more positive attitudes towards homework compared to boys (Corno, 2000; Çetinkaya & Uzunkol, 2019; Trautwein & Köller, 2003). Moreover, in a study conducted on twelfth-grade students to examine the effects of motivation, interest and engagement on mathematics achievement, the structural equation model established revealed that the time spent on math homework was significantly and positively related to attitudes toward mathematics (Singh et al., 2002; as cited in Smith et al., 2021). Students' interest in assignments and the value they place on these tasks directly affect their motivation and enable greater participation in the learning process. In this context, it is emphasized that educational policies should be structured in a way that supports students' positive interaction with homework (Vatterott, 2009). When individual differences are considered, it is thought that assigning differentiated homework could influence students' attitudes towards mathematics homework.

Differentiated Homework

From the past to the present, homework has been a significant topic that has occupied scientists interested in developing and evaluating education in many countries around the world in terms of quantity, quality, difficulty level and the way homework is assigned. In addition, it has been pointed out that the homework assigned to students is not of sufficient quality (Algani & Alhaija, 2022). In Türkiye, in addition to the fact that a large amount of homework is assigned, it is observed that the same amount and content of homework are given to all students. However, it is emphasized that individual differences should be considered in education, as students' levels of benefit from a particular teaching practice and their responses to this practice vary according to their individual characteristics (Kuzgun & Deryakulu, 2004). When differentiated instruction is taken into account, it is an approach that aims to personalize the learning process by differentiating teaching approaches and learning environments according to students' individual characteristics, different learning styles, needs and levels (Demir, 2021; Sousa & Tomlinson, 2018; Tomlinson, 2014). In this approach, it should be taken into account that homework can also be differentiated.

When studies on differentiated instruction in mathematics teaching at the primary school level are examined, it is generally seen that differentiated instruction focuses on its effects on students' achievements (Demir, 2013; Göl, 2021), mathematical reasoning skills, use of metacognitive learning strategies and problem-solving abilities (Çoban, 2019), attitudes

towards mathematics lessons (Ekinci, 2016) and the academic success of students with special needs (King, 2016). Other studies are found to be conducted at the middle school level with similar focuses (Avcı et al., 2022; Çoban, 2019; Karakaş, 2019; Şaldırdak, 2012; Taş & Sırnacı, 2018).

Educational research has focused on the critical role of homework in shaping elementary students' attitudes towards homework, academic performance and skill development. It has been noted that perceptions of homework change with age, with younger students exhibiting more positive attitudes compared to older students (Cooper et al., 2006). Therefore, it is important for students at the beginning of their school years to have a positive attitude towards homework, as it is known that affective traits acquired early are more resistant to change later (Brophy, 1986). The data collected from the current study will reveal the attitudes of fourth-grade students towards homework. What distinguishes the current study from others is its focus on examining the effect of providing differentiated homework, tailored to individual differences, on students' attitudes towards homework.

Homework is a method frequently used at the primary school level to help students acquire various skills and reinforce the knowledge they have learned. However, in the literature, there are many different perspectives and practices regarding homework at the primary school level. Moreover, when the literature is reviewed, it is seen that the need to examine the effect of differentiated homework in mathematics lessons on students' attitudes towards homework emerges as significant, particularly in the context of addressing students' individual learning needs and enhancing their engagement in the learning process. Traditional homework is often assigned to all students at the same level of difficulty and in the same quantity, which may not be suitable for each student's learning style, pace and needs (Tomlinson, 2001). Therefore, differentiated homework can better address students' individual learning needs and help maintain their interest in the subject. Differentiated homework consists of tasks that are varied according to students' readiness levels, learning styles and areas of interest (Tomlinson, 2001). This approach allows students to participate more effectively in their learning processes by taking their individual differences into account.

Research shows that students' attitudes towards homework have a significant effect on their academic success and motivation (Cooper, 2001; Cooper et al., 2006; Trautwein & Lüdtke, 2007; Zimmerman & Kitsantas, 2005). Students with a positive attitude towards homework complete their assignments more regularly and willingly, while negative attitudes can lead students to develop resistance towards homework. Differentiated homework in mathematics allows students to develop a positive attitude towards homework because this type of homework is tailored to the student's own skill level and interests (Tomlinson, 2001). Similarly, students' display of positive attitudes towards homework and their expression of emotions are directly related to their consistent effort, as well as the development of their independent learning skills. This situation indicates that students, by being aware of their own learning processes, can develop learning habits even without teacher guidance, and it is considered one of the key components of homework motivation (Graven, 2016). It is stated that traditional homework in mathematics can create anxiety and stress in students, and this situation can negatively affect students' interest in the subject (Elgit, 2019). It is emphasized

that differentiated homework can reduce these negative effects and contribute to students developing positive attitudes towards lessons (Tomlinson, 2001).

In this context, the main purpose of the current study is to comparatively examine the effects of differentiated and traditional homework methods applied in the 4th grade mathematics lessons on students' attitudes towards homework. The examination of the effect of differentiated homework in mathematics on students' attitudes towards homework is expected to contribute to the educational sciences literature and also help teachers improve their in-class and out-of-class practices. Understanding the potential of differentiated homework to increase student motivation and success can raise teachers' awareness of this approach and support the implementation of more effective teaching strategies.

In the current study, the aim is to answer the question, "Is there an effect of differentiated homework in the 4th grade mathematics lessons on students' attitudes towards mathematics homework?" In line with this main question, the sub-problems of the study are as follows:

1. Is there a significant difference between the pre-test and post-test mean attitude scores of the control group students towards mathematics homework?

2. Is there a significant difference between the pre-test and post-test mean attitude scores of the experimental group students towards mathematics homework?

3. Is there a significant difference between the post-test mean score of the experimental group students, who were given differentiated homework, and that of the control group students, who were given traditional homework, regarding their attitudes towards mathematics homework?

4. Do the emotional expressions of the students in the control group support their attitude scores towards traditional homework?

5. Do the emotional expressions of the experimental group students towards differentiated homework support their attitude scores after the completion of the experimental process?

Method

Research Model

The current study was conducted using a pre-test/post-test control group quasi-experimental design (Büyüköztürk, 2020). Quasi-experimental designs are preferred in situations where the controls required in true experimental models cannot be ensured or are insufficient (Karasar, 2012). Participants in this design are selected through a matching process from pre-existing groups (Büyüköztürk et al., 2019). In the study, since there was no possibility of random assignment of participants to the experimental and control groups, the use of a quasi-experimental design was deemed appropriate.

Study Group

This study was conducted with the participation of fourth-grade students attending two different classes of a primary school in Kayseri during the 2023-2024 school year. The school

was selected from Kayseri province by using convenience sampling, one of the purposive sampling techniques. This method allows the researcher to select a sample that is easily accessible, thereby facilitating the data collection process (Yıldırım & Şimşek, 2021).

Although the school was selected using the convenience sampling method, care was taken to ensure that the control and experimental groups selected from the eight classes in the school were equivalent in terms of their homework attitudes to contribute to the establishment of the validity and reliability of the study. In this context, the developed homework attitude scale was administered as a pre-test to the eight fourth-grade classes. The pre-test results were analyzed, and four classes that exhibited a normal distribution and showed no significant differences between them were selected. Two of these four classes were assigned to the experimental and control groups using the random sampling method. As a result, a total of 50 students, with 24 in the experimental group and 26 in the control group, were included in the study. The distribution of students by class is presented in Table 1.

Table 2.

The Distribution of the Students in the Experimental and Control Groups

	f	%
Experimental group	24	48
Control group	26	52
Total	50	100

Table 1 shows the distribution of students in the experimental and control groups of the study. The experimental group constituted approximately 48% of the study group (EG=24), while the control group constituted approximately 52% (CG=26).

Determining the Equivalence of the Study Groups

The current study was conducted in two different classes of a primary school in the Kocasinan district of Kayseri during the 2023-2024 school year. The study was carried out in two classes that were equivalent in terms of their pre-test mean scores on attitudes towards mathematics homework, selected from the eight classes available in the school.

Table 3.

Pre-Test Mean Scores of the Experimental and Control Group Students' Attitudes towards Mathematics Homework

Variables	Groups	*n*	*M*	*SD*	*t*	*df*	*p*
Homework attitude	Experimental group-pre-test	24	.81	.31	.95	49	.343
	Control group-pre-test	26	.73	.29			

Data Collection Tool

In the current study, the "Attitude Scale towards Mathematics Homework" developed by Bora (2018) was used to determine the attitudes of the students in the experimental and control groups towards mathematics homework.

Attitude Scale towards Mathematics Homework

In the current study, the "Attitude Scale towards Mathematics Homework" developed by Bora (2018) was used to determine the effect of differentiated homework designed by the researcher and traditional homework assigned by the primary teacher on the attitudes of fourth-grade primary school students towards mathematics homework. In the current study,

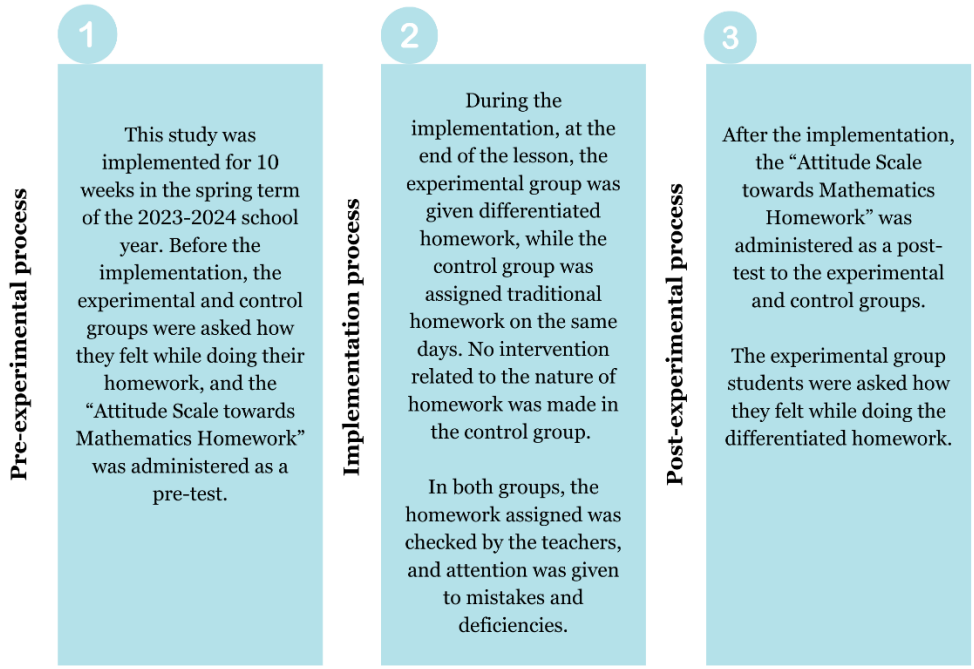
the "Attitude Scale towards Mathematics Homework", developed by Bora (2018) and subjected to validity and reliability studies, was administered to the students before and after the implementation. This scale is a five-point likert-type scale and the response options are "Strongly Agree", "Agree", "Undecided", "Disagree" and "Strongly Disagree". The scale consists of a total of 21 items, including 14 positive statements and 7 negative statements (4, 9, 11, 12, 16, 18, 21). At the end of the experimental process, the Cronbach's Alpha reliability coefficient of the scale was calculated as .85. The researchers conducted the reliability study of this scale, developed by Bora (2018), with 91 students attending the 4th grade of primary school. The content validity of the scale was evaluated through expert opinions, and the Cronbach's Alpha coefficient obtained from the reliability analysis was determined to be .80. In addition, in order to better interpret the attitude scores, the students in the experimental and control groups were asked the question, "How do you feel while doing the homework assigned in the mathematics lesson?" at the beginning of the experimental process, and they were asked to write down their feelings.

Implementation Process in the Study

The "Attitude Scale towards Mathematics Homework" was administered as a pre-test at the beginning of the experimental process and as a post-test at the end to the experimental and control groups. By evaluating the obtained results, an analysis was conducted to determine whether assigning differentiated homework in mathematics compared to traditional homework had an effect on students' attitudes towards the mathematics homework assigned. The implementation process of the study is as follows.

Figure 1.

Implementation Process and Its Stages

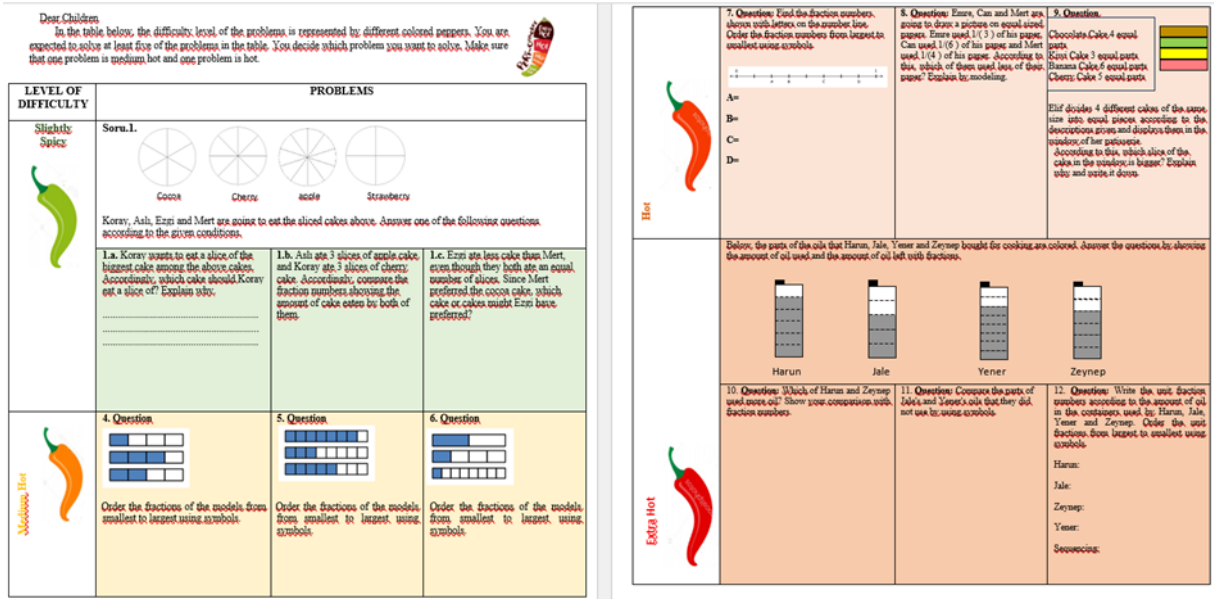


During the study, the students in the experimental group received 5 hours of mathematics lessons per week for 10 weeks, with two assignments each week. At the end of

each mathematics lesson, differentiated mathematics homework was assigned, collected during the process, checked, feedback was provided in the classroom, and a discussion environment was created. In the control group, homework was also assigned by the primary teacher during the same weeks and hours, and the researcher did not intervene in the homework. However, just like in the experimental group, the homework in the control group was collected during the process, checked, feedback was provided in the classroom, and a discussion environment was created. In both groups, after each homework assignment, a discussion environment was created with the students, and the deficiencies and mistakes in the homework were addressed and evaluated. During the in-class correction, the "class-wide correction homework technique" was used, where the mistakes made by the students were projected onto the board and corrected. The class-wide correction technique involves writing the mistakes on the board and making corrections with the input of the entire class (Atlı, 2012). This technique encouraged students to search for different solutions to each other's mistakes and ensured that correct solutions were learned by other students as well (Demirel, 2011). After reviewing the relevant literature, the differentiated homework assignments were presented to a mathematics education professor, a Turkish language teacher, a mathematics teacher and four primary school teachers, and expert opinions were gathered and evaluated. In addition, the researcher has been conducting lessons using the differentiated instruction approach for many years at her educational institution. The necessary adjustments to the homework assignments were made based on the experts' recommendations. The homework assignments prepared for the subjects of "Fractions" and "Time Measurement" were distributed to the experimental group. In both groups, the learning outcomes related to the subjects of "Fractions" and "Time Measurement" were covered by the primary teachers.

Figure 2.

Example 1 of Differentiated Mathematics Homework on Fractions



In Figure 2, an example of differentiated homework is provided, where level differentiation is made according to the mathematics learning level, and the homework includes questions that students can choose from based on their own level. In Figure 2 given as a differentiated homework, students are expected to choose one problem from the horizontal

columns according to the difficulty levels of the questions. In the differentiated homework sheet, the problems become more difficult in the horizontal columns (mildly challenging, moderately challenging, challenging, and extra challenging), with every third problem in each row becoming progressively harder, from problem 1 to problem 3. This approach allows students to select problems based on their perceived difficulty, while ensuring that all problems address the same learning outcome.

Figure 3.

Example 2 of Differentiated Mathematics Homework on Fractions

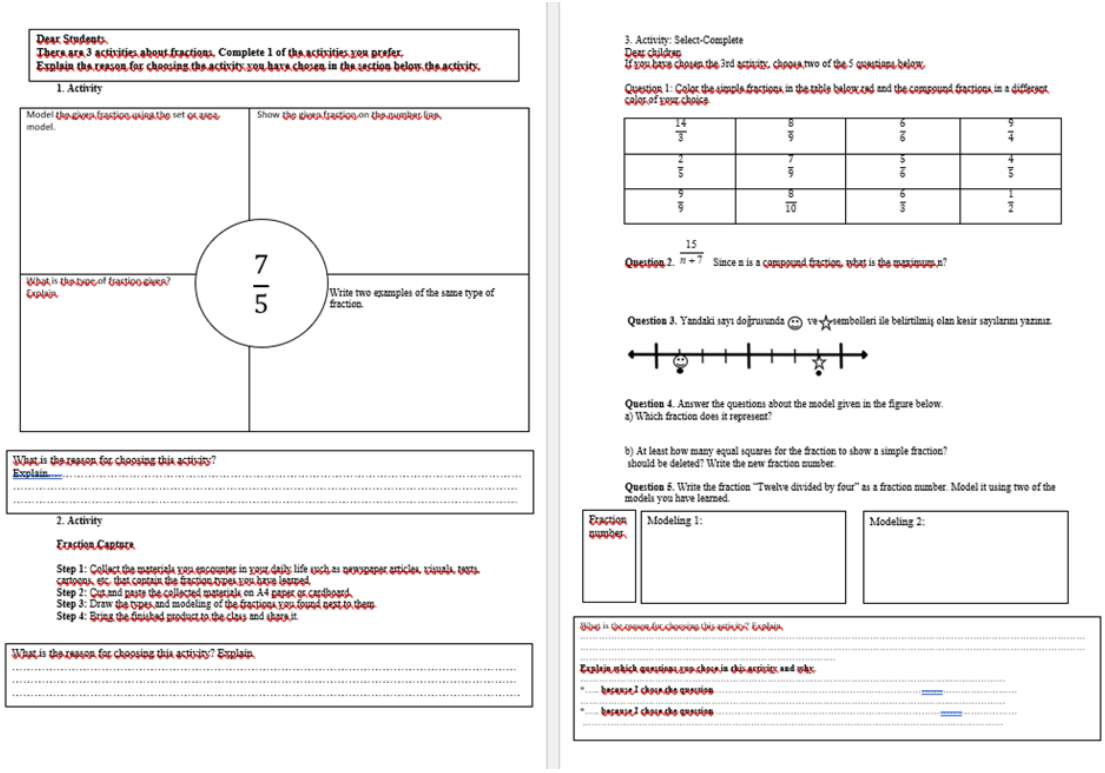


Figure 3 shows another example of differentiated math homework. In the homework sheet in Figure 3, students are presented with three activities and are asked to choose one activity. In the activities, the first activity uses the Frayer model, which progresses from easy to difficult. In the second activity, students are asked to find examples of fractions from newspapers, magazines, and various sources that include real-life fraction examples, and create a poster displaying the types and models of fractions found there. In the third activity, five questions related to the subject are presented to the students, and they are asked to choose and solve three of the five questions. Students were given the opportunity to choose both the amount of homework and the types of questions.

Figure 4.

Traditional Math Homework Example on Fractions

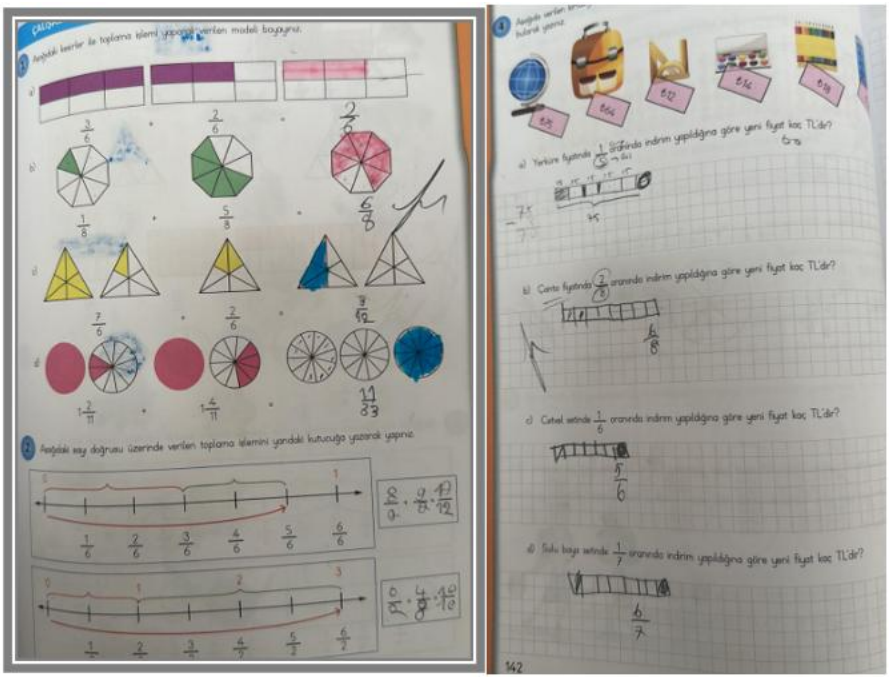


Figure 4 presents an example of the fractions homework given to all students from the same page, with the same amount and level of difficulty.

Data Analysis

In the current study, various statistical methods and techniques were used for the analysis of the collected data. Data classification procedures were carried out by calculating frequency and percentage values. The scale items were separated based on the positive or negative direction of the statements they contained, and reverse coding was applied to the data based on this separation. Then, the obtained data were organized in tables. To determine the attitudes of the groups, a pre-test was administered to both the experimental and control groups, and the groups were found to be equivalent.

To compare the attitude levels of the experimental and control groups towards mathematics homework, the pre-test and post-test mean scores of the experimental and control groups were analyzed using an independent samples t-test. At the same time, the differences between the pre-test and post-test attitude scores of the experimental group were examined using the paired samples t-test. to test the normality of the groups' data distributions, the Shapiro-Wilk normality test and kurtosis-skewness values were examined, and it was determined that the normality assumption was met for both groups. The data analysis was conducted using the SPSS 27 statistical software package. The pre-test and post-test distributions of the data showed normal distribution for both the experimental and control groups. The data analysis was conducted using the SPSS 27 statistical software package. To better assess the students' attitude scores towards the mathematics homework, a table was created based on the content analysis of the emotional expressions related to the homework. The frequencies were calculated, and the results were supported by direct student quotations.

Ethical Permits of Research:

In the current study, all the rules specified under the "Regulations on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions listed under the second section of the regulation, titled "Actions Contrary to Scientific Research and Publication Ethics", were carried out.

Ethics Committee Permission Information:

Name of the committee that made the ethical evaluation = Gazi University Rectorate Ethics Commission

Date of ethical review decision = 22.01.2024

Ethics assessment document issue number = 2024 - 79

Findings

This section presents the findings obtained from the data analysis related to the main aim and sub-aims of the study, along with the interpretations of these findings. The findings related to the comparison of the pre-test and post-test attitude scores of the control group students, who were given traditional homework, are presented in Table 4.

Table 4.

Comparison of the Pre-Test and Post-Test Attitude Scores of the Control Group Students

Variables	Groups	*n*	*M*	*SD*	*t*	*df*	*p*
Homework attitude	Control group-pre-test	24	3.73	.46	1.86	25	.001
	Control group-post-test	26	3.69	.24			

When Table 4 is examined, it is seen that there is a significant difference between the control group students' pre-test mean attitude score and post-test mean attitude score ($t_{(26)}$=1.86; p<.05). The control group students' pre-test mathematics homework attitude mean score (M=3.73) is higher than their post-test mean attitude score (M=3.69). According to the data in Table 4, there is a statistically significant difference between the control group students' pre-test mean attitude and post-test mean attitude scores in favour of the pre-test. In other words, the traditional homework given to the students negatively affected their attitudes towards homework.

The findings obtained from the comparison of the pre-test and post-test mean attitude scores of the experimental group students, who were assigned differentiated homework in mathematics lessons, are presented in Table 5.

Table 5.

Comparison of the Pre-Test and Post-Test Attitude Scores of the Experimental Group Students

Variables	Groups	*n*	*M*	*SD*	*t*	*df*	*p*
Homework attitude	Experimental group-pre-test	24	3.81	.31	-7.18	24	.001
	Experimental group-post-test	26	4.29	.22			

When Table 5 is examined, it is seen that there is a significant difference between the experimental group students' pre-test and post-test mean attitude scores ($t_{(25)}$=-7.18; p<.05). The pre-test mean attitude score of the experimental group students (M=3.81) is lower than their post-test mean attitude score (M=4.29). The significant difference found between the pre-test and post-test mean scores is in favour of the post-test mean score. In other words, it can

be said that differentiated homework positively affected the students' attitudes towards homework.

The findings obtained from the comparison of the post-test mean attitude scores of the experimental group students, who were assigned differentiated homework, and the control group students, who were assigned traditional homework, are presented in Table 6.

Table 6.

Comparison of the Post-Test Mean Attitude Scores of the Experimental and Control Groups

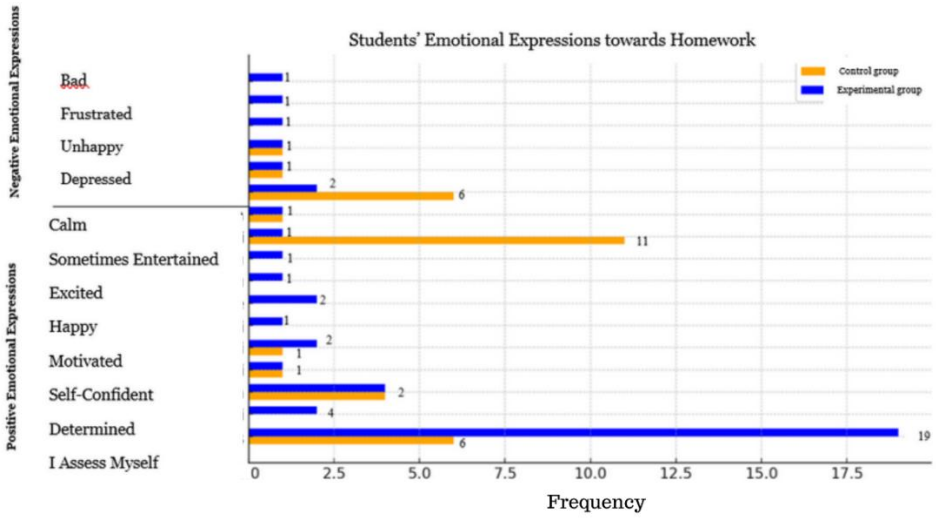
Variables	Groups	*n*	*M*	*SD*	*t*	*df*	*p*
Homework attitude	Experimental group-post-test	24	4.29	.22	7.73	49	.001
	Control group-post-test	26	3.69	.31			

When Table 6 is examined, it is seen that the homework attitudes of the students in the experimental group show a significant difference compared to those of the students in the control group. The post-test mean attitude score of the experimental group students (M=4.29) is higher than that of the control group students (M=3.69). As a result of the analysis, it was determined that the mean attitude score of the students in the experimental group is significantly higher than that of the students in the control group ($t_{(51)}$=-7.73; p<.05). In other words, it can be said that the differentiated mathematics homework assigned to the experimental group significantly improved the students' attitudes towards homework compared to the homework assigned to the control group.

The responses of the experimental and control group students to the question, "How do you feel while doing mathematics homework?", which reflects their emotional expressions towards homework in mathematics lessons at the beginning of the experimental process, are presented in Graph 1.

Graph 1.

Students' Emotional Expressions towards Homework



When the emotional expressions of the experimental and control group students towards the homework assigned to them in mathematics lessons at the beginning of the experimental process are examined, the prominent emotions expressed in the experimental group include "feeling good, nice and pleasant while doing the homework" (f=19) and "feeling they can understand the subject better" (f=4). In the control group, students expressed that

they sometimes felt entertained (f=11), experienced good, nice and pleasant feelings (f=6), but at times also felt bored (f=11) regarding the mathematics homework assigned to them. Other emotional expressions include positive feelings such as feeling successful, hardworking, determined, confident, motivated and happy while doing homework, while negative emotions like feeling nervous, bad, frustrated, unhappy and depressed are present, though to a lesser extent, in both groups.

The direct quotations for the emotional expressions mentioned in the above graph are as follows:

E1. I feel successful.

E10. I feel happy, proud and determined.

E13. It feels so good.

E14. I feel good.

E18. I feel entertained, nice and pleasant.

C5. I feel excited and nice.

E12. I feel that I can understand the lesson better.

E20. … because I improve on the subject

C21. … I can do it from easy to difficult by assessing myself.

E24. … I feel bad.

C16. Bored and frustrated.

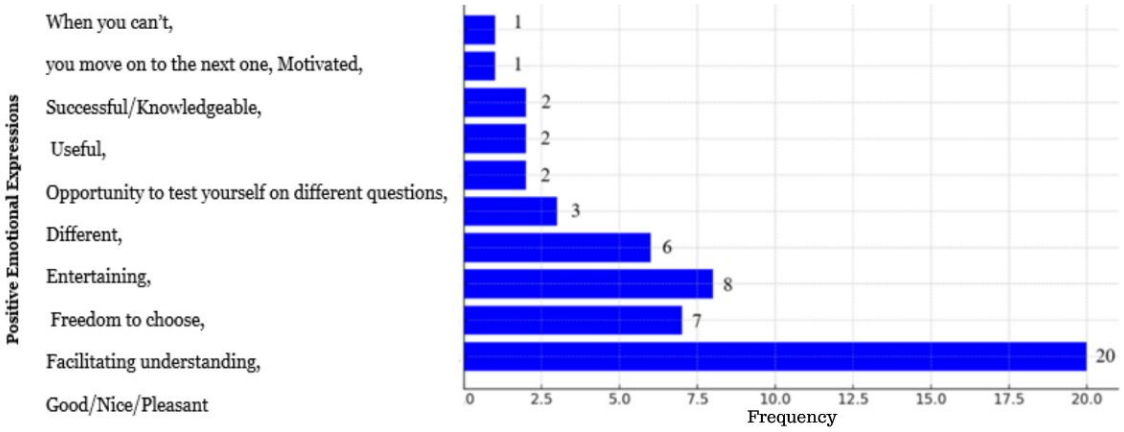
C18. I get bored because we already do the same things at school.

C23. I'm so bored.

In the study, after the experimental process, the emotional expressions of the experimental group students in response to the question, "How did doing the homework of your choice make you feel?" regarding the mathematics homework assigned to them, are presented in Graph 2.

Graph 2.

Emotional Expressions of the Experimental Group Students towards Differentiated Homework



The experimental group students expressed more positive emotions such as feeling good, nice and pleasant (f=20) while doing their differentiated mathematics homework. In addition, emotions such as experiencing the freedom to choose (f=8), finding it easier to understand (f=7), and feeling that it was entertaining (f=6) were also commonly expressed. To a lesser extent, students mentioned that they found these assignments different, had the opportunity to assess themselves with different questions, found them useful, and were able to move on to the next question when they couldn't complete one. They also stated that they felt successful and knowledgeable.

The direct quotations from the emotional expressions mentioned in the above graph are as follows:

E2. It made me feel good because the homework I chose myself is always very nice.

E5. It made me feel very nice because it made me feel better.

E8. It made me feel good because everyone could choose the easy or the difficult one, the one they liked, or the homework related to the subject they wanted.

E11. The homework we choose ourselves is better; we can learn quickly and understand how to do it.

E15. It helped me understand.

E16. When I couldn't solve a question, I chose another one, and this made the homework fun.

E22. It made me feel very good because I could choose the questions I wanted.

E24. I felt amazing because it helped me understand the lesson.

Discussion and Conclusion

In the current study, it was aimed to investigate the effect of differentiated mathematics homework assigned to fourth-grade primary students on their attitudes towards mathematics homework. The findings revealed that the experimental and control group students initially had equal attitude scores towards mathematics homework but the differentiated mathematics homework assigned to the experimental group had a positive effect on the students' attitudes towards mathematics homework compared to the traditional homework assigned to the control group. Moreover, while the attitudes of the experimental group students, who were assigned the differentiated homework, showed a positive change, the attitudes of the control group students, who were assigned the traditional homework, changed negatively.

At the beginning of the experimental process, when the students in both the experimental and control groups were asked, "How do you feel while doing mathematics homework?", the emotional expressions of the students revealed that in the experimental group, the emotions of "feeling good, nice and pleasant while doing the homework" and "feeling that they could understand the subject better" were more prominent. On the other hand, in the control group, students expressed that they "sometimes felt entertained, experienced good, nice and pleasant feelings, but at times also felt bored" while doing their homework. To a lesser extent, other emotional expressions such as feeling successful,

hardworking, determined, confident, motivated and happy while doing their homework, as well as negative emotional expressions such as feeling nervous, bad, frustrated, unhappy and depressed, are common in both groups. In response to the question, "How did you feel while doing the differentiated mathematics homework assigned in the mathematics lesson?" asked to the experimental group in the study, the students expressed emotions similar to their previous emotional responses, such as feeling much better, pleasant and nice while doing the homework, finding it easier to understand and enjoying it. They also mentioned feeling successful and knowledgeable. Notably, unlike the previous expressions, there were no negative emotions. The opportunity for children to choose in the differentiated homework might have provided them with a chance to take responsibility for their own learning because the opportunity for students to monitor themselves through homework not only fosters a sense of responsibility but also enables them to feel proud of themselves and experience a sense of achievement (Jamal & Rizvi, 2021).

In the study, students stated that with the differentiated homework, they had the opportunity to assess themselves with questions of different levels, found it useful, and were able to move on to the next question when they couldn't complete one. This may be an indication that the assigned homework served its intended purpose. At the same time, these emotions may have contributed to the positive change in students' attitudes towards homework. Moreover, the emotional expressions of the experimental and control group students towards homework align with the positive attitude statements in the attitude scale, such as "I enjoy doing homework, it helps me learn better and I have fun doing it", as well as the negative attitude statements like "it can sometimes be boring and I don't enjoy it".

When all the results are considered together, it shows that differentiated mathematics homework can be effective in helping students develop a positive attitude towards mathematics homework. It can be said that in both groups of students, and especially in the experimental group, the results showed that children had a more positive attitude towards homework. Similarly, Emily (2016) found in a study conducted in preparatory schools that students had positive perceptions of homework (as cited in Algani & Alhaija, 2022). Factors that positively influence students' attitudes towards homework include parental involvement, teacher feedback, and the students' intrinsic motivation (Cooper et al., 2006). Moss and Brookhart (2019) emphasized the importance of constructive feedback from teachers in creating positive homework attitudes, suggesting that timely feedback can increase students' participation in and compliance with homework. Constructive feedback and the relevance of homework to classroom learning can positively affect students' attitudes (Moss & Brookhart, 2019).

In the current study, differentiated homework was designed as a learning tool that is both challenging and achievable, taking into account students' interests, levels and various preferences and was used during the instructional process. It has been stated that teachers who design both challenging and achievable homework, and provide feedback that guides development, can help students view the homework process as a valuable learning tool (Corno, 2000). The suitability of homework to students' age and skill levels, its engaging nature and its connection to real life play a critical role in developing a positive attitude towards homework

(Trautwein et al., 2006). Boring, repetitive and highly difficult homework, on the other hand, increases students' avoidance behaviours towards homework and lead to the development of negative attitudes towards it. Some of the reasons why students develop negative attitudes towards homework are observed in students who perceive homework as a boring, uncomfortable and unpleasant task. This group may show reluctance towards doing homework, and this is often associated with low academic performance (Epstein & Van-Voorhis, 2001).

Considering factors such as students' interest, motivation and learning level in mathematics, the use of differentiated homework is believed to create a positive process, both in terms of the contribution of the homework to the students and in terms of students' attitudes and emotional expressions towards homework. Differentiating homework according to students' cognitive, affective and psychomotor characteristics, as well as allowing them to engage in activities that align with their preferences during this differentiation process, positively influenced students' attitudes towards homework, and this was reflected in their emotional expressions as well. Moreover, feedback was given and discussions were conducted with students during the differentiated homework process within the lessons. In this regard, in a study conducted by Işık Tertemiz (1991), it was stated that students in the group where homework was given and discussed scored higher on retention tests, indicating that retention was greater in this group. A similar situation occurred in the current study as well, and this may have been reflected in children's attitudes because children stated that they felt successful, knowledgeable and willing to try different questions. Although feedback was provided to both groups in the study, it can be considered that the feedback given according to individual differences in the experimental group was more effective. Arıkan (2017) stated that homework that is not effectively integrated into the teaching process is not beneficial for students, and that homework which is not discussed in the classroom or lacks feedback creates a burden for both students and families. Similarly, in the study by Kaur (2011), it was found that the purpose of homework assigned by teachers for instructional purposes is to help students reinforce what they have learned in class and prepare them for upcoming tests and exams. This finding aligns with the student opinions expressed in the current study, such as "it helps me understand better", "it contributes to my learning" and "I assess myself". In addition to all these results, the findings align with the expectancy-value theory proposed by Abu-Hilal et al. (2013), which approaches the topic through the value theory. According to this theory, homework motivation is conceptualized as having both an expectancy and a value component. A student's belief that he/she can successfully accomplish goal-directed behaviour represents the expectancy component. The value component, on the other hand, supports outcomes as various types of value, such as achievement value (succeeding in homework is important), intrinsic value (homework is an enjoyable task) and utility value (homework will be beneficial in the future).

In the control group, a decrease in attitude scores towards homework was observed in the post-test results, and more negative emotional expressions were uttered compared to the experimental group. In the mentioned study, it was concluded that homework assigned through a traditional approach, based solely on repetition and practice, can negatively affect students' perception of learning responsibility and their ability to take on that responsibility. This is in line with the findings of Duru and Çöğmen (2017). In this study, the traditional

approach is to rely solely on repetition and practice. It was concluded that homework assignments may negatively affect students' perception of learning responsibility and their ability to assume this responsibility.

Similarly, in the current study, it was determined that homework prepared in accordance with the traditional approach did not contribute positively to students' learning processes in terms of attitudes at the expected level. Similarly, Cooper et al. (1998), found that in lower grades (2nd and 4th), teacher-assigned homework was associated with negative student attitudes. It can also be said that the increasing and repetitive prestige loss of homework carries the risk of reducing the benefits of homework, encouraging students' negative attitudes towards homework and promoting intrinsic demotivation (Suárez et al., 2019).

According to Hong et al. (2015), many critics have addressed the negative impacts of homework on students and have stated that standardized homework policies should be revised. Similarly, while it is noted that the decrease in motivation for school tasks in older students affects their motivation to complete homework (Hong et al., 2011; Pfeiffer, 2018), on the other hand, as indicated in the emotional expressions towards homework, a significant portion of middle and high school students state that homework is effective in developing their academic skills and achieving success (Hong et al., 2011). In addition, among the reasons why students express negative feelings towards homework, it is mentioned that limitations such as homework sometimes overwhelming children's minds with academic information, which prevents them from participating in social activities or spending time on entertainment, may be contributing factors. Kaplan (2018) also states that students' reluctance to do homework is a common issue for both teachers and parents.

In conclusion, this study contributes to the literature supporting the integration of emotional components into educational strategies. The clear benefits observed in the experimental group improved students' attitudes towards mathematics, potentially leading to better educational outcomes. In general, homework designed using the differentiated instruction method confirms the commitment to developing and implementing educational interventions that lead to a more positive approach to learning.

Recommendations

Given the strong positive changes in attitudes observed in the experimental group, future research could explore scaling these interventions across different schools or educational systems and evaluate their effectiveness in various environments. Furthermore, it would be beneficial to examine the durability of these attitude changes over time to determine whether the improvements persist in the long term and how they relate to actual performance in mathematics.

Taking these findings into account, educational policymakers, when designing curricula that include not only cognitive goals but also emotional objectives, may aim to create a holistic educational experience that encourages both knowledge acquisition and positive emotional engagement with the subject. The similarity in attitudes towards homework before the study and the differences that emerged after the study in favour of the experimental group suggest that it is not so much the homework itself, but rather the way it is assigned, that plays

a crucial role. Therefore, the reasons behind the negative shift in the attitudes among the control group students can be examined in depth.

Furthermore, the subject can be approached from a broader perspective and evaluated with a holistic viewpoint (in-depth perspective on homework, teacher behaviour, parental approach and contribution, activities after homework, etc.). Moreover, a broader range of findings and insights can be obtained through interviews. On the other hand, it could be explored how students' attitudes towards and experiences with homework change as they move up in grade levels, from primary to middle school.

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Author 2: 50%

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There is no conflict of interest that the authors will declare in the research.

Notice of Use of Artificial Intelligence

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İlkokul 4. Sınıfta Farklılaştırılmış Matematik Ev Ödevlerinin Öğrencilerin Ödeve Yönelik Tutumlarına Etkisi

Özet

Bu araştırmanın amacı matematik dersinde farklılaştırılmış yöntem ile tasarlanan ev ödevleri ile geleneksel ev ödevlerinin, ilkokul 4. sınıf öğrencilerinin matematik dersi ev ödevlerine yönelik tutumlarına etkisini incelemektir. Araştırmada nicel araştırma yöntemlerinden ön test-son test kontrol gruplu yarı deneysel desen kullanılmıştır. Çalışma grubu 2023-2024 eğitim öğretim yılında Kayseri ilinde yer alan bir devlet ilkokulunda 4. sınıfta öğrenim sürecine devam eden 25 deney, 26 kontrol grubu öğrencisinden oluşmaktadır. Araştırmada veri toplama aracı olarak Bora (2018) tarafından geliştirilen "Matematik Dersine Yönelik Ödev Tutum Ölçeği" ile "Yarı Yapılandırılmış Görüşme" uygulanmıştır. Deney grubuna araştırmacının tasarladığı farklılaştırılmış ev ödevleri, kontrol grubuna ise geleneksel ev ödevleri 10 hafta boyunca verilmiştir. Çalışma sonunda deney ve kontrol grubu öğrencilerinin son test sonuçlarında deney grubu lehine anlamlı fark bulunmuştur. Ayrıca hem deney hem de kontrol grubunun grup içi ön test-son test karşılaştırmalarında son test lehine anlamlı fark olduğu, bu farkın deney grubunda daha yüksek olduğu tespit edilmiştir. Öğrencilerin ödeve yönelik duygu ifadeleri, nicel bulguları destekler nitelikte olduğu belirlenmiştir. Araştırma kapsamında öğrencilerin ilkokuldan ortaokula geçişte ev ödevine yönelik tutum ve deneyimlerindeki değişimler de incelenebilir.

Anahtar Kelimeler: Farklılaştırılmış matematik ödevi, ilkokul matematik eğitimi, farklılaştırılmış ev ödevi, farklılaştırılmış öğretim, ev ödevine yönelik tutum.

Giriş

Ev ödevleri, öğrencilerin bireysel sorumluluk kazanmalarını, entelektüel yeteneklerini geliştirmelerini ve kendi kendine öğrenmelerini destekleyen önemli bir eğitim aracıdır (Algani & Alhaija, 2022; Zentall & Goldstein, 1999). Ancak, öğrencilerin ödevlere yönelik algıları, akademik başarı ve motivasyon üzerinde belirleyici bir faktördür (Cooper, 2001; Demir, 2013; Epstein & Van-Voorhis, 2001). Ödevlerin akademik başarı üzerindeki etkisi tartışmalı olup, bazı araştırmalar olumlu katkılar sunduğunu belirtirken (Cooper vd., 2006), aşırı ödev yükünün stres ve tükenmişliğe yol açabileceği ifade edilmektedir (Hattie, 2013; Kohn, 2006). Ayrıca, ödevlerin niteliği ve bireysel farklılıkların dikkate alınması başarı üzerinde etkili olabilir (Kapıkıran & Kıran, 1999). Farklılaştırılmış ödevler, öğrenci seviyesine uygun olarak düzenlendiğinde, motivasyonu artırabilir ve kaygıyı azaltabilir (Elgit, 2019). Ancak, geleneksel yöntemler öğrencilerde stres yaratabilir ve öğrenme sürecini olumsuz etkileyebilir.

Bu araştırmada, matematik dersinde uygulanan farklılaştırılmış ve geleneksel ev ödevlerinin, öğrencilerin tutumları üzerindeki etkileri karşılaştırmalı olarak incelenmiştir. Özellikle, farklılaştırılmış ödevlerin akademik motivasyon ve başarı üzerindeki rolü değerlendirilmiştir. Araştırmanın, eğitim bilimleri literatürüne katkı sağlaması ve öğretmenlerin sınıf içi ve sınıf dışı uygulamalarını geliştirmelerine yardımcı olması

beklenmektedir. Öğretmenlerin bu yaklaşıma yönelik farkındalıklarının artırılması, daha etkili öğretim stratejilerinin uygulanmasını destekleyebilir.

Bu araştırmada, "İlkokul dördüncü sınıfta matematik dersinde farklılaştırılmış ev ödevlerinin öğrencilerin matematik ev ödevine yönelik tutumlarına etkisi var mıdır?" sorusuna cevap aramaktır. Bu temel soru doğrultusunda araştırmanın alt problemleri aşağıdaki gibidir:

1. Kontrol grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik tutumu ön test-son test tutum puan ortalamaları arasında anlamlı fark var mıdır?

2. Deney grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik tutumu ön test-son test tutum puan ortalamaları arasında anlamlı fark var mıdır?

3. Farklılaştırılmış ev ödevinin verildiği deney grubu öğrencileri ve geleneksel ev ödevinin verildiği kontrol grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik tutumu son test puan ortalamaları arasında anlamlı fark var mıdır?

4. Deney ve kontrol grubu öğrencilerinin geleneksel ev ödevlerine yönelik duygu ifadeleri tutum puanlarını desteklemekte midir?

5. Deney grubu öğrencilerinin denel işlem sonrası farklılaştırılmış ev ödevlerine yönelik duygu ifadeleri tutum puanlarını desteklemekte midir?

Yöntem

Araştırmanın Modeli

Bu araştırma, ön test-son test kontrol gruplu yarı-deneysel bir desen kullanılarak gerçekleştirilmiştir (Büyüköztürk, 2020). Yarı-deneysel desenler, gerçek deneysel modellerde gerekli olan kontrollerin sağlanamadığı veya yeterli olmadığı durumlarda tercih edilmektedir (Karasar, 2012). Bu tür bir desende, katılımcılar mevcut gruplar arasından eşleştirilerek belirlenmeye çalışılır (Büyüköztürk vd., 2019). Araştırmada, katılımcıların deney ve kontrol gruplarına rastgele atama imkânı bulunmadığı için yarı-deneysel desenin kullanılması uygun görülmüştür.

Araştırmanın Çalışma Grubu

Bu araştırma 2023-2024 eğitim-öğretim yılı Kayseri ilinde bir ilkokulun iki farklı şubesinde öğrenim gören dördüncü sınıf öğrencileriyle yürütülmüştür. Örneklem seçimindeki okul seçimi amaçlı örneklem türlerinden, kolay ulaşılabilir örnekleme ile Kayseri ilinden seçilmiştir. Bu yöntem, araştırmacının veri toplama sürecini kolaylaştırmak amacıyla erişim sağlayabileceği bir örneklem seçmesine olanak tanımaktadır (Yıldırım & Şimşek, 2021).

Okulun seçimi kolay ulaşılabilir örneklem yöntemi olarak seçilmesine rağmen araştırmanın geçerliği ve güvenirliği açısından okulda bulunan sekiz şube arasından seçilecek kontrol ve deney grubunun ödev tutumu bakımından birbirine denk olmasına dikkat edilmiştir. Bu kapsamda, dördüncü sınıf düzeyindeki sekiz şubeye geliştirilmiş ödev tutum ölçeği ön test olarak uygulanmıştır. Ön test sonuçları analiz edilmiş ve normal dağılım sergileyen, aralarında anlamlı bir farklılık bulunmayan dört şube belirlenmiştir. Bu dört şubeden ikisi, rastgele küme örnekleme yöntemiyle deney ve kontrol gruplarına atanmıştır. Bu

süreç sonucunda, deney grubunda 24, kontrol grubunda ise 26 öğrenci olmak üzere toplamda 50 öğrenci araştırma kapsamına alınmıştır.

Bu araştırma 2023-2024 eğitim-öğretim yılında Kayseri ili Kocasinan ilçesinde bir ilkokulun iki farklı şubesinde öğrenim gören ve okulda bulunan sekiz şube arasından matematik dersinde ev ödevlerine yönelik tutum ön test puan ortalamaları bakımından birbirine denk olan iki şubede gerçekleştirilmiştir. Bu çalışmada, deney ve kontrol gruplarındaki öğrencilerin matematik dersine yönelik ev ödevi tutumlarını belirlemek amacıyla Bora (2018) tarafından geliştirilen "Matematik Dersinde Ev Ödevlerine Yönelik Tutum Ölçeği" kullanılmıştır.

Matematik Dersinde Ev Ödevlerine Yönelik Tutum Ölçeği

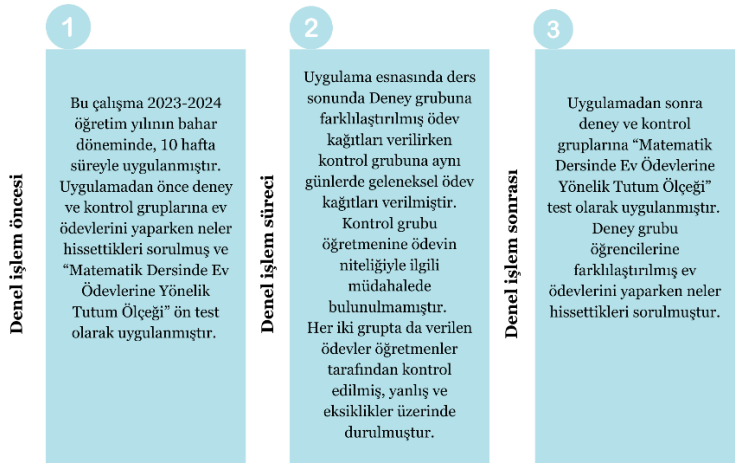
Araştırmada, matematik dersinde araştırmacı tarafından tasarlanan farklılaştırılmış ev ödevleri ile sınıf öğretmeni tarafından verilen geleneksel ev ödevlerinin, ilkokul dördüncü sınıf öğrencilerinin matematik dersine yönelik ev ödevi tutumları üzerindeki etkisini belirlemek amacıyla Bora (2018) tarafından geliştirilen "Matematik Dersinde Ev Ödevlerine Yönelik Tutum Ölçeği" kullanılmıştır. Araştırmada, uygulama öncesi ve sonrası öğrencilere Bora (2018) tarafından geçerlik ve güvenirlik çalışmaları yapılmış beşli likert tipi 21 maddeden oluşan bu ölçek uygulanmıştır. Ölçekte 14 olumlu, 7 olumsuz ifade bulunmakta olup, Cronbach's Alpha güvenirlik katsayısı .85 olarak hesaplanmıştır. Ölçeğin güvenirlik çalışması 91 ilkokul 4. sınıf öğrencisi üzerinde gerçekleştirilmiş ve kapsam geçerliliği uzman görüşleriyle değerlendirilmiştir. Ek olarak, tutum puanlarının daha iyi yorumlanabilmesi için deney ve kontrol grubu öğrencilerine denel işlem başında "Matematik dersinde verilen ev ödevlerini yaparken neler hissediyorsunuz?" sorusu yöneltilmiş ve duygu ifadeleri toplanmıştır.

Araştırmanın Uygulama Süreci

"Matematik Dersinde Ev Ödevlerine Yönelik Tutum Ölçeği" deneysel sürecin başlangıcında ön test, sonunda ise son test olarak deney ve kontrol gruplarına uygulanmıştır. Elde edilen sonuçlar değerlendirilerek matematik dersinde farklılaştırılmış ev ödevleri ile geleneksel ev ödevlerinin verilmesinin, öğrencilerin matematik dersinde verilen ev ödevlerine yönelik tutumları üzerinde bir etkisinin olup olmadığı analiz edilmiştir. Araştırmanın uyulama süreci aşağıdaki şekilde verilmiştir.

Şekil 1.

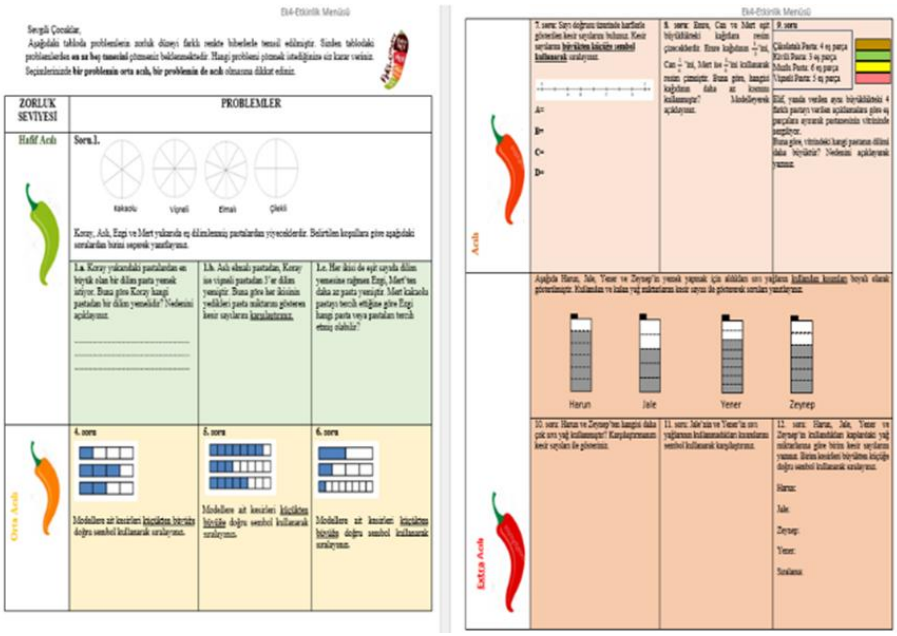
Araştırmanın Uygulama Süreci ve Aşamaları



Çalışma süresinde deney grubundaki öğrencilere 10 hafta, her hafta 5 saat matematik dersi, haftada iki ödev olmak üzere; matematik dersi sonunda farklılaştırılmış matematik ödevi verilmiş, ödevler süreç içerisinde toplanmış, kontrol edilmiş, sınıf içinde geri bildirim verilmiş ve tartışma ortamı da yaratılmıştır. Kontrol grubunda da yine aynı hafta ve saatlerde sınıf öğretmeni tarafından ödev verilmesi sağlanmış ve ev ödevlerine araştırmacı tarafından müdahale edilmemiştir. Ancak deney grubundaki gibi ödevler süreç içerisinde toplanmış, kontrol edilmiş, sınıf içinde geri bildirim verilmiş ve tartışma ortamı da yaratılmıştır. Her iki grupta da verilen her ödevin ardından öğrencilerle birlikte bir tartışma ortamı oluşturulmuş, ödevlerdeki eksiklikler ve hatalar ele alınarak değerlendirilmiştir. Sınıf içi kontrol sırasında, öğrencilerin yaptığı hatalar tahtaya yansıtılarak düzeltildiği "sınıfça düzeltme ödev tekniği" kullanılmıştır, sınıfça düzeltme tekniği yapılan yanlışların sınıfta tahtaya yazılarak ve bütün sınıfın görüşünü alarak düzeltme yapılmasıdır (Atlı, 2012).

Şekil 2.

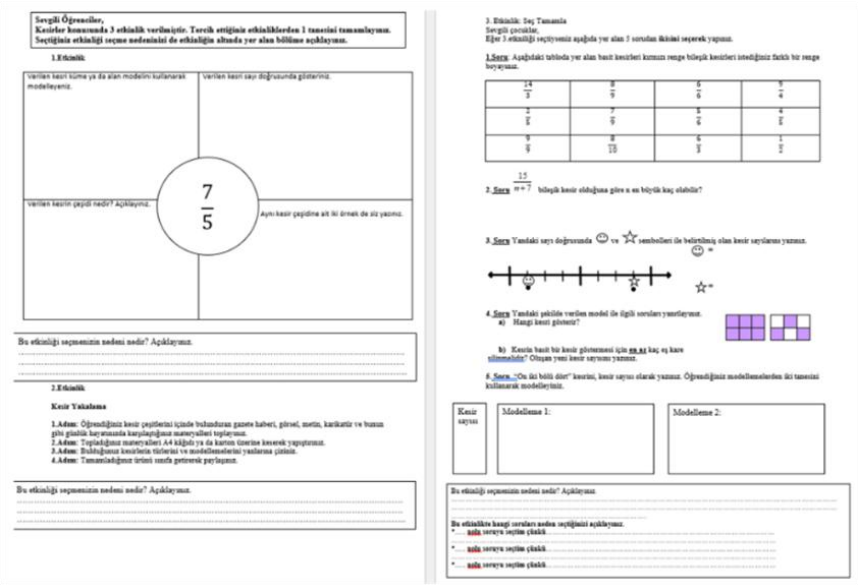
Kesirler Konusunda Farklılaştırılmış Matematik Ödevi Örneği 1



Şekil 2'de matematik öğrenme düzeyine göre seviye farklılaştırılması yapılmış, öğrencilerin her seviyeden kendi tercihiyle yapacağı soruların bulunduğu farklılaştırılmış ev ödevi örneği verilmiştir. Farklılaştırılmış ödev olarak verilen Şekil 2'de öğrencilerin, soruların zorluk seviyelerine göre bir yatay sütunlardan bir tane problem seçmesi beklenmektedir. Farklılaştırılmış ödev kağıdında, problemler yatay sütunda (hafif acılı, orta acılı, acılı ve ekstra acılı) olarak zorlaşırken bu satırlarda bulunan her 3 problemde 1, 2 ve 3. probleme doğru kendi içinde zorlaşmaktadır. Öğrenciler zorluk bakımından soruları tercih edebilirken hem de problemlerin hepsi aynı kazanım üzerine çalışma yapmalarını sağlamaktadır.

Şekil 3.

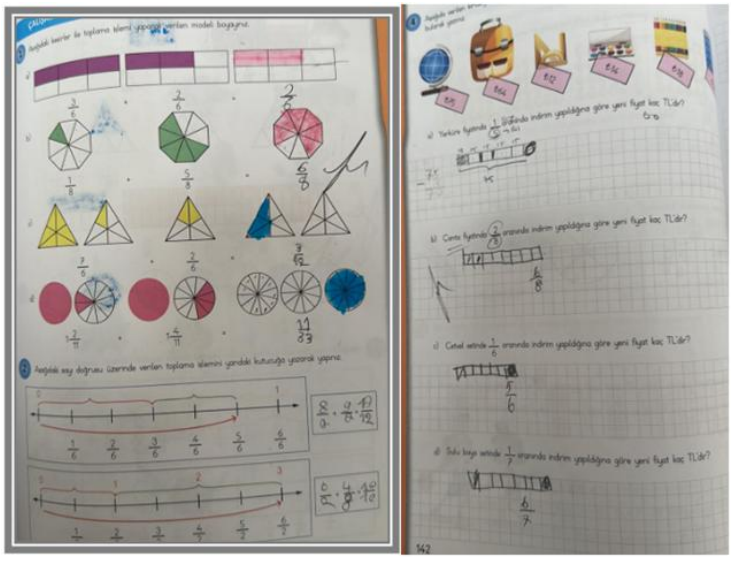
Kesirler Konusunda Farklılaştırılmış Matematik Ödevi Örneği 2



Şekil 3'te yine farklılaştırılmış başka bir matematik ödevi örneği bulunmaktadır. Şekil 3'te yer alan ödev kağıdında, öğrencilere 3 etkinlik sunulmuş 1 etkinliği tercih etmeleri istenmiştir. Etkinliklerde ise ilk etkinlik kendi için kolaydan zora giden Frayer modeli kullanılmış, ikinci etkinlikte öğrencilerden içerisinde günlük hayatta kesir örnekleri bulunan gazete, dergi ve çeşitli kaynaklardan örnekler bulmalarını ve orada geçen kesir tür-modellerini poster haline getirmeleri istenmiştir. Üçüncü etkinlikte ise öğrencilere konu ile ilgili beş soru sunulmuş, beş sorudan üç soruyu tercih ederek çözmeleri istenmiştir. Öğrenciler hem ödev miktarı hem de soru çeşidi olarak öğrencilerin tercih yapmasına fırsat verilmiştir.

Şekil 4.

Kesirler Konusunda Verilen Geleneksel Matematik Ödevi Örneği



Şekil 4'te öğrencilerin hepsine aynı sayfadan, aynı miktarda ve aynı düzeyde verilen kesirler konusundaki ödev örneği verilmiştir.

Verilerin Analizi

Bu araştırmada, matematik dersinde araştırmacı tarafından tasarlanan farklılaştırılmış ev ödevleri ile sınıf öğretmeni tarafından verilen geleneksel ev ödevlerinin, ilkokul dördüncü sınıf öğrencilerinin matematik dersine yönelik ev ödevi tutumları üzerindeki etkisini belirlemek amacıyla Bora (2018) tarafından geliştirilen "Matematik Dersinde Ev Ödevlerine Yönelik Tutum Ölçeği" kullanılmıştır.

Araştırmada, uygulama öncesi ve sonrası öğrencilere Bora (2018) tarafından geçerlik ve güvenirlik çalışmaları yapılmış beşli likert tipi 21 maddeden oluşan bu ölçek uygulanmıştır. Ölçekte 14 olumlu, 7 olumsuz ifade bulunmakta olup, Cronbach's Alpha güvenirlik katsayısı .85 olarak hesaplanmıştır. Ölçeğin güvenirlik çalışması 91 ilkokul 4. sınıf öğrencisi üzerinde gerçekleştirilmiş ve kapsam geçerliliği uzman görüşleriyle değerlendirilmiştir.

Veri analizi sürecinde, frekans ve yüzdelik değerler hesaplanarak ölçek maddeleri ters kodlama yöntemiyle düzenlenmiştir. Grupların tutumlarını belirlemek için deney ve kontrol grubuna ön test uygulanmış, grupların denkliği sağlanmıştır. Ön test ve son test puan ortalamalarının karşılaştırılmasında bağımsız gruplar t-testi, deney grubu içinde ön test ve son test farklarını incelemek için bağımlı örneklem t-testi kullanılmıştır. Veri dağılımının normalliği Shapiro-Wilk testi ve çarpıklık-basıklık değerleri ile doğrulanmış, analizler SPSS 27 yazılımı ile gerçekleştirilmiştir.

Öğrencilerin ödevlere yönelik duygu ifadeleri, içerik analizi ile incelenmiş ve elde edilen veriler tablo halinde sunularak doğrudan öğrenci ifadeleri ile desteklenmiştir.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Etik değerlendirmeyi yapan kurulun adı = Gazi Üniversitesi Rektörlük Etik Komisyonu

Etik Kurul Etik inceleme karar tarihi = 22.01.2024

Etik değerlendirme belgesi konu numarası = 2024 - 79

Bulgular

Bu bölümde, araştırmanın temel amacına ve alt amaçlarına ilişkin verilerin analizinden elde edilen bulgular ile bu bulguların yorumlarına yer verilmiştir. Geleneksel ev ödevinin verildiği kontrol grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik ön test ve son test tutum puan ortalamalarının karşılaştırılmasına ait bulgularda kontrol grubundaki öğrencilerin matematik dersine yönelik ev ödevi tutumlarının kendi içinde anlamlı bir farklılık gösterdiği görülmektedir ($t_{(26)}$=1.86; p<.05). Kontrol grubundaki öğrencilerin ön test matematik dersi ev ödevi tutum puan ortalamaları (M=3.73), son test tutum puan ortalamalarından (M=3.69) daha yüksektir. Öğrencilere verilen geleneksel ev ödevleri öğrencilerin ödeve yönelik tutum puanlarını olumsuz yönde etkilemiştir.

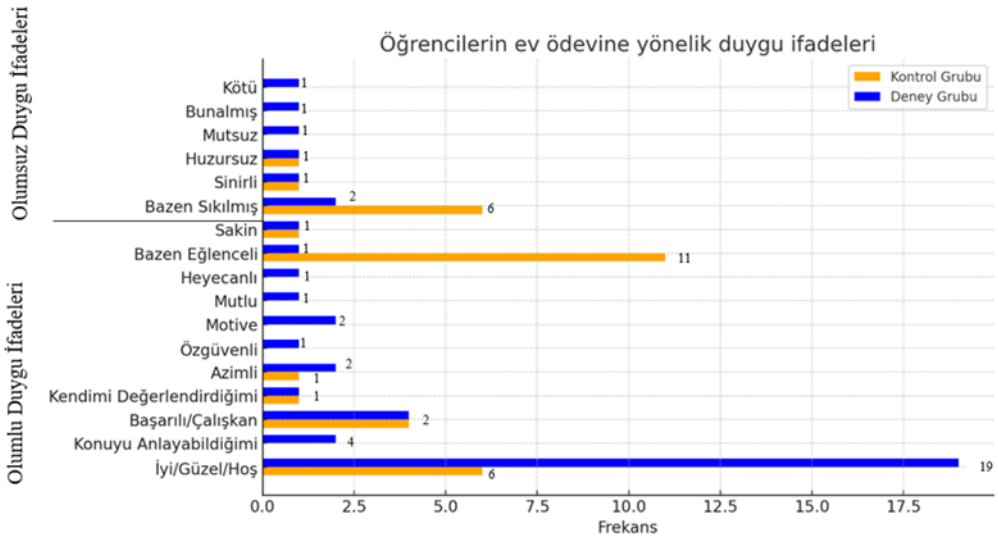
Araştırmada elde edilen farklılaştırılmış ev ödevinin verildiği deney grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik ön test ve son test tutum puan ortalamalarının karşılaştırılmasına ait bulgularda deney grubundaki öğrencilerin matematik dersinde verilen ev ödevlerine yönelik tutumlarının kendi içinde anlamlı bir farklılık gösterdiği görülmektedir ($t_{(25)}$=-7.18; p<.05). Deney grubunda yer alan öğrencilerin ön test matematik dersi ev ödevlerine yönelik tutum puan ortalamaları (M=3.81), son test tutum puan ortalamalarından (M=4.29) daha düşüktür. Yapılan analizler sonucunda farklılaştırılmış ev ödevleri öğrencilerin ödeve yönelik tutum puanlarını olumlu yönde etkilemiştir denilebilir.

Farklılaştırılmış ev ödevinin verildiği deney grubu öğrencileri ve geleneksel ev ödevinin verildiği kontrol grubu öğrencilerinin matematik dersinde ev ödevlerine yönelik tutum son test puan ortalamalarının karşılaştırılmasına ait elde edilen bulgularda, deney grubundaki öğrencilerin matematik dersine yönelik ev ödevi tutumlarının, kontrol grubundaki öğrencilerle karşılaştırıldığında anlamlı bir farklılık gösterdiği görülmektedir. Deney grubu öğrencilerinin tutum puan ortalamaları (M=4.29), kontrol grubu öğrencilerinin tutum puan ortalamalarından (M=3.69) daha yüksektir. Yapılan analiz sonucunda deney grubunda verilen farklılaştırılmış matematik ev ödevleri kontrol gurunda verilen ödevlere göre öğrencilerin matematik dersinde verilen ev ödevlerine yönelik tutum puanları üzerinde etkili olduğu söylenebilir.

Deney ve kontrol grubu öğrencilerinin denel işlem başında matematik dersinde ev ödevlerine yönelik duygu ifadelerinin yer aldığı "Matematik dersi ev ödevlerini yaparken neler hissediyorsunuz?" sorusuna verilen cevaplar Grafik 1'de sunulmuştur.

Grafik 1.

Öğrencilerin Ev Ödevlerine Yönelik Duygu İfadeleri



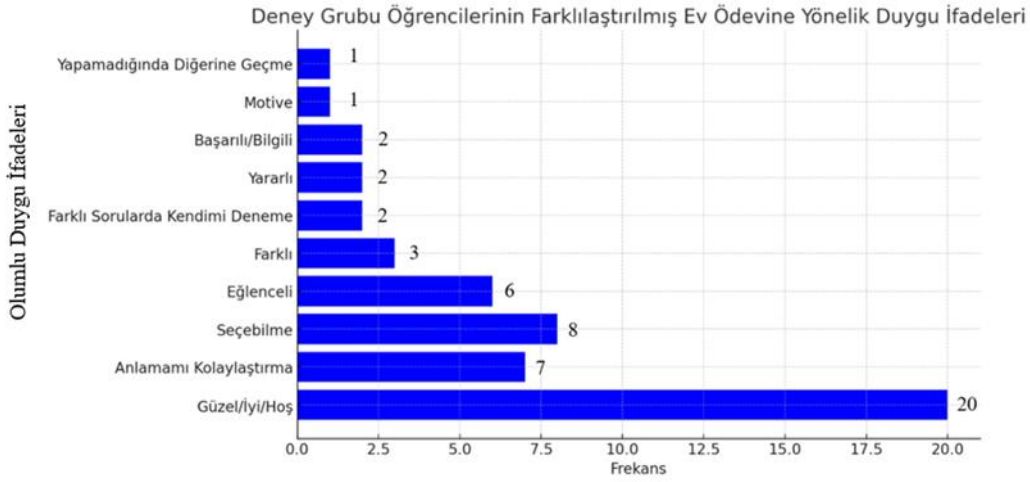
Deney ve kontrol grubu öğrencilerinin denel işlem başında matematik dersinde kendilerine verilen ev ödevlerine yönelik duygu ifadeleri incelendiğinde ön plana çıkan duygular deney grubunda Ödevi yaparken kendilerini iyi, güzel ve hoş hissettikleri (f=19) ve konuyu daha iyi anlayabilecekleri duygusu (f=4) taşıdıkları görülmektedir. Kontrol grubu öğrencilerinde ise öğrencilerin matematik dersinde verilen ev ödevlerine yönelik hislerinin bazen eğlendiklerini (f=11), iyi, güzel ve hoş duygular yaşadıklarını (f=6) ancak bazen de

sıkıldıklarını (f=11) ifade etmişlerdir. Diğer duygu ifadeleri olan ödev yapınca kendilerini başarılı çalışkan, azimli, özgüvenli, motive ve mutlu hissetme gibi olumlu duygular ifade edilirken, sinirli, kötü, huzursuz, mutsuz ve bunalmış duygu durumları her iki grupta da az da olsa yer almaktadır.

Çalışmada denel işlem sonrası deney grubuna, matematik dersinde verilen ev ödevlerine yönelik "Kendi seçtiğiniz ödevleri yapmak sizi nasıl hissettirdi?" sorusuna yönelik duygu öğrencilerin ifadeleri Grafik 2'de sunulmuştur.

Grafik 2.

Deney Grubu Öğrencilerinin Farklılaştırılmış Ev Ödevine Yönelik Duygu İfadeleri



Deney grubu öğrencileri kendilerine verilen farklılaştırılmış matematik ev ödevlerini yaparken daha çok iyi, güzel ve hoş duygu ifadelerinde (f=20) bulunmuşlardır. Bunun yanı sıra seçebilme özgürlüğü yaşadıklarının (f=8), anlamalarını kolaylaştırdığı (f=7), eğlenceli olduğu (f=6) daha çok hissedilen duygu ifadeleridir. Az da olsa öğrenciler bu ödevleri farklı buldukları, farklı sorularda kendilerini değerlendirme fırsatı buldukları, yararlı gördükleri ve yapamadıklarında diğer soruya geçebildiklerini, kendilerini başarılı ve bilgili hissettiklerini belirtmişlerdir.

Tartışma ve Sonuç

Bu araştırmada, ilkokul dördüncü sınıf öğrencilerine matematik dersinde verilen farklılaştırılmış ev ödevlerinin, öğrencilerin matematik dersine yönelik tutumlarına etkisi incelenmiştir. Bulgular, farklılaştırılmış ödevlerin öğrencilerin tutumlarını olumlu yönde etkilediğini, geleneksel ödevlerin ise olumsuz değişime yol açtığını göstermektedir. Öğrenciler, farklılaştırılmış ödevlerin anlamalarını kolaylaştırdığını, eğlenceli olduğunu ve başarı duygusunu artırdığını belirtmiştir (Jamal & Rizvi, 2021). Farklılaştırılmış ödevler, öğrencilere seviyelerine uygun sorular sunarak değerlendirme fırsatı vermekte, bilişsel ve duyuşsal gelişimlerini desteklemektedir. Öğretmen geri bildirimi, ebeveyn katılımı ve öğrencilerin içsel motivasyonlarının tutum geliştirmede önemli olduğu görülmüştür (Cooper vd., 2006; Moss & Brookhart, 2019).

Öğrencilerin yaş ve beceri seviyelerine uygun, ilgi çekici ve gerçek hayatla bağlantılı ödevler, olumlu tutum gelişiminde kritik rol oynamaktadır (Trautwein vd., 2006). Geleneksel ödevlerin sıkıcı ve tekrarlayıcı olması, öğrencilerde olumsuz tutumlara yol açabilir. Bu

araştırmada, geleneksel ödevlerin öğrenme sürecine katkısının sınırlı olduğu gözlemlenmiştir (Duru & Çöğmen, 2017). Sonuç olarak, farklılaştırılmış matematik ödevleri öğrencilerin tutumlarını olumlu yönde etkileyerek, öğrenme sürecine aktif katılımlarını artırmaktadır. Eğitimde bireysel farklılıkları dikkate alan bu yaklaşım, öğrencilerin ödevleri daha değerli bir öğrenme aracı olarak görmelerini sağlamaktadır.

Öneriler

Deney grubundaki güçlü olumlu tutum değişiklikleri, gelecekte farklı okullar ve eğitim sistemleri arasında müdahalelerin ölçeklendirilmesini ve etkinliklerinin çeşitli ortamlarda değerlendirilmesini gerektirmektedir. Ayrıca, tutumlardaki bu değişikliklerin zaman içindeki dayanıklılığını ve matematik performansıyla ilişkisini incelemek önemlidir. Eğitim politikası yapıcıları, bilişsel hedeflerin yanı sıra duygusal hedefleri de içeren bütünsel müfredatlar tasarlarken bu bulguları dikkate almalıdır.

Çalışma öncesinde grupların benzer tutumlara sahip olması, çalışma sonrası deney grubu lehine ortaya çıkan farklılığın ödevin kendisinden çok ödevin verilme biçimine bağlı olduğunu göstermektedir. Bu bağlamda kontrol grubundaki olumsuz yöndeki değişimlerin nedenleri derinlemesine incelenebilir.

Ayrıca öğretmen davranışı, veli katkısı ve ödev sonrası aktiviteler gibi daha geniş çerçevede faktörler bütüncül bir şekilde ele alınabilir ve mülakat yöntemiyle daha kapsamlı bulgular elde edilebilir.

Son olarak, öğrencilerin ilkokuldan ortaokula geçişte ev ödevine yönelik tutum ve deneyimlerindeki değişimler de incelenebilir.

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Educational Expectations of Parents within the Framework of Ecological Systems Theory

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Abstract

This study, which aims to explain the expectations of families in primary education, was designed with an exploratory sequential mixed method approach. While a checklist developed by the author, whose validity and reliability has been proven, was used for quantitative data, a semi-structured interview form was used for qualitative data. The participants of the research consist of 261 parents whose children are enrolled in a public primary. According to the results, the main expectations of the parents are "national-religious values" and "moral education" within the macrosystem. The microsystem dimension, which includes individual development and academic success, is in second place. While first grade parents prioritize academic success, national-religious-moral values are expected to be taught in the upper grades. The least expected concepts are "migration" and "family structure" within the chronosystem theme. In addition, awareness and sensitivity should be increased towards disadvantaged students whose parents' expectations and knowledge levels are lower. According to the findings obtained from the study, the ecological systems theory is an appropriate tool for explaining parents' expectations from education. In order for school-family collaboration to progress healthily and for parents to meet their expectations, it is recommended that efforts be made at both the school level and within general educational policies, based on respect for ethnic and cultural differences, with a focus on national, religious, and moral values.

Keywords: Parent, expectation, primary school, ecological systems theory.

Introduction

Proper communication between family and school makes a significant contribution to the individual's academic, emotional, and social development (Burns et al., 1992; Decker & Decker, 2005; Nuri et al., 2022) In this context, Bronfenbrenner's (1979) ecological systems theory states that both home and school are two different but closely intertwined microsystems while explaining the influence of parents on child's development (Rimm-Kaufman & Pianta, 2000). Friends, parents, educators and other community members further interact with these intertwined systems and develop an order that will positively affect the children's development (Holmes et al., 2021). For sure there are certain responsibilities and duties that the schools undertake within the scope of this order. Expanding the common culture to new generations, building a national awareness and training qualified manpower are cited as examples of the government's expectations from an instructional educational institution (Ministry of National Education [MoNE], 1973). While meeting these expectations of the government, the school further has to get to know the individual, which is its raw material, and its socio-cultural surrounding in all its aspects (Aydın, 2000). Encountering certain conflicts or problems is an expected situation in an institution whose pillars are people and human relations. School administrators, students, parents and teachers are affected by the functioning of this process while the most affected elements are the teachers who are in close contact with all groups (Tezcan, 1996).

The changing living conditions of the century that we live in along with the factors such as all members of the family having to work or each individual having to acquire a profession has differentiated parents' expectations from school (Gordon, 1993). Findings obtained in line with the purpose of the studies conducted to find out the extent of family participation in the academic process and the expectations of parents from education institutions revealed that the

parents' expectations are generally categorized under teaching moral attitudes, providing efficient study skills and the habit of reading books as well as preparing the student for taking central exams (Aslan, 1994; Can, 2010; Eroymak, 1997; Özçınar, 2003; Şişman, 2002).

Ecological systems theory, which is more like the scientific explanation of the Native American proverb "It takes a village to raise a child", was put forward by Bronfenbrenner (1979) and effectively addressed the development of the individual within the context of the relationship with the environment. The theory explains the developmental stages of the individual through intertwined and interrelated circles ranging from the one-on-one interaction to a broader societal belief structure (Eliasa, 2012; Espelage & Swearer, 2003; Härkönen, 2007). These intertwined and interrelated systems include the microsystem, mesosystem, exosystem, macrosystem and chronosystem, from the closest to the most general (Eliasa, 2012; Grzywacz, 2000).

Figure 1.

Ecological Systems Theory and its Relationship with Education

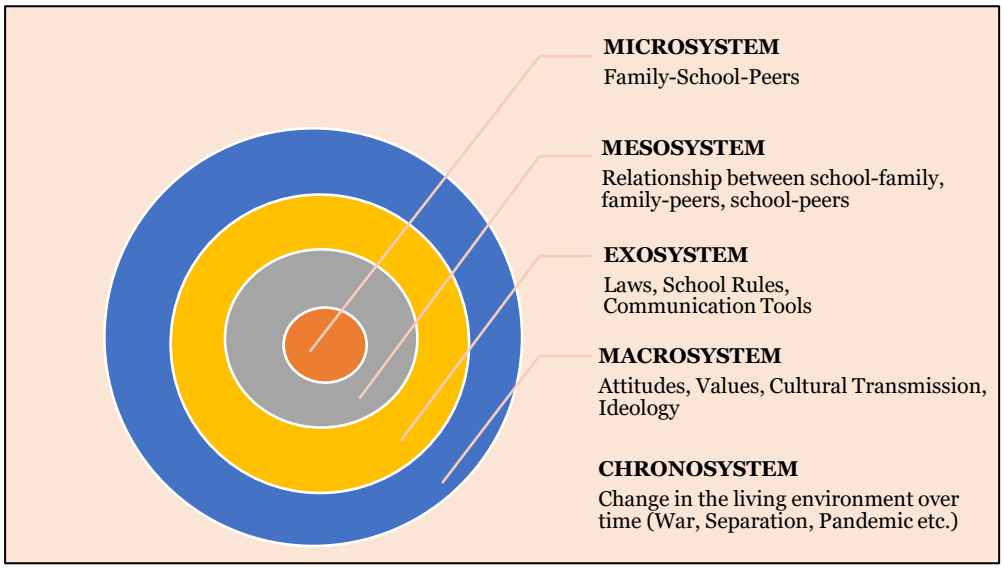


Figure 1 presents an illustration of Bronfenbrenner's (1979) ecological systems theory within the framework of education and school. The microsystem, which represents the circle closest to the individual, consists of family, peers, school and teacher factors that directly interact with the student. The Mesosystem, on the other hand, addresses the relationship between microsystems representing the ring below. The interaction, harmony and incompatibility between school and family are examples of this circle. exosystem includes interactions that the students are not directly involved in but that affect their development. Problems between the parents, parents' work stress, and interaction between the school administration and teachers are examples of this circle. The macrosystem includes the cultural codes, values, belief systems, and socio-economic status of the society in general and, though it does not directly affect the student, has effects on issues such as character development, creating a perspective and the shaping of thought. The Chronosystem, which includes all other systems and interacts with each of them, relates to shifts and transitions to each ring over the child's lifetime. Considering the case from an academic perspective, the change in the child's current school due to relocation exemplifies this layer of the theory. As relocation will affect

the child's peers and school environment, it will cause a shift in the microsystem and mesosystem.

The education-training process is compatible with the ecological systems theory as it represents a structure formed by diverse components such as students, teachers, family, school administration and society (Espelage & Swearer, 2003). Pursuant to the data announced by Turkish Statistical Institute [TurkStat] in 2022 the percentage of children aged between 5-9 in our country constitutes 26.5% of the entire population. When considered together with their families, it is possible to argue that approximately 40 million of the total population is affected within the scope of primary school education. Based on this finding, both school administrators who aim to attain academic achievement on a minimal scale and further public administrators who aim to attain achievement in country politics on a broader scale should pay attention to the relationship between family-school as much as to the relationship between the student and teacher (Akbaşlı & Kavak, 2008). Educational institutions tasked with meeting these expectations of families can sustain their existence and grow to the extent they succeed in fulfilling them (Balkar, 2009). However, Aytaç (2000) argued that educational institutions have gradually been facing difficulties in meeting the expectations of the society, therefore they may fail to maintain a healthy relationship with the parents. As a consequence of poor communication, some parents who think they have been treated unfairly may have an increasing propensity for violence (Debarbieux, 2003). Teachers, who constantly cooperate with families, become the victims of violence (Rodriguez et al., 2014). Gradually increasing number of studies focusing on acts of violence committed by parents over the recent years indicate that the conflict between the parents and the teacher generally increases in line with the socioeconomic status of the parent and this situation stands out as an international problem (Atmaca & Öntaş, 2014; Mcmahon et al., 2017; Ngakane et al., 2012; Özdemir, 2012; Valencia & Black, 2002).

It is necessary to listen to the expectations of parents and to take their demands into consideration in order to improve the quality of education provided and to meet the expectations of society. The government further imposes certain responsibilities on educational institutions which are expected to effectively organize the society and realize the desired change. Educational institutions which undertake the task of ensuring the harmony and balance between society and the government should primarily take into account the demands and get to know very well the human factor, which is their raw material, in order to achieve this goal. This study which aims to examine the expectations of primary school students' parents from the educational institution within the framework of ecological systems theory was designed in line with an exploratory sequential mixed method. This approach both offers the opportunity to reach a larger number of parents quantitatively and to examine the subject thoroughly for the purpose of qualitative analysis. For this purpose, answers to the following questions were sought:

1. What do parents of primary school students expect from education in accordance with ecological systems theory?

2. Do the educational expectations of primary school students' parents differentiate based on their grades in accordance with ecological systems theory?

3. Do the educational expectations of primary school students' parents differentiate based on their demographic characteristics (gender, income, education, age) in accordance with ecological systems theory?

4. Have new dimensions been added to the current themes of the ecological systems theory, which is referred to for the quantitative analysis purposes, at the end of the interviews held for qualitative analysis?

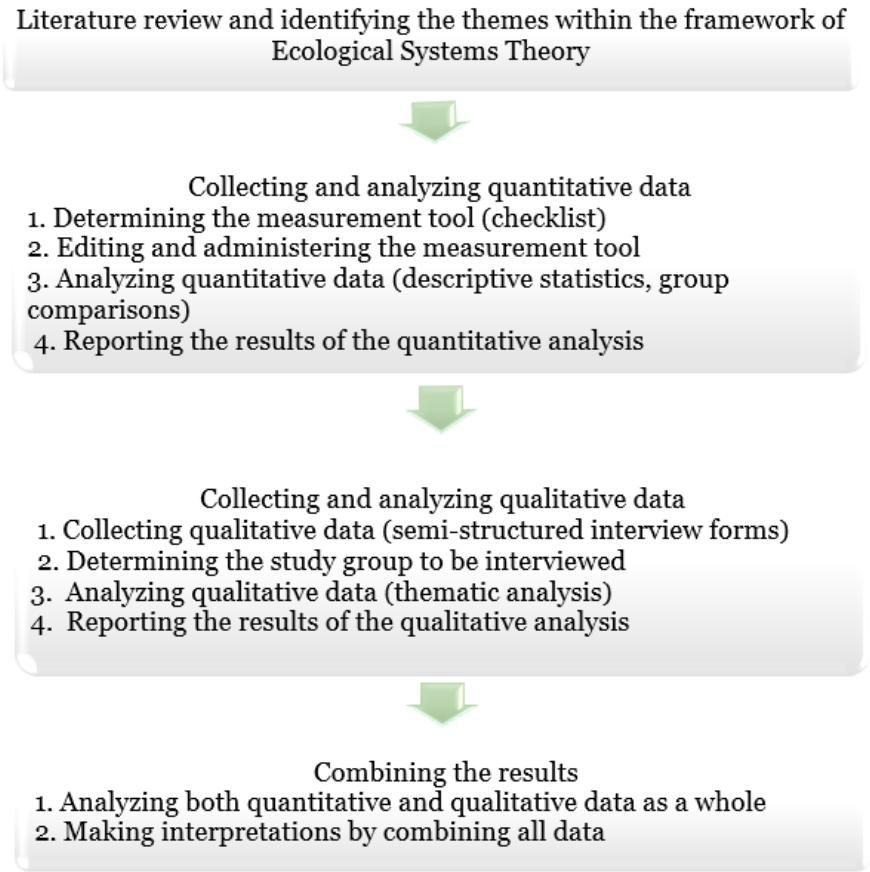
Method

This research is designed in line with an exploratory sequential mixed methods approach consisting of two different analysis, namely quantitative and qualitative analysis (Creswell & Plano Clark, 2007). For the purpose of this approach, quantitative data is collected and analyzed in the first step. Then, qualitative data is collected to help explain in detail the quantitative data collected in the first step. The second-tier qualitative analysis is built on the first-tier quantitative analysis and these two steps are further correlated in the middle of the study. The reason for adopting such an approach was to make the statistical results more meaningful by thoroughly investigating the generalizable data collected within quantitative data through qualitative analysis (Rossman & Wilson, 1994; Tashakkori & Teddlie, 1998).

The steps of the research constituted in line with the determined research design are presented in Figure 2.

Figure 2.

Steps of the Research



Quantitative Analysis

253 parents were included in the quantitative analysis, which is the first step of the exploratory design. The convenience sampling method, which is referred to as working with closest and easy-to-reach groups, was used to determine the parents to be included in the study (Yıldırım & Şimşek, 2011). Demographic characteristics of the sample are presented in Table 1.

Table 1.

Demographic Characteristics of the Sample used for Quantitative Analysis Purposes

	Variables	*f*	%
Gender	Female	167	66
	Male	86	34
Age	20-30 years of age	30	11.9
	30-40 years of age	155	61.3
	40-50 years of age	68	26.9
Education	Primary school	20	7.9
	Secondary school	35	13.8
	High school	102	40.3
	Associate/bachelor's degree	81	32
	Post graduate degree	15	5.9
Income	Low income	30	11.9
	Middle income	124	49
	High income	99	39.1
Grade	1. grade	55	21.7
	2. grade	71	28.1
	3. grade	70	27.7
	4. grade	57	22.5
Total		253	100

Table 1 indicates that the number of female participants (66%) is significantly higher than that of male participants (34%). The ages of the participants ranged between 20 to 50 and the majority (61.3%) were between 30-40 years of age. High school graduates (40.3%) take the lead among the participants. It was determined that the majority of the participants were in the middle-income group (49%). When determining parents, care was taken to ensure that students from all grades of primary school were represented. accordingly, the parents of 1. grade (21.7%) students, 2. grade (28.1%) students, 3. grade (27.7%) students and 4. grade (22.5%) students were included in the study.

A checklist developed by the author and whose validity and reliability were confirmed was used for the purpose of collecting quantitative data. Collected data were then transferred to the SPSS program to calculate the frequency and percentage values. A pilot scheme was administered on a small group, with characteristics similar to the main sample, in order to determine to what extent, the checklist, which was finalized in line with the feedback, met the reliability and validity expectations with a different method. Büyüköztürk (2005) argued that a group of 5% of the sample size will be sufficient to perform a pilot scheme for consisting of independent questions measuring opinions and behaviors on a certain subject. In this regard, a pilot scheme was administered to 23 parents. For the purpose of this stage, participants were asked to submit items that were unclear, incomplete and that needed to be improved. In line with the feedbacks, the statements in two items were rephrased to be more comprehensible. The finalized form was administered to the respondents via face-to-face interview method. It

took an average of 10 minutes to answer each checklist. Collected forms were then transferred to the statistic program where the mean and percentage values were calculated for variables. Developed checklist was presented in Figure 3.

Figure 3.

Checklist

As a parent, please tick the options that you think reflect your views about the educational institution and your expectations from the education process. (You can tick more than one item)

( ) 1. Should ensure that my child becomes a self-confident and responsible individual.
( ) 2. Should identify and improve my child's specific talents or interests.
( ) 3. Should provide the necessary education that will allow my child to acquire a good profession the future.
( ) 4. Should contribute to my child for becoming a sophisticated and well-trained individual.
( ) 5. Should ensure the means of collaboration between school and family.
( ) 6. Should keep the child away from the harmful habits in the environment.
( ) 7. Should employ teachers who are experts in their fields.
( ) 8. Should offer equal opportunities to all children regardless of their economic status.
( ) 9. The school administration should be at equal distance to teachers and students.
( ) 10. Should focus on social activities.
( ) 11. The guidance and counseling department should provide effectual and effective information about child's development processes.
( ) 12. Should inculcate religious, national and moral values.
( ) 13. Should inculcate moral values such as respect, integrity and honesty.
( ) 14. Should place emphasis on the activities aimed at eliminating the educational deficiencies of disadvantaged students (immigrants, disabled individuals etc.).
( ) 15. Should follow and adapt to developing educational approaches in the world.

Options 1-2-3-4 in the checklist were related to the microsystem theme. Options 5-6 in the checklist addressed the mesosystem, options 7-8-9-10-11 addressed the exosystem, options 12-13 addressed the macrosystem and options 14-15 addressed the chronosystem theme. Mean values of the items under each theme were taken into consideration while performing the analyses.

Qualitative Analysis

Phenomenology, which aims to reveal the participants' perceptions and experiences of a phenomenon, was used for qualitative analysis (Creswell, 2012). Phenomenology is a qualitative research design in which it is possible to get to the roots of people's experiences regarding a phenomenon and discover common points between individuals (Swanborn, 2010).

The participants of the research were determined by purposive sampling method. This non-probability sampling approach allows the researchers to reach out to specific participants who are well-versed on a certain subject and have certain characteristics in accordance with the research purpose (Büyüköztürk et al., 2012). Accordingly, the research sample consisted of 8 parents who have children studying at any level of primary education from the 1st grade to the 4th grade and who took part in the quantitative analysis of the research. A semi-structured interview form was used to collect data in the study. Brinkmann and Kvale (2018) define the interview as a narrative-based method that is produced in mutual interaction, seeks answers to research questions, and gains meaning from its context. In order to ensure compliance with ethical principles in the interviews held with participants, the names of the individuals were

anonymized and each parent was coded as P1, P2, P3. Demographic characteristics of the participants are presented in Table 2.

Table 2.

Demographic Characteristics of the Sample used for Qualitative Analysis Purposes

Participant	Gender	Age	Education	Profession	Income	Grade of the student
P1	Female	41	Bachelor's degree	Housewife	Middle income	Third grade
P2	Female	33	Secondary school	Housewife	Middle income	First grade
P3	Male	42	High school	Laborer	Middle income	Second grade
P4	Female	34	Secondary school	Housewife	Low income	Fourth grade
P5	Male	37	Bachelor's degree	Public servant	High income	Third grade
P6	Female	48	Primary school	Housewife	Low income	First grade
P7	Female	30	High school	Laborer	Middle income	Second grade
P8	Female	41	Bachelor's degree	Public Servant	High income	Fourth grade

According to Table 2, six of the participating parents were female and two were male. Mean age of the participants varied between 30 and 48. Participants were parents with a bachelor's degree (3) or high school (2), secondary school (2) and primary school (1) graduates. Four of the female parents did not work. One of the male participants worked as a laborer and one worked as a public servant. Participants generally defined themselves as middle income (4). Two parents stated that they had a high income and two parents stated that they had a low income. When determining parents to be included in the research, utmost care was taken to involve representatives with children from each grade and two parents with children from each grade with different socioeconomic levels were interviewed.

Interviews were conducted personally with each participant. Before the interview, the purpose of the research was clearly explained to the participants, attention was paid to take cultural and social differences into account and an appropriate environment was tried to be created to ensure a sincere and collaborative approach (Kahn & Canell, 1957). It was further explained that audio recording was necessary to prevent data loss and not to disrupt the flow during the interview process and to make detailed analysis in the future and necessary permission was obtained from the participants in this regard (Borg, 1963).

While developing the semi-structured interview form, the question types defined by Patton (2002) were taken as basis. Accordingly, the interview started with questions with regard to the experiences that the participant could easily answer for warm-up purposes; then, the process was expanded with questions regarding the opinions, emotions and knowledge level of the participants. Developed questions were submitted to the approval of an expert of the field along with a linguist and the interview form was finalized in line with their approval. Then, the interview continued with questions developed within the framework of ecological systems theory. The questions asked in the interview are presented in Table 3.

Table 3.

Interview Questions

Components of the Ecological System Theory	Questions related to the theme
Microsystem	1. What kind of benefits do you think school provides to students? Or what kind of gains should it provide?
Mesosystem	2. Does the interaction between the school and the family affect a student's education? 3. Does the interaction between the family and the teacher affect a student's education? 4. Does the relationship between the mother and the father affect a student's education? 5. Does the circle of friends affect a student's education?
Exosystem	6. How do school rules be too strict or too loose affect the education process? 7. Does the school administration's communication with teachers and the management approach affect the quality of education? 8. Do the times of arrival and departure at school or the physical facilities of the school affect the quality of education?
Macrosystem	9. What values would you like the school to inculcate to the child? 10. Is school alone sufficient to inculcate such values in children?
Chronosystem	11. What could lag behind the child's declining/increasing academic or social achievement? 12. What changes in a child's life affect the quality of education?

A preliminary meeting was held with the parents before the interview to inform them about the process and the purpose. In addition, parents were asked to sign a letter of consent documenting their voluntary participation in the research. Interview appointments were scheduled taking into account the appropriate time intervals for the interviewer-participant-school components. Data regarding the interview process held with each parent is presented in Table 4.

Table 4.

Interviews with Each Parent

Participant	Date	Hour	Duration	Means of Recording	Place
P1	20.02.2024	14.35	25:00	Voice recorder	Meeting room
P2	21.02.2024	14.50	10:00	Voice recorder	Meeting room
P3	22.02.2024	14.30	27:00	Voice recorder	Meeting room
P4	23.02.2024	14.35	32:00	Voice recorder	Meeting room
P5	26.02.2024	14.45	30:00	Voice recorder	Meeting room
P6	27.02.2024	14.45	26:00	Voice recorder	Meeting room
P7	28.02.2024	14.35	34:00	Voice recorder	Meeting room
P8	29.02.2024	14.40	32:00	Voice recorder	Meeting room

The interviews took place between a minimum of 22 minutes and a maximum of 32 minutes. As the building is crowded during school hours and it is assumed that the meeting room may be frequently visited for use, hours outside the school hours were preferred in order not to adversely affect the interview atmosphere. Following the interview process, the audio recordings and notes of each interview were analyzed. The themes already available within the framework of the theory were used for the interviews which were then transferred to a Word file. For the purpose of this type of coding, which starts with already-available codes based on the conceptual framework, new sub-themes can be added in addition to the themes created before the analysis (Yıldırım & Şimşek, 2011). New sub-themes related to education were

reached based on the answers and expressions provided by the parents during the interview process. These codes were then included in the five themes within the theory.

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 = Harran University Social and Humanities Ethics Committee

Date of ethical review decision = 15.02.2024

Ethics assessment document issue number = 2024/72

Findings

With the checklist developed for the purposes of quantitative analysis, parents' opinions were collected and analyzed within the framework of Ecological Systems Theory [EST]. The findings as "What do parents of primary school students expect from education in accordance with Ecological Systems Theory?", are presented in Table 5.

Table 5.

Expectations of Parents in Accordance with EST

Expectations	*n*	*M*	*SD*
Microsystem	253	.78	.41
Mesosystem	253	.75	.43
Exosystem	253	.58	.49
Macrosystem	253	.87	.32
Chronosystem	253	.33	.52

Pursuant to Table 5, parents' expectations from primary school primarily consist of options within the macrosystem (M=.87). This section, involving the options paraphrased as "Should inculcate religious, national and moral values" and "Should inculcate moral values such as respect, integrity and honesty", covers variables such as attitudes, values, ideology and cultural transfer in the individual's environment.

The second place in the parents' expectations from primary school education pertained to the options within the microsystem of the EST (M=.78). This theme covering options like "Should ensure that my child becomes a self-confident and responsible individual", "Should identify and improve my child's specific talents or interests, if any", "Should provide the necessary education that will allow my child to acquire a good profession in the future." and "Should contribute to my child for becoming a sophisticated and well-trained individual", addresses parents' expectations within the framework of individual development and academics.

The third place in the parents' expectations from primary school education pertained to the options within the Mesosystem of the EST (M=.75). This theme covering options like "Should ensure the means of collaboration between school and family" and "Should keep the

child away from the harmful habits in the environment" addresses expectations such as the relationship between the parents' children and their immediate surrounding.

The fourth place in the parents' expectations from primary school education pertained to the options within the exosystem of the EST (M=.75). This theme covering options like "Should employ teachers who are experts in their fields", "Should offer equal opportunities to all children regardless of their economic status", "The school administration should be at equal distance to teachers and students", "Should focus on social activities" and "The guidance and counseling department should provide effectual and effective information about child's development processes" addresses expectations such as laws, school rules and communication.

The options under the chronosystem theme constitute the lowest expectations of parents from primary education (M=.33). This theme covering options like "Should place emphasis on the activities aimed at eliminating the educational deficiencies of disadvantaged students (immigrants, disabled individuals etc.)" and "Should follow and adapt to developing educational approaches in the world" addresses the options that change expectations and affect all other topics. The second question of the quantitative analysis dimension of the research sought answers to the question which was paraphrased as "Do the educational expectations of primary school students' parents differentiate based on their grades in accordance with ecological systems theory?". The findings derived as a result of the analyzes performed for this purpose are presented in Table 6.

Table 6.

Parents' Expectations in terms of Their Children's Grades

Child's grade	Expectations	*n*	*M*	*SD*
1. grade	Microsystem	55	.74	.43
	Mesosystem	55	.69	.46
	Exosystem	55	.47	.50
	Macrosystem	55	.70	.45
	Chronosystem	55	.21	.62
2. grade	Microsystem	71	.71	.45
	Mesosystem	71	.81	.38
	Exosystem	71	.52	.50
	Macrosystem	71	.91	.28
	Chronosystem	71	.45	.55
3. grade	Microsystem	70	.90	.43
	Mesosystem	70	.85	.38
	Exosystem	70	.71	.50
	Macrosystem	70	.97	.28
	Chronosystem	70	.65	.59
4. grade	Microsystem	57	.78	.42
	Mesosystem	57	.75	.49
	Exosystem	57	.58	.48
	Macrosystem	57	.87	.33
	Chronosystem	57	.52	.60

Pursuant to Table 6, the greatest expectation of parents whose children are in the first grade of primary school were the academic expectations, categorized within the microsystem (M=.74). It was further determined that the lowest expectations of the parents were grouped under chronosystem, which covers all the effects that will change the child's academic life (M=.22)

The greatest expectation of parents whose children are in the second grade of primary school were the national-religious-moral values (M=.91), categorized within the macrosystem. Lowest expectations of the parents were grouped under chronosystem (M=.45).

Greatest expectation of parents whose children are in the third grade of primary school were the national-religious-moral values (M=.90), categorized within the macrosystem. Lowest expectations of the parents were grouped under chronosystem (M=.65).

Greatest expectations of parents whose children are in the fourth grade of primary school were the national-religious-moral values (M= .87), categorized under the macrosystem. Lowest expectations of the parents were grouped under chronosystem (M=.52).

The third question of the qualitative analysis dimension of the research sought answers to the question "Do the educational expectations of primary school students' parents differentiate based on their demographic characteristics (income, education, gender, age)?". The findings derived as a result of the analyzes performed for this purpose are presented in Table 7.

Table 7.

Parents' Expectations in terms of Their Demographic Characteristics

Demographic Characteristics		Microsystem *(M)*	Mesosystem *(M)*	Exosystem *(M)*	Macrosystem *(M)*	Chronosystem *(M)*
Gender	Female	.77	.80	.63	.86	.52
	Male	.80	.73	.56	.90	.48
Age	20-30 years of age	.66	.73	.56	.76	.51
	30-40 years of age	.80	.78	.58	.87	.47
	40-50 years of age	.79	.69	.60	.92	.45
Education	Primary school	1.00	.80	.60	1.00	.45
	Secondary school	.71	.71	.62	.85	.51
	High school	.78	.72	.56	.82	.50
	Bachelor's degree	.75	.76	.58	.85	.62
	Post graduate degree	.86	.93	.66	.93	.65
Income	Low Income	.73	.76	.56	.90	.34
	Middle Income	.74	.74	.55	.88	.43
	High income	.86	.73	.61	.83	.45
	Very high Income	.84	.89	.73	.94	.42

Based on the data presented in Table 7, parents' expectations were first analyzed in terms of gender. Analysis revealed that greatest expectations of both female (M=.86) and male (M=.90) participants concentrated on the acquisition of national-religious-moral values, categorized within the macrosystem. Lowest expectations of both groups were related to the items categorized within chronosystem (female, M=.52; male, M=.48).

Analyzes performed to examine the changes in parents' expectations from school based on age groups revealed that the greatest expectation in all age groups, namely 20-30 years of

age (M=.76), 30-40 years of age (M=.87) and 40-50 years of age (M=.92) is related to the macrosystem, which involves items on inculcating national-religious-moral values. However, it is further observed that parents' expectations from school increased in direct proportion to the increase in age.

Analyzes aimed to examine the changes in parents' expectations from school based on their educational background revealed that the greatest expectation in all education groups is also related to inculcating national-religious-moral values (primary school M=.1.00; secondary school M=.85; high school M=.82; associate/bachelor's degree M=.85, post graduate degree M=.93). Second most important expectations of parents from the school are related to the academic expectations categorized within the microsystem. The findings further indicate that the expectations of primary school graduate parents, who are in fact the lowest group in terms of educational background, as well as the parents with a post graduate degree (the highest group in terms of educational background) are higher compared to other groups.

Analyzes aimed to examine the changes in parents' expectations from school based on their income revealed that the greatest expectation of parents who defined themselves in low-income group (M=.90), middle income group (M=.88) and very high-income group (M=.94) was related to "inculcating national-religious-moral values" whereas the greatest expectation of parents who defined themselves in high income group (M=.86) was related to "academic achievement".

The results of the research were found to be associated with five main themes identified within the framework of the ecological systems theory put forward by Bronfenbrenner (1979) and sub-themes derived as a result of the findings. The structure developed in line with the findings is presented in Figure 4.

Figure 4.

Themes and Sub-Themes Related to Parents' Expectations

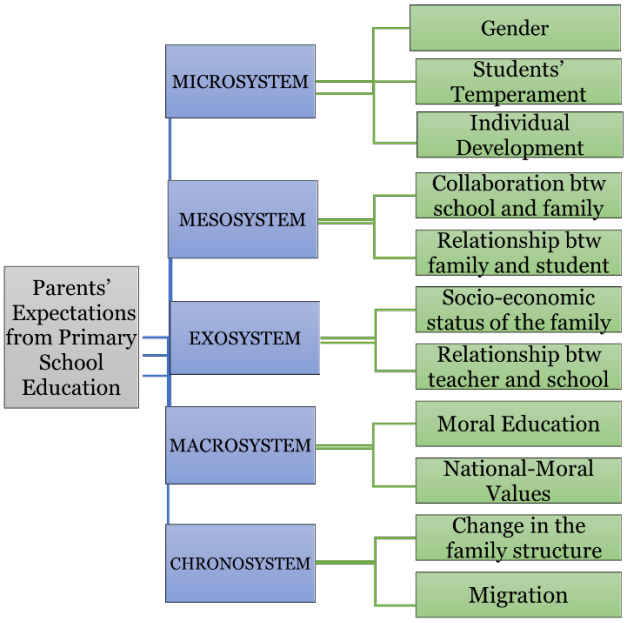


Figure 4 indicated that new sub-themes were added in the qualitative analysis dimension of the research as a supplement to the quantitative analysis.

Theme 1. Microsystem

Three different sub-themes were identified under the microsystem theme, namely "gender", "students' temperament" and "individual development".

Gender: Three of the participants included statements in line with gender-related expectations. For instance, P4, a housewife whose child is in the fourth grade expressed her expectations by saying: "My son is really energetic, he perpetually wants to deal with something, my financial income is not enough to let him attend to a sports activity course; it would be very beneficial if the school could offer such sports activities." Another participant P7 underlined the challenges of his working conditions and used an expression emphasizing gender by saying: "My daughter is really sensitive and introvert, I don't want her to have to work in challenging conditions like me in the future, so I want her to have a comfortable profession that suits her female identity."

Students' temperament: Some parents expressed their expectations by emphasizing factors such as their children's intelligence and temperament. P2 who has a son in the first grade saying: "My son was diagnosed with mild intellectual disability last year and he is repeating first grade this year. Thanks to our teacher, she is doing her best, but I think it is not enough. I think my son deserves more attention." P5, emphasized that the crowded environment of the classroom was not suitable for his child's calm temperament by saying: "As my son has grown up as an only child, he always had to play on his own. He told us, in his first days at school, that his classroom was too crowded and noisy, so he didn't like to go to school."

Individual development: P8, who has a child attending in the second grade, expressed his expectations concerning his child's individual development by saying: "When I was a child, I refrained to raise my hand as I felt anxious of my teacher getting mad at me if I answered wrong, but I would never want my own child to experience such a situation. I make sure to raise her up as a self-confident child."

Theme 2. Mesosystem

As a result of the interviews held with parents, two different sub-themes regarding the "collaboration between school and the family" and "the relationship btw family and student" were identified under the mesosystem theme.

Collaboration between school and the family: The findings revealed that school and family are currently generally disconnected from each other. For instance; P6 emphasized that the collaboration between school and family as of today is insufficient by saying: "While we were at school, everyone knew each other and our teacher knew everyone's parents in person. Now that we can only see our teacher from meeting to meeting."

Relationship between family and student: Besides parents stating that homework and exams negatively affect the communication with their children, two parents figured out that school should help them in establishing proper communication with their children. P6, whose child started first grade this year, stated that homework caused a problem in her communication with the child by saying: "At the beginning, both me and the child had nervous breakdowns at home every evening. There were days when we finished a one-page assignment in two hours." P8, whose child is in the fourth grade, states that she has some

problems in communication with her child and that she has expectations from the school in this regard by saying: "Her behavior has completely changed this year. She used to directly tell me about what was going on in the classroom, but now I either hear it from her friends' parents or I hear about it when the teacher complains about her misbehavior."

Theme 3. Exosystem

There are two different codes under the exosystem theme: the socio-economic status of the family and the relationship between teacher and the school.

Socio-economic status of the family: P3, explained his expectations from primary school education as providing social status rather than economic gains by saying: "Thanks God, I have a job and I earn pretty well; however, I would not like my son to do my job. I would do my best to ensure him to have a prestigious office job."

Relationship between teacher and school: While explaining their expectations from primary school education, parents touched upon teachers' compliance and conflicts with the school. P1, whose child is in the third grade, emphasized the relationship between teachers and the school administration and the impact of this relationship on students by saying: "Actually, we love our teacher very much, but I wish she were a little bit more active. When the teacher is more active, children will benefit more from social activities." P3, the parent of a second-grade student, expressed the effect of the relationship between the attendants and the school administration on education by saying: "My daughter says that sometimes the toilets are not that clean or there is no soap left."

Theme 4. Macrosystem

It was determined that sub-themes of "moral education" and "national-moral values" were classified under this theme.

Moral education: To the author's question about moral education, all parents answered "education begins in the family. For instance, P8 "The children spend a maximum of six hours at school, and the rest of the time they are with the family. No matter what the children learn at school, if that behavior is not reinforced at home, they cannot learn it!" P7, who told that her child was subjected to violence by his desk mate, further stated that school comes the second when it comes to moral education by saying: "What can a teacher do if the child is taught violence at home? I always remind my own child not to fight with friends, but there are also people who say the opposite."

National-moral values: Another code that parents referred to when defining their expectations from primary school education was the national-moral values. Participant P5 explained her expectations with the words: "My greatest expectation from the school is to be sure that my child will be raised to be a good and decent person for his country and nation". P6 expressed her expectations for national values to be taught at school by saying: "I want him to learn to love his country, to learn the official history, national days and wars." Another theme that parents referred to when defining their expectations from primary school education was the macrosystem. It was determined that sub-themes of "moral education" and "national-moral values" were classified under this theme.

Theme 5. Chronosystem

Change in the family structure: Situations that will change parents' expectations from school consist of two sub-themes: "change in family structure" and "immigration". Participants P7 and P2 stated that changes in the environment would trigger a change in their expectations. In this context P7 said that: "I think boys need authority, but in case such an authoritarian person does not exist in the family, say a child who does not have a father, it would be more appropriate to prefer a male teacher in primary school." while P2 said: "My husband is in the army and sometimes he is away from home for months. My daughter is always more sensitive and fragile when her father is on duty. I inform my daughter's teacher about this while her father is away on duty. I tell her that my daughter may have problems and request her to notify me in such a case."

Migration: Under the "Migration" dimension, parents stated that a change of address within the city, intercity relocation (internal migration) or inter-country migration, the rules and the environment of the new school may affect their expectations. P4, stated that student's expectations from education have been lowered due to immigration by saying: "There is a Syrian student in my son's classroom. Actually, his scores weren't that bad. Maybe he would be more successful and reach better places if he were in his own country, but he strives to adapt." P1, on the other hand, stated that the address change caused a change in his expectations from the school by saying: "Our address changed last year as we bought a new house. As I didn't like the surrounding of our old neighborhood, I didn't expect much from the school. As this school has a better surrounding, I can send my child to school with peace of mind." While determining the parents' expectations from school under the chronosystem theme, they were asked to reply questions like: "You currently have certain expectations from primary school education. So, will these expectations change over time? What kind of a situation would change your expectations?" In line with the answers provided, two sub-themes were identified as: "change in the family structure" and "migration".

Discussion and Conclusion

For the purpose of the quantitative analysis dimension of this research, which aims to determine parents' expectations from primary school education, 5 themes were identified in line with ecological systems theory, and then these five themes were elaborated with different sub-themes in the qualitative analysis dimension.

As a result of the research, it was concluded that the most common expectation in all parent groups was the inculcation of religious-national-moral values. In a study supporting this finding, Sevinç (2006) examined mothers' expectations from pre-school education and concluded that the expectations of mothers with different educational backgrounds showed a similar structure. Considering the "income" variable; it was determined that the greatest expectation of parents who indicated that they have low, middle and very high income is to acquire national, religious and moral values whereas the expectation of parents who described themselves as earning a "good" income were mostly "academic success". The findings in other studies examining the parents' expectations from education revealing that income level affects expectations from education are in parallel with the results of the current research (Bulut, 2005; Şimşek & İvrendi, 2014).

Analyzes according to the child's grade revealed that the greatest expectation of the parents of second, third and fourth grade students is the inculcation of national, religious and moral values under the macrosystem whereas the greatest expectation of the parents of first grade students is the academic achievement. Studies indicating that the expectations of parents in early childhood education mostly focus on academic achievement support the findings of this research (Loughlin-Presnal & Bierman, 2017; Özen Altınkaynak & Yanıklar, 2014; Toran & Şahin, 2020).

The first concept related to the parents' expectations from education, within the framework of ecological systems theory, is the microsystem. The microsystem theme consisted of three sub-themes: Gender, Students' Temperament and Individual Development. Parents, who consider their expectations from education within the framework of gender, expect their daughters and sons to be directed to different professions and they think in terms of gender roles. Similarly, in a study conducted with mentally retarded students, Akıncı (1991) concluded that mothers' expectations from education are higher for their sons and lower for their daughters. Another finding is that parents' expectations from education under the microsystem theme may vary depending on the student's temperament (mental development, superior talents, emotions, aggression etc.). In line with the results of this study, Papageorgiou and Kalyva (2010) found that parents of children with autism, unlike others, have expectations such as healing, being understood, and being able to communicate effectively. Another expectation of parents within the microsystem theme is to have their children's individual development to be supported. These parents thought that the school should organize events, competitions and courses and teachers should be qualified and supportive in this regard in order for their children to be healthy and socially, psychologically, physically and spiritually in harmony with the environment. There are similar studies in the literature that revealed parental expectations requiring that children's individual development should be supported by teachers and that activities involving one-to-one interaction should be featured (Dahari & Bin Ya, 2011; Ivey, 2004; Kaya, 2022; Pratoomrat, 2008).

Parents' expectations within the mesosystem theme is discussed in two different dimensions, namely collaboration between school and the family and the relationship between family and student. There are studies in the literature indicating that the relationship between school and family has an impact on educational expectations. Bailey (1999) argues that the transition period from pre-school to primary school is particularly one of the most difficult stages in a child's life and that the close relationship established by the family with the school throughout this period improves the individual's academic success. There are similar studies in the literature concluding that a successful communication between parents and school contributes to the child's progress (Dockett & Perry, 2001; Fabian, 2002). It was further determined that the relationship between the family and the child, which constitutes another sub-dimension of the mesosystem, affects the educational expectations of parents. Studies indicating that the major predictor of a student's academic success is a healthy interaction between parent and child and the support provided therein further confirm the results of the current research (Çelenk, 2001; Diaz, 1989; Eastman, 1988; Satır, 1996).

In the qualitative analysis dimension of the research, the exosystem theme was further elaborated and two sub-dimensions emerged: the socio-economic status of the family and the relationship between teacher and school. Under the socio-economic status of the family sub-dimension, parents demanded their school to offer courses and social activities so that students from low-income families can have equal opportunities with their peers. Parents further demand their school to contribute to the improvement of their children's economic and social status through education. There are studies in the literature arguing that low-income parents' expectations from all areas of education are higher compared to other groups and these studies support the findings of the current study (Erşan, 2019; Sevinç, 2006; Şimşek & İvrendi, 2014). One other sub-theme that defines the parents' expectations from school under the exosystem theme is the relationship between teacher and the school. There were parents indicating that children can benefit from social activities more effectively if the teacher and the school administration work in harmony and that the teacher will execute the education process more effectively in case the school has the administrative power over the teacher. Further research arguing that the relationship between teachers and the school administration affects the overall school environment and that teachers motivated by the school administration work more efficiently confirm the findings of the current study (Doğan et al., 2014; Ekici, 2020; Öztürk & Dündar, 2003).

Another theme that explains parents' expectations from education, within the framework of the ecological systems theory, is the macrosystem. This theme, which deals with the attitudes, values and cultural transmission dimensions of education, stands out as the most emphasized and most frequently referred area by all parents. Parents, who agree that children should acquire religious, national and moral values at school, discussed this theme in two sub-dimensions: "moral education" and "national moral values". Agreeing that the process of acquiring moral values accepted by society, such as being reputable, honest, hard-working and determined, begins in the family within the framework of moral education, parent further expected these values to be inculcated at school. Opinions arguing that the family is the significant factor in the child's learning of certain attitudes, behaviors and values are supported by different studies (Akman, 2011; Aktepe, 2014). Nevertheless, it is further discussed in the literature that families expect values such as "integrity", "justice", "loyalty", "trust", "love" and "respect" should also be taught at school (Arpacı, 2014; Ülavere & Veisson, 2015). Another sub-dimension of the macrosystem in parents' expectations from primary school education was determined as "national-moral values". Knowing and valuing national and religious days, devotion to one's nation and flag, and education of religion and ethics are considered as the most prominent expectations particularly emphasized by the parents. Yiğittir (2010), who reached a similar finding, concluded that the values that families primarily expect to be taught at school are "hard work", "respect for the National Flag and the National Anthem" and "patriotism". 4 of the 12 values identified by World Values Survey data as the values that children should acquire at home were adopted by society and most frequently accepted value was found to be religiosity (35%), followed by determination and perseverance (28%), frugality (26%) and obedience (12%) (Esmer, 1999). As the parents in the current study expected national and religious values to be taught primarily at school, the results herein do not fit in this context.

Another theme that explains parents' expectations, is the chronosystem which affects all dimensions. For the purpose of the qualitative analysis dimension of the research, the chronosystem is divided into two sub-dimensions: change in the family structure and migration. Parents argued that a change in family structure (divorce, death, separation) would cause a difference in their educational expectations. Similarly, Bayındır (2023) examined the effect of divorce on academic achievement and concluded that parents should be guided within the scope of the collaboration between school and the family and should be supported throughout the process. There are similar studies that discuss divorce within the framework of ecological systems theory, arguing that divorce affects the academic and social development of the child and that the process should be facilitated by the student-school-family coordination (Arslan, 2018; Reçber, 2020; Şeker, 2009).

Another factor that will affect parents' expectations from school was identified as "migration". Nar's (2008) study examining the communication problems with the school administration due to language problems of migrating families along with Karakuş (2006), arguing that children coming from villages to cities due to internal migration lag behind their peers academically and experience communication problems supported the findings of the current study.

Recommendations

School-family conflicts are mentioned among the most fundamental education problems of today. It is essential to reveal the expectations of the parties in order to suggest a solution for these conflicts. Within a structure such as a school, which requires taking into account both individual differences and the impact of the environment, ecological systems theory maintains its validity. The findings of the study revealed that ecological systems theory is a suitable tool to explain parents' expectations from education. The subcomponents of the theory explain the expectations of the parents from the specific to the general, thereby indicates that it is possible to examine the existing components in more detail in the qualitative analysis dimension of the research. In conclusion;

It was determined that the greatest expectations of parents, regardless of their age, gender and educational background, were inculcation of national-religious-moral values while the lowest expectations were related to students who had migrated and whose family structure had changed. While parents' expectations from first grade education focus on academic achievement, from the second grade onwards the emphasis shifts to the inculcation of national-religious-moral values. Examining the expectations against "education" variable; it was determined that the expectations of parents with primary school education, which is the lowest level of education, and parents with a postgraduate degree, which is the highest level, are higher compared to other parent groups. The analysis of parents' expectations from education in accordance with their age revealed that expectations from school increased in line with the parent's age.

The results herein provide significant ideas to schools, policy makers and non-governmental organizations about how to solve the conflicts and support parents. A unique contribution is provided to the literature in terms of developing solution-oriented ideas in order to ensure the healthy functioning of primary education institutions, which concern

almost half of the society in terms of size, and to meet the expectations of both the government and the public.

The results of the research indicated that the society's greatest expectation regarding education is on national-religious-moral values, categorized within the macrosystem. Starting from this point of view, it is recommended to meet the parents' expectations within the framework of respect for ethnicity and cultural differences and through a universal language. The dimensions of "migration" and "family structure", categorized under the chronosystem that parents least referred to when explaining their expectations, need to be carefully considered. In order to inform parents who are deemed uninterested in these issues, social support should be provided within the framework of both the school rules and general education policy. Gender inequality, economic opportunities, physical and mental disabilities are also among the expectations emphasized by the parents. More attention needs to be paid to disadvantaged students and their families within the framework of inclusive education. Accordingly, the opinions and expectations of parents, who are significant stakeholders of the society, will be taken into account, and the government's expectations from education institutions will be realized by identifying and supporting weaknesses. For further studies, it is recommended to examine and compare parents' expectations at preschool and secondary school levels. Further studies conducted in different regions, cities and institutions will also enhance and develop existing results.

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Ekolojik Sistemler Kuramı Çerçevesinde Ebeveynlerin Eğitimden Beklentileri

Özet

Bu çalışma, ilkokulda ebeveynlerin eğitimden beklentilerini açıklamayı amaçlamakta olup, keşfedici sıralı karma yöntem yaklaşımıyla tasarlanmıştır. Nicel veriler için geçerliliği ve güvenilirliği kanıtlanmış, araştırmacı tarafından geliştirilen bir kontrol listesi kullanılırken, nitel veriler yarı yapılandırılmış görüşme formu aracılığıyla toplanmıştır. Çalışmanın katılımcıları, çocukları bir devlet ilkokulunda öğrenim gören 261 ebeveynden oluşmaktadır. Araştırma sonuçlarına göre, ebeveynlerin birincil beklentileri makrosistem içinde yer alan "millî-dinî değerler" ve "ahlak eğitimi" dir. Bireysel gelişim ve akademik başarıyı içeren mikrosistem boyutu ise ikinci sırada yer almaktadır. Birinci sınıf velileri akademik başarıya öncelik verirken, üst sınıflardaki veliler millî, dini ve ahlaki değerlerin daha fazla vurgulanmasını beklemektedir. En az önemsenen kavramlar ise kronosistem teması içinde yer alan "göç" ve "aile yapısı"dır. Ayrıca, dezavantajlı öğrencilere yönelik farkındalığın ve duyarlılığın artırılması gerekmektedir, çünkü ebeveynlerin bu gruba ilişkin beklentileri ve bilgi düzeyleri görece düşük bulunmuştur. Çalışma sonucu elde edilen bulgulara göre; ekolojik sistemler kuramı ebeveynlerin eğitimden beklentilerini açıklamada uygun bir araç niteliğindedir. Okul-aile iş birliğinin sağlıklı bir şekilde ilerlemesi ve ebeveynlerin beklentilerinin yerine getirebilmesi için hem okul bazında hem de genel eğitim politikasında etnik ve kültürel farklılıklara saygı çerçevesinde millî-dini-ahlaki değerlere yönelik çalışmalar yapılması önerilmektedir.

Anahtar Kelimeler: Ebeveyn, beklenti, ilkokul, ekolojik sistemler kuramı.

Giriş

"Bir çocuğu yetiştirmek için bir köy gerekir." diyen Kızılderili atasözünün bilimsel açıklaması niteliğindeki ekolojik sistemler kuramı, Bronfenbrenner (1979) tarafından ortaya atılmış ve bireyin gelişimini çevreyle ilişki bağlamında etkili bir biçimde ele almıştır. Kuramda bireyin birebir etkileşiminden, toplumsal inanç sistemine doğru bir genişleme söz konusudur (Eliasa, 2012; Espelage & Swearer, 2003; Härkönen, 2007). Birbiri içine yerleşmiş ve etkileşim halinde olan bu sistemler en yakından en genele doğru mikrosistem, mezosistem, ekzosistem, makrosistem ve kronosistem bölümlerinden oluşmaktadır (Eliasa, 2012; Grzywacz, 2000). Bireye en yakın halka olan mikrosistem, doğrudan öğrenci ile etkileşim içinde olan aile, arkadaş, okul ve öğretmen faktörlerinden oluşmaktadır. Mezosistem ise bir alt halkada yer alan mikrosistemler arasındaki ilişkiyi kapsamaktadır. Ekzosistem, öğrencinin doğrudan içinde yer almadığı ancak gelişimini etkileyen etkileşimleri kapsamaktadır. Ebeveynler arası sorunlar, ebeveynlerin iş stresi, idare ve öğretmenler arasındaki etkileşim bu basamağa örnek oluşturmaktadır. Makrosistem, toplumun genelindeki kültürel kodlar, değerler, inanç sistemleri, sosyo-ekonomik durumları kapsamakta ve öğrenciyi doğrudan etkilemese de karakter geliştirme, bakış açısı oluşturma, düşünceyi biçimlendirme gibi etkileri bulunmaktadır. Diğer tüm sistemleri kapsayan ve her biri ile etkileşim içinde olan kronosistem ise zamanla her bir halkada oluşan değişimlerden oluşmaktadır.

Türkiye İstatistik Kurumu [TÜİK] (2022) verilerine göre 5-9 yaş arasını kapsayan ilkokul öğrencileri toplam nüfusun %27,6'sını oluşturmaktadır ve aileler de hesaba katıldığında yaklaşık 40 milyon vatandaş ilkokul eğitimi kapsamında yer almaktadır. Buradan yola çıkılarak minimal bazda okul, geniş çapta ülke politikasında başarı yakalamayı hedefleyen idareciler; öğrenci ve öğretmen kadar aile-okul ilişkisine de önem vermelidir (Akbaşlı & Kavak, 2008). Aile ve okul arasında kurulacak iletişimin önemi üzerine gerçekleştirilen çalışmalar doğru etkileşimin çocukların akademik, duygusal ve sosyal gelişimine katkı sunduğunu göstermektedir (Burns vd., 1992; Decker & Decker, 2005; Nuri vd., 2020). Bronfenbrenner'in (1979) ekolojik sistemler kuramı da ebeveynlerin çocuk gelişimi üzerindeki etkisini açıklamakta ve hem evin hem de okulun farklı ama içi içe geçmiş iki yakın mikrosistem olduğunu belirtmektedir (Rimm-Kaufman & Pianta, 2000). Arkadaş, ebeveyn, eğitimci ve diğer toplum üyeleri bu iç içe geçmiş sistemlerde etkileşime girerek çocukların olumlu etkileneceği bir düzen geliştirirler (Holmes vd., 2021). Yaşanılan yüzyılın değişen yaşam şartları ile birlikte ebeveynlerin okuldan beklentilerinde farklılaşma oluşmuştur. Bu noktada devletin okuldan beklentilerinin yanına toplumun da okuldan beklentilerini eklemek mümkündür (Gordon, 1993). Ailenin eğitime katılımı ve eğitimden beklentileri ile ilgili çalışmalar incelendiğinde, genellikle ahlaki davranışlar, verimli ders çalışma becerisi, kitap okuma alışkanlığı kazandırma ve sınavlara hazırlama şeklinde bulgulara rastlanmaktadır (Aslan, 1994; Can, 2010; Eroymak, 1997; Özçınar, 2003; Şişman, 2002). Okulların birey ve toplumun değişen ihtiyaçlarına yanıt bulabildiği ölçüde gelişimini sürdürmesi söz konusudur (Balkar, 2009). Ancak Aytaç'a (2000) göre Türkiye' de okul, toplumun ihtiyaçlarını giderme konusunda her geçen gün yetersiz kalmakta ve dolayısı ile okul-veli ilişkisi sağlıklı bir şekilde yürümemektedir. Bu iletişimsizliğin sonucu olarak olası sorunlarda haksızlığa uğradığını düşünen ebeveynlerin şiddete yönelme eğilimleri artmaktadır (Debarbieux, 2003). Ailelerle sürekli iş birliği içerisinde olan öğretmenler şiddet olayının mağduru durumuna düşmektedir (Rodriguez vd., 2014).

Toplum ve devlet arasındaki uyum ve dengeyi sağlama görevini üstlenen eğitim kurumlarının bunu gerçekleştirebilmesi için öncelikle talepleri göz önünde bulundurması ve ham maddesi olan insan faktörünü iyi tanıması gerekmektedir. Bu amaçla ilkokul öğrencilerinin ebeveynlerinin okuldan beklentilerini ekolojik sistemler kuramı çerçevesinde incelemeyi amaçlayan bu çalışma hem nicelik olarak fazla ebeveyne ulaşabilme hem de niteliksel olarak daha derin inceleme imkânı sunmasından dolayı açımlayıcı sıralı desene göre tasarlanmıştır. Bu amaç doğrultusunda şu soruların yanıtları aranmaktadır:

1. Ekolojik sistemler kuramına göre ilkokul öğrencilerinin ebeveynlerinin eğitimden beklentileri nelerdir?

2. Ekolojik sistemler kuramına göre ilkokul öğrencilerinin ebeveynlerinin eğitimden beklentileri sınıf düzeyine göre anlamlı farklılık göstermekte midir?

3. Ekolojik sistemler kuramına göre ilkokul öğrencilerinin ebeveynlerinin eğitimden beklentileri demografik değişkenlere göre (cinsiyet, gelir, eğitim, yaş) anlamlı farklılık göstermekte midir?

4. Nicel boyutta temel alınan ekolojik sistemler kuramına ait temalara nitel boyuttaki görüşmeler sonucunda yeni boyutlar eklenmekte midir?

Yöntem

Bu araştırma, nicel ve nitel iki farklı aşamadan oluşan açımlayıcı sıralı desene göre düzenlenmiş bir karma yöntem çalışmasıdır (Creswell & Plano Clark, 2007). Bu desene göre öncelikle nicel veriler toplanıp analizleri gerçekleştirilir. Sonrasında nitel veriler toplanır ve ilk aşamada elde edilen nicel verilerin ayrıntılı bir şekilde açıklanmasına yardımcı olur. İlk sırada yer alan nicel aşamanın üzerine ikinci sıradaki nitel aşama inşa edilir ve bu iki aşama çalışmanın ortasında ilişkilendirilir. Böyle bir yaklaşım benimsenmesinin nedeni nicel verilerle elde edilen genellenebilir verileri, nitel çalışma aracılığı ile derinlemesine soruşturarak istatistiksel sonuçları daha anlamlı hale getirmektir (Rossman & Wilson, 1994; Tashakkori & Teddlie, 1998).

Açımlayıcı desenin ilk aşaması olan nicel boyutta 253 ebeveyn ile çalışılmıştır. Ebeveynlerin belirlenmesinde yakın ve erişilmesi kolay gruplarla çalışma esasına dayanan kolay ulaşılabilir örnekleme yönteminden yararlanılmıştır (Yıldırım & Şimşek, 2011). Nicel veriler toplanırken araştırmacı tarafından geliştirilen, geçerliği ve güvenirliği sağlanmış kontrol listesi formundan yararlanılmıştır. Ulaşılan veriler SPSS paket programına aktarılmış, frekans ve yüzde değerleri belirlenmiştir. Araştırmanın nitel boyutunda katılımcıların bir olguya dair algılarını ve yaşantılarını ortaya çıkarmayı amaçlayan olgubilim deseninden yararlanılmıştır (Creswell, 2012).

Araştırmanın katılımcıları amaçlı örnekleme yöntemi ile belirlenmiştir. Olasılık temelli olmayan bu örnekleme yaklaşımında araştırma amacına göre bilgi açısından zengin ve belirli özelliklere sahip özel durumlar ile çalışılmaktadır (Büyüköztürk vd., 2012). Bu doğrultuda araştırma örneklemini, 1. sınıftan 4. sınıfa kadar herhangi bir düzeyde çocuğu olan ve araştırmanın nicel boyutunda yer almış olan 8 ebeveyn oluşturmaktadır. Araştırmada veri toplamak amacıyla yarı yapılandırılmış görüşme formu kullanılmıştır. Brinkmann ve Kvale (2018) görüşmeyi, karşılıklı etkileşim içerisinde üretilen, araştırma sorularına yanıt arayan, içinde bulunduğu bağlamdan anlam kazanan, anlatıma dayalı bir yöntem olarak tanımlamaktadır. Katılımcılarla yapılan görüşmelerde etik ilkelere uygunluk açısından kişilerin isimleri yerine her ebeveyn için E1, E2, E3 şeklinde kodlama yöntemine gidilmiştir. Katılımcı ebeveynlerin altısı kadın ve ikisi erkek katılımcılardan oluşmaktadır. Katılımcıların yaş ortalamaları 30 ve 48 aralığında değişmektedir. Katılımcılar lisans (3), lise (2), ortaokul (2) ve ilkokul (1) mezunu ebeveynlerdir. Kadın ebeveynlerin dördü çalışmamaktadır. Erkek katılımcılardan biri işçi ve biri kamu görevlisi olarak çalışmaktadır. Katılımcıların yarısı kendilerini orta gelir düzeyinde olarak tanımlarken iki ebeveyn iyi gelirleri olduğunu, iki ebeveyn ise düşük gelir düzeyine sahip olduğunu belirtmiştir. Ebeveynler belirlenirken her sınıf düzeyinden temsilci bulunmasına dikkat edilmiş ve her sınıf için farklı-sosyoekonomik düzeyde ikişer veli ile görüşülmüştür.

Görüşmeler her katılımcı ile bire bir şekilde gerçekleştirilmiştir. Görüşmeye başlamadan önce hangi amaçla soruları cevaplayacakları açıkça anlatılmış, kültürel ve sosyal farklılıkları göz önünde bulundurmaya dikkat edilmiş, içten ve işbirlikçi bir yaklaşım

sağlamaları için uygun ortam oluşturulmaya çalışılmıştır (Kahn & Canell, 1957). Görüşme sürecince veri kaybını önlemek, akışı bozmamak, aynı zamanda daha sonra ayrıntılı analizler yapabilmek adına ses kaydı alınması gerektiği belirtilmiş ve katılımcılardan bu konuda izin alınmıştır (Borg, 1963).

Yarı yapılandırılmış görüşme formu hazırlanırken Patton (2002) tarafından tanımlanan soru türleri temel alınmıştır. Bu doğrultuda katılımcının kolay cevaplayabilmesi ve ısınması için sürece deneyim soruları ile başlanmış sonrasında ise görüş soruları, duygu soruları, bilgi soruları şeklinde süreç genişletilmiştir. Hazırlanan sorular bir alan uzmanı ve bir dil uzmanı ile paylaşılmış ve onaylar doğrultusunda son şekli verilmiştir.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Etik değerlendirmeyi yapan kurulun adı = Harran Üniversitesi Sosyal ve Beşerî Bilimler Etik Kurulu

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Bulgular

Günümüzde temel eğitim sorunları arasında okul-aile çatışmaları yer almaktadır. Çatışmaların bir çözüme ulaşması için tarafların beklentilerinin ortaya konulması esastır. Bu noktada ekolojik sistemler kuramının temelinde yer alan bireysellik yerine etkileşim halinde olunan çevrenin de hesaba katıldığı bir yapıdan yola çıkılmalıdır. Okul gibi hem bireysel farklılıkları hem de çevre etkisini göz önünde bulundurmayı zorunlu kılan bir yapıda ekolojik sistemler kuramı geçerliliğini sürdürmektedir. Çalışma sonucu elde edilen bulgulara göre kuram, ebeveynlerin eğitimden beklentilerini açıklamada uygun bir araç niteliğindedir. Ekolojik sistemler kuramının alt bileşenleri ailenin beklentilerini özelden genele, yakından uzağa açıklamakta ve araştırmanın nitel boyutunda mevcut bileşenleri daha ayrıntılı olarak ele almanın mümkün olduğunu göstermektedir. Sonuç olarak;

Araştırma sonucunda yaş, cinsiyet, eğitim düzeyi fark etmeksizin ebeveynlerin en yüksek beklentilerinin millî-dini-ahlaki değerlerin kazandırılması olduğu, en düşük beklentilerinin ise göç etmiş ve aile yapısı değişmiş öğrenciler ile ilgili olduğu görülmüştür. Ebeveynlerin birinci sınıfta beklentisi akademik başarı iken ikinci sınıftan itibaren düzey arttıkça millî-dini-manevi değerlerin öğretilmesi şeklinde beklentiler ağırlık kazanmaktadır. Gelir düzeyine göre beklentiler incelendiğinde sadece "iyi" gelir düzeyinde olan ebeveynlerin akademik başarıyı önceledeği, ekonomik düzeylerini; çok iyi, orta ve zayıf olarak niteleyen ebeveynlerin en yüksek beklentilerinin yine millî-dinî-ahlaki değerlerin kazandırılması olduğu tespit edilmiştir. Ebeveynlerin eğitim düzeyine göre beklenti ortalamaları incelendiğinde en düşük eğitim düzeyi olan ilkokul ile en yüksek grup olan lisansüstü eğitim düzeyindeki

ebeveynlerin beklenti ortalamalarının diğer gruplara göre daha fazla olduğu tespit edilmiştir. Ebeveynlerin yaşa göre eğitimden beklentileri incelendiğinde yaş ortalaması arttıkça okula dair beklentilerin de arttığı görülmüştür. Ebeveynlerin mikrosistem içerisindeki beklentileri; cinsiyet, öğrenci yapısı ve bireysel gelişim olarak alt temalara ayrılmaktadır. Mezosistem boyutunda beklentiler açıklanırken okul-aile ve aile-çocuk ilişkisine değinilmiştir. Ekzosistem boyutunda beklentilerini sosyo-ekonomik durum ve öğretmen-okul ilişkisi olarak ifade eden ebeveynler, makrosistemde ahlakı ve millî-manevi değerleri vurgulamaktadır. İç içe bir yapı gösteren bu dört alanın her birini etkileyen boyut olan kronosistemi ise aile yapısındaki değişim ve göç kavramları ile ilişkilendirmektedirler.

Tartışma ve Sonuç

İlkokul düzeyinde ebeveynlerin eğitimden beklentilerinin belirlenmesinin amaçlandığı bu araştırmanın nicel boyutunda ekolojik sistemler kuramı doğrultusunda 5 temaya ulaşıldığı nitel boyutta ise bu beş temanın farklı alt temalarla detaylandırıldığı belirlenmiştir.

Araştırma sonucunda ebeveynlerin eğitim düzeyi, yaşı ve cinsiyeti fark etmeksizin tüm gruplarda en sık rastlanan beklentinin makrosistem içerisinde yer alan millî-dinî-ahlaki değerlerin kazandırılması olduğu görülmüştür. Bulguyu destekleyen çalışmasında, annelerin okul öncesi dönemde eğitimden beklentilerini inceleyen Sevinç (2006), her eğitim düzeyindeki annelerin beklentilerinin benzer bir yapı gösterdiği sonucuna ulaşmıştır. Gelir düzeyine göre incelendiğinde ise alt, orta ve çok iyi ekonomik düzeyde olduğunu belirten ebeveynlerin en büyük beklentisi millî-dinî-ahlaki değerlerin kazandırılması iken kendisini "iyi" ekonomik düzeyde betimleyen velilerin beklentilerinin daha çok akademik başarı üzerine olduğu tespit edilmiştir. İlkokul ve okulöncesi düzeyde ebeveynlerin eğitimden beklentilerini inceleyen çalışmalarda ekonomik düzeyin eğitimden beklentileri değiştirdiğine yönelik elde edilen bulgular mevcut bulguyu desteklemektedir (Bulut, 2005; Şimşek & İvrendi, 2014).

Ebeveynlerin eğitimden beklentilerinin çocuğun sınıf düzeyine göre nasıl bir yapı sergilediğini belirlemek amacıyla yapılan analizler sonucunda ikinci, üçüncü ve dördüncü sınıf öğrencileri için ailelerin en büyük beklentisini makrosistem altında yer alan millî-dinî-ahlaki değerler oluştururken yalnızca birinci sınıf velilerinin mikrosistem içerisinde yer alan akademik başarıyı önceledikleri tespit edilmiştir. Erken çocukluk döneminde ebeveynlerin çoğunlukla akademik beklentiler içerisinde olduğuna dair çalışmalar, bu bulguyu desteklemektedir (Loughlin-Presnal & Bierman, 2017; Özen Altınkaynak & Yanıklar, 2014; Toran & Şahin, 2020).

Ekolojik sistemler kuramı çerçevesinde ebeveynlerin eğitimden beklentilerinin ilk bölümünü mikrosistem teması oluşturmaktadır. Bulgular sonucunda mikrosistem teması cinsiyet, öğrenci yapısı ve bireysel gelişim olmak üzere üç alt temadan oluşmaktadır. Eğitimden beklentilerini cinsiyet çerçevesinde ele alan veliler kız ve erkek çocuklarının farklı mesleklere yöneltilmesini beklemekte ve toplumsal cinsiyet rolleri içerisinde düşünmektedirler. Benzer şekilde Akıncı (1991), zihin engelli öğrencilerle gerçekleştirdiği çalışmada annelerin eğitimden beklentilerinin erkek çocukları söz konusu olduğunda daha yüksek olduğu, kız çocukları için ise daha düşük beklentili oldukları sonucuna ulaşmıştır. Mikrosistem teması altında ebeveynlerin eğitimden beklentilerinin öğrenci yapısına (zihinsel

gelişim, üstün yetenekli, duygusal, agresif vb.) göre değişebildiği elde edilen bir diğer bulgudur. Papageorgiou ve Kalyva (2010), mevcut bulguyu destekleyen çalışmaları sonucunda otizmli çocukların ebeveynlerinin, diğerlerinden farklı olarak iyileşme, anlaşılma ve etkili iletişim kurabilme gibi beklentilere sahip olduğunu tespit etmiştir. Mikrosistem teması içindeki bir diğer alt boyutta ebeveynlerin beklentileri çocuklarının bireysel gelişiminin desteklenmesidir. Ebeveynler çocuklarının sosyal, psikolojik, fiziksel ve ruhsal açıdan çevre ile uyum içinde ve sağlıklı olması için okulun etkinlikler, yarışmalar ve kurslar düzenlemesi, öğretmenlerin de bu konuda bilgili ve destekçi olmaları gerektiğini düşünmektedirler. Öğretmenler tarafından çocuğun bireysel gelişiminin desteklenmesi ve bire bir etkileşim içeren faaliyetlerin önemsenmesi yönündeki ebeveyn beklentilerini ortaya koyan benzer çalışmalar literatürde yer almaktadır (Dahari & Bin Ya, 2011; Ivey, 2004; Kaya, 2022; Pratoomrat, 2008).

Bireyin yakın çevresinin birey üzerindeki etkisini kapsayan mezosistem teması içerisinde ebeveynlerin beklentileri okul-aile iş birliği ve aile-çocuk ilişkisi açısından iki farklı boyutta ele alınmaktadır. Okul ve aile arasındaki ilişkinin eğitimle ilgili beklentiler üzerinde etkili olduğuna dair çalışmalara literatürde rastlanmaktadır. Bailey (1999), özellikle okul öncesinden ilkokula geçiş döneminin çocuğun hayatındaki en zor evrelerden biri olduğunu, bu dönemde ailenin okulla kurduğu yakın ilişkinin bireyin eğitim başarısını arttırdığını belirtmektedir. Ebeveyn ve okul arasındaki başarılı iletişimin çocuğun ilerleme hızına katkı sağladığına yönelik benzer çalışmalar da literatürde yer almaktadır (Dockett & Perry, 2001; Fabian, 2002). Mezosistemin bir diğer alt boyutunu oluşturan aile-çocuk ilişkisinin, ebeveynlerin eğitim beklentilerini etkilediği tespit edilmiştir. Öğrencinin akademik başarısının en önemli yordayıcısının ebeveyn ile çocuk arasındaki sağlıklı etkileşim ve sunulan destekten geçtiğini ortaya koyan çalışmalar mevcut bulguyu desteklemektedir (Çelenk, 2001; Diaz, 1989; Eastman, 1988; Satır, 1996).

Ekolojik sistemler kuramına göre ailelerin okuldan beklentilerinin bir diğer boyutunu da okul sistemlerini ve kuralları kapsayan, öğrenciyi dolaylı yoldan etkileyen değişkenler olusturmaktadır. Araştırmanın nitel boyutunda ekzosistem teması daha da ayrıntılanmış ve ailenin sosyoekonomik durumu ve öğretmen-okul ilişkisi olmak üzere iki alt boyut ortaya çıkmıştır. Sosyoekonomik düzeye yönelik ebeveynler, düşük ekonomik düzeydeki öğrencilerin akranları ile fırsat eşitliği yakalayabilmeleri için okul içi kurslara ve sosyal faaliyetlere ağırlık verilmesini talep etmişlerdir. Ayrıca ebeveynler eğitim aracılığı ile çocuklarının ekonomik düzeylerinin ve toplumsal statülerinin artmasını talep etmektedirler. Düşük gelir düzeyindeki ebeveynlerin eğitimin her alanından beklentilerinin diğer gruplara göre daha yüksek olduğuna dair çalışmalar alan yazında yer almakta ve mevcut bulguyu desteklemektedir (Erşan, 2019; Sevinç, 2006; Şimşek & İvrendi, 2014). Ekzosistem teması altında ebeveynlerin okuldan beklentilerini tanımlayan bir diğer alt tema ise öğretmen-okul ilişkisidir. Öğretmen ve idarenin uyum içinde çalışması durumunda çocukların sosyal faaliyetlerden daha fazla yararlanabileceği, idarenin öğretmen üzerinde yaptırım gücü olması halinde öğretmenin eğitim sürecini daha etkili yürüteceğine yönelik ebeveyn görüşleri tespit edilmiştir. Öğretmen ve idare arasındaki ilişkinin okul ortamını genel olarak etkilediğine, idare tarafından motivasyonu arttırılan öğretmenlerin daha verimli çalıştığına yönelik araştırmalar mevcut bulguyu desteklemektedir (Doğan vd., 2014; Ekici, 2020; Öztürk & Dündar, 2003).

Ekolojik sistemler kuramına göre ebeveynlerin eğitimden beklentilerini açıklayan bir diğer tema makrosistemdir. Eğitimin tutum, değer ve kültürel aktarım gibi boyutları ile ilgilenen bu tema tüm ebeveynler tarafından en çok vurgulanan ve üzerinde durulan alan olarak dikkat çekmektedir. Çocuğunun okulda millî-dinî-ahlaki değerleri kazanması gerektiği konusunda fikir birliği içerisinde olan ebeveynler bu temayı "ahlak eğitimi" ve "millî manevi değerler" olmak üzere iki alt boyutta ele almışlardır. Ahlak eğitimi çerçevesinde saygılı, dürüst, çalışkan ve azimli olmak gibi toplum tarafından kabul görülen ahlaki değerlerin edinilme sürecinin ailede başladığını kabul etmekle birlikte yine de bu değerlerin okul tarafından kazandırılmasını beklediklerini belirtmişlerdir. Çocuğun tutum, davranış ve değerleri öğrenmesinde ailenin en önemli faktör olduğu farklı çalışmalarla desteklenmektedir (Akman, 2011; Aktepe, 2014). Ancak yine de ailelerin dürüstlük, adalet, sadakat, güven, sevgi, saygı gibi değerlerin okulda da öğretilmesi gerektiğine dair beklentileri olduğu alan yazında yer almaktadır (Arpacı, 2014; Ülavere & Veisson, 2015). Ebeveynlerin eğitimden beklentilerinde makrosistemin bir diğer alt boyutu "millî manevi değerler" olarak belirlenmiştir. Millî ve dinî bayramların bilinmesi, değer verilmesi, vatan ve bayrak sevgisi ve din bilgisi ebeveynlerin üzerinde durduğu beklentiler olarak görülmektedir. Benzer bir bulguyu elde ettiği çalışmasında Yiğittir (2010), ailelerin okulda kazandırılmasına öncelik verdiği değerlerin öncelikle "çalışkanlık", "Türk bayrağı ve İstiklal Marşı'na saygı" ve "vatanseverlik" şeklinde devam eden değerler olduğunu tespit etmiştir. Dünya Değerler Araştırmasının verilerine göre çocukların evde kazanması gereken 12 değerden 4 tanesi Türk toplum yapısı bakımından kabul görmüş ve bu değerlerin en çok kabul göreninin dindarlık (%35) olduğu, sonrasında azim ve sebat (%28), tutumluluk (%26) ve itaatkârlık (%12) değerlerinin geldiği görülmüştür (akt. Esmer, 1999). Mevcut çalışmada ebeveynler millî ve dinî değerlerin okul eğitimi ile karşılanmasını öncelikle bekledikleri için sonuçlar uyum sağlamamaktadır.

Ekolojik sistemler kuramına göre ailelerin beklentilerinin bir diğer boyutu ise tüm boyutları etkileyen kronosistemdir. Araştırmanın nitel boyutunda kronosistem kendi içerisinde aile yapısındaki değişim ve göç olmak üzere iki alt boyuta ayrılmıştır. Ebeveynler aile yapısının değişmesinin (boşanma, ölüm, ayrı kalma) eğitim beklentilerinde farklılık oluşturacağını belirtmişlerdir. Benzer şekilde Bayındır (2023), boşanmanın akademik başarıya etkisini incelediği çalışmada ebeveynlerin okul-aile iş birliği kapsamında yönlendirilmesi ve süreç boyunca desteklenmesi gerektiğini söylemiştir. Boşanma durumunu ekolojik kuram perspektifinden ele alan benzer çalışmalarda boşanma sürecinin çocuğun akademik ve sosyal gelişimini etkilediği ve öğrenci-okul-aile koordinasyonu ile sürecin desteklenmesi gerektiği belirtilmektedir (Arslan, 2018; Reçber, 2020; Şeker, 2009).

Ebeveynlerin okuldan beklentilerini değiştirecek bir diğer etken olarak "göç" faktörü belirlenmiştir. Nar (2008), dış göç sonucu ailelerin dil bilmemesi nedeniyle okul yönetimi ile oluşan iletişim sorunlarına değindiği çalışması ile Karakuş (2006) ise iç göç ile köyden kente gelen çocukların akademik olarak akranlarından geri kaldığını ve iletişim problemleri yaşadığını belirten çalışması ile mevcut bulguyu desteklemektedir.

Öneriler

Elde edilen bulgular sorunların çözümü ve ebeveynlerin desteklenmesi amacıyla nasıl bir yol izlenebileceği hakkında okullara, politika yapıcılara ve sivil toplum kuruluşlarına önemli fikirler sunmaktadır. Büyüklük itibari ile toplumun neredeyse yarısını ilgilendiren ilköğretim kurumlarının sağlıklı işlemesi ve hem devletin hem halkın beklentilerini karşılayabilmesi için çözüme yönelik fikir oluşturmada alan yazına orijinal bir katkı sunulmaktadır.

Araştırma sonucunda toplumun eğitimle ilgili en büyük beklentisinin makrosistem içerisinde yer alan millî-dinî-manevi değerler üzerine olduğu görülmüştür. Buradan yola çıkarak etnik ve kültürel farklılıklara saygı çerçevesinde ve evrensel bir dille ebeveynlerin beklentilerinin karşılanması önerilmektedir. Ebeveynlerin en az beklenti içerisinde olduğu kronosistem teması altında yer alan "göç" ve "aile yapısı" boyutlarının dikkatle ele alınması gerekmektedir. Bu konularda ilgisiz görülen ebeveynleri bilgilendirmek amacıyla sosyal destek çalışmaları hem okul hem de genel bir eğitim politikası çerçevesinde gerçekleştirilmelidir. Cinsiyet eşitsizliği, ekonomik imkânlar, fiziksel ve zihinsel engeller de ebeveynlerin üzerinde durduğu beklentiler arasında yer almaktadır. Kapsayıcı eğitim çerçevesinde dezavantajlı öğrencilere ve ailelerine yönelik daha fazla ilgi gösterilmesi gerekmektedir. Bu şekilde hem toplumun önemli bir paydaşı olan ebeveynlerin görüşleri ve beklentileri dikkate alınacak hem de yetersiz alanlar belirlenip desteklenerek devletin eğitim kurumlarından beklentileri gerçekleştirilecektir. Bundan sonraki araştırmalarda okul öncesi ve ortaöğretim düzeyinde ebeveyn beklentilerinin incelenmesi ve karşılaştırılması önerilmektedir. Ayrıca farklı bölgeler, şehirler ve kurumlar ile gerçekleştirilen çalışmalar mevcut bulguyu zenginleştirecek ve geliştirecektir.

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The Effect of the use of Educational Digital Comics in Primary School Fourth Grade Turkish Course on Students' Writing Skills and Self-Efficiency

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Abstract

This study aims to examine the impact of educational digital comics on the writing skills and writing self-efficacy of fourth-grade students in Turkish lessons. A quantitative research method, the pre-test-post-test control group quasi-experimental design, was used. The study's participants were 70 fourth-grade students (34 experimental and 36 control groups) from a primary school in Manisa during the 2022-2023 academic year. The sample was chosen using a non-random sampling method, and groups were determined through random selection with the approval of teachers and administrators. Data were collected using the "Writing Self-Efficacy Scale" and the "Writing Skills Rubric". The Writing Skills Rubric was used to assess students' writing abilities, considering factors such as word choice, grammar, readability, and mechanics. The Writing Self-Efficacy Scale was applied at the beginning and end of the process to evaluate the students' self-efficacy in writing, including their writing attitudes, independent writing, reflective writing, and resistance to writing. Data analysis was performed using Kolmogorov-Smirnov normality test, independent sample t-test, dependent sample t-test, and exploratory factor analysis with SPSS software. Results showed that the experimental group, who received instruction using educational digital comics, had higher writing skills and self-efficacy compared to the control group. The study concluded that educational digital comics are effective in improving writing skills, and suggested that such tools could be used to foster creativity and diversity in education. Additionally, it was suggested that digital comics could be used in other subjects and skills as well.

Keywords: Writing skill, writing self-efficacy, educational digital comic.

Introduction

Writing, an indispensable tool for communication, is a fundamental language skill acquired during elementary school that remains essential in every aspect of life. In the development of reading and writing skills, writing is the most basic element that is processed in memory and serves as a medium for fulfilling the functions of other skills (Göçer, 2013). The fact that writing is a skill used throughout life makes the development of writing skills significant and necessary. Through writing, thought and creativity can be utilized without limits (Duran, 2010). Many factors influence the development of writing skills. Martinez et al., (2011) emphasize that self-efficacy plays an important role in writing skills and can be used to predict a student's writing performance. Bandura (1994) defines self-efficacy as an individual's thoughts regarding their capacity to plan and execute a task. Bandura (1997) considers self-efficacy to be one of the most important components of volitional mechanisms, placing it above the accumulation of knowledge and skills in a particular area. Additionally, a positive relationship has been established between students' levels of self-efficacy and their ability to acquire a skill or their levels of success (Schunk & Zimmerman, 2007). Therefore, the importance of writing self-efficacy in the development of writing skills cannot be overlooked.

Writing self-efficacy is defined as the process through which an individual demonstrates their writing ability during writing performance (Aydın & Duğan, 2018). A high level of writing self-efficacy in students indicates that they consistently engage in activities to develop their writing skills and continue to improve their writing abilities without giving up, even when they make mistakes (Demir, 2011). By examining writing self-efficacy, the problems students encounter in the skill development process can be clearly identified, allowing for potential solutions to be proposed. In this way, teachers' approaches to students can be shaped

according to the students' self-efficacy regarding writing skills. In recent years, studies in the field of writing self-efficacy have gained momentum in our country (Akar & Özber, 2018). Research conducted to measure students' writing self-efficacy (Manay et al., 2017; Özonat, 2015; Şengül, 2011) generally covers the second stage of primary education. Given that self-efficacy begins to develop in the first stage of primary education and that the development of writing skills accelerates in the fourth grade (Tok & Erdoğan, 2017), it is deemed necessary for these studies to increase focus on fourth-grade students, particularly in the first stage of primary education.

Writing is one of the indispensable means of expression today. As language continues to evolve, the development of means of expression becomes necessary. Additionally, with the advancement of technology, it can be said that oral communication has declined, while written communication has increased due to the abundance and practicality of digital environments. This developmental process of language and technology necessitates the evolution of writing. Writing is actively used in human life for communication, professional purposes, or personal enjoyment. In students' academic lives, it is a skill that is used effectively, making its improvement very important. With the increasing use of writing in various fields, such as social and academic contexts, the importance placed on writing and writing skills is also growing. Each citizen in Türkiye writes at least one official document, and students engage in written expression in academic settings (Arıcı, 2008).

Writing, being one of the four fundamental language skills, is the final step in the skill acquisition process. It plays a unifying role in a cumulative progression. After acquiring listening, speaking, and reading skills, students move on to the acquisition of writing skills through the use of all these skills. The necessity of using other skills for the acquisition of writing makes writing a long, challenging, and significant process. The development of writing skills requires various physical, mental, and emotional attributes, such as intense effort, time, and practice, which is why many students struggle during this process. Fear of failure in writing, feelings of inadequacy, and gaps in knowledge and practice stem from individuals' levels of writing self-efficacy (Gülli & Kuşdemir, 2021). For an individual to perform a task, their belief in their ability and desire to do it must be at a high level. Demir (2013) states that a student with writing self-efficacy who believes in their success and possesses high motivation before starting to write will find the writing process easier.

Writing self-efficacy is an internal process for the individual. When examining the concepts of writing desire and belief in writing ability alongside writing skills, writing self-efficacy emerges. A student's self-efficacy is closely related to their writing skills. Having a high degree of writing self-efficacy increases the likelihood of the student succeeding in writing. In this regard, it is evident that a student's motivation and belief are crucial requirements for elevating writing success. Korkmaz (2015) states that the quality of students' writing skills increases with their writing self-efficacy. For effective use of one's native language, the development of language skills is significant. Throughout the primary education process, the development of the four fundamental language skills requires regular and diligent effort. Language skills do not develop at the same pace or quality for all students. It is noted that students often struggle with the development of writing skills, which is one of the fundamental

language skills. Students frequently face challenges in written expression and experience high anxiety regarding written exams (Özbay, 2011). The development of writing skills progresses more slowly compared to listening, reading, and speaking skills (Demirel & Şahinel, 2006; Göğüş, 1978; Maltepe, 2006; Yalçın, 1998). Addressing certain deficiencies in the teaching process of language skills, utilizing modern methods and techniques, and incorporating practical and meaningful materials into the process are especially important for the development of writing skills.

It has been observed that the writing skills of students in the fourth grade, which is the final level of primary education, are significantly higher compared to students in the first, second, and third grades (Tok & Erdoğan, 2017). This indicates that the development of writing skills increases in the fourth grade. Effectively guiding this skill development will be important for fourth-grade students. To make this development rapid, complete, and effective, it is necessary to keep pace with the advancing era. This way, the doors to practical and effective teaching can be opened, allowing for adaptation to the existing system. It is evident that technology is pervasive in daily life. Integrating the digitalization offered by technology into every aspect of life in the most appropriate way is essential. Utilizing this in the field of education is important for a more effective teaching and learning process. Emerging technology particularly captures the attention of primary school children and ensures that they spend much of their time in the world of technology. This situation restricts the time children allocate to educational activities. It is not about distancing children from the world of technology; rather, it is essential to include technology in the educational process. Increasing internet-supported materials in educational environments is important for diversity, relevance to the era, practicality, and accessibility. Additionally, technology-based digital materials attract students' interest and motivate them in class. It is believed that incorporating educational digital comics into the teaching and learning process will expand the limited time allocated for educational activities alongside technology.

The educational digital comics developed for the research are original creations by the researcher and have not been used in any previous studies, which is significant for the originality of the research. It is believed that this study will provide the researcher, participating teachers, and students with the opportunity to encounter and experience a new material. A review of the literature shows that comics have been the subject of research in areas such as foreign language learning or social studies. Existing studies on the use of comics in Turkish language classes have focused on their use to promote reading enjoyment and their impact on reading skills. Including educational digital comics in a study related to students' writing skills and writing self-efficacy in the context of Turkish lessons is expected to offer a new perspective to research. Additionally, it is anticipated that the study will contribute new methods and techniques to the field, serve as an example for future studies, and promote the widespread use of digital tools in education.

The integration of technology into our era is reflected in education and teaching, facilitating the digitalization of methods and techniques used in this field. Traditional forms of information transfer and rote learning have become obsolete (Aslan et al., 2015). The increasing use of technology in education is prompting researchers to conduct studies in this

area. The presence of media necessitates developing a critical perspective toward various visual elements in our increasingly visual lives. Cihan (2014) states that students should learn the ability to critically analyze and interpret visuals at school to prevent the establishment of a fixed worldview. It is particularly important for these teachings to be implemented in Turkish language classes as the native language. There are considerations on how Turkish lessons can contribute to the ability to critically analyze and interpret visuals. Following this thought, a question arises regarding which tools can be used to enrich verbal expression with visual narration in Turkish classes. At this point, there is a belief that educational digital comics can contribute to developing a critical perspective on visuals and to interpreting them. Comics are a holistic medium where visuality and literary qualities are intertwined. They are defined as a narrative tool formed by the sequential arrangement of images or drawings that convey a desired message in a way that elicits an aesthetic response from the reader (Alsaç, 1994; McCloud, 2019). They capture the reader's attention and facilitate understanding of the plot, allowing them to visualize the story in their imagination. Thus, the reader finds themselves within the narrative structure, opening the door to the limitless possibilities of their imagination through visuals. This structure of comics suggests that when used for educational purposes, they may yield effective results.

The primary aim of this research is to determine the effect of using educational digital comics on the writing skills and self-efficacy of fourth-grade students in Turkish language classes. In line with this objective, answers will be sought for the following questions:

1. Is there a significant difference between the pre-test and post-test average scores of the Writing Self-Efficacy Scale for the experimental group students who were taught using educational digital comics?

2. Is there a significant difference between the pre-test and post-test average scores of the Writing Self-Efficacy Scale for the control group students who were taught without using educational digital comics?

3. Is there a significant difference between the post-test average scores of the Writing Self-Efficacy Scale for the experimental group students taught with educational digital comics and the control group students who continued to be taught without them?

4. Is there a significant difference between the pre-test and post-test average scores of the Writing Skills Rubric for the experimental group students who were taught using educational digital comics?

5. Is there a significant difference between the pre-test and post-test average scores of the Writing Skills Rubric for the control group students who were taught without using educational digital comics?

6. Is there a significant difference between the post-test average scores of the Writing Skills Rubric for the experimental group students taught with educational digital comics and the control group students who continued to be taught without them?

Method

Research Model

In this study, which examines the effect of using educational digital comics on the writing skills and self-efficacy of fourth-grade primary school students in Turkish lessons, a quasi-experimental design with pre-test and post-test control groups from quantitative research methods was employed. The difficulty of forming unbiased groups in schools prompts researchers to utilize a quasi-experimental design that allows for matching ready-made groups based on certain variables, enabling unbiased assignment within these groups (Gay et al., 2005). In the pre-test and post-test control group quasi-experimental model, measurements are conducted under equal conditions in two groups that are created without random assignment, before and after the intervention (Karasar, 2016). The design of the study is modeled in Table 1 below.

Table 1.

Research Model

Groups	Pre-test	Experimental process	Post-test
Experimental	Writing self-efficacy scale Writing skills rubric	Instruction enriched with educational digital comics	Writing self-efficacy scale Writing skills rubric
Control		Ministry of National Education [MoNE] curriculum	

Study Group

The study group consists of 70 fourth-grade primary school students studying in the province of Manisa during the 2022-2023 academic year. Among these students, 34 were assigned to the experimental group and 36 to the control group. The participants were selected using a non-random convenience sampling method from a primary school where teachers voluntarily took part in the study. The classes designated as the experimental and control groups were determined by lottery with the approval of teachers and administrators. The sample for the study consists of fourth-grade students studying at a primary school in the Yunus Emre district of Manisa province during the 2022-2023 academic year. The distribution of students in the experimental and control groups by gender is presented in Table 2.

Table 2.

Distribution of Students in the Experimental and Control Groups by Gender

Group	Famale	Male	Total
Experimental	18	16	34
Control	18	18	36

Table 2 shows that the experimental group consists of a total of 34 primary school students, including 18 female and 16 male students, while the control group consists of a total of 36 primary school students, including 18 female and 18 male students. Before the implementation process began, it was examined whether the experimental and control groups were equivalent in terms of the dependent variables. At this stage, the pre-test scores of both groups on the Writing Skills Rubric and Writing Self-Efficacy Scale were compared. To conduct this comparison, the Kolmogorov-Smirnov test was applied to determine whether the data from both groups exhibited a normal distribution. The results of the normality test for the pre-test scores of the Writing Skills Rubric for the experimental and control group students are presented in Table 3 below.

Table 3.

Results of the Normality Test for the Pre-Test Scores of the Writing Skills Rubric for the Experimental and Control Group Students

	Kolmogorov-Smirnov			Skewness	Kurtosis
Group	Value	*SD*	*p*		
Experimental	.123	34	.200	.216	-.333
Control	.141	36	.069	.360	-.681

As seen in Table 3, the pre-test averages of the experimental group on the "Writing Skills Rubric" (Kolmogorov-Smirnov Z=.123, p>.05) and the control group on the "Writing Skills Rubric" pre-test (Kolmogorov-Smirnov Z=.141, p>.05) show normal distribution. Following the verification of the normal distribution of the data, the equivalence of the writing skills between the experimental and control groups was investigated. The results of the independent samples t-test indicating the equivalence of the writing skills pre-test scores of the experimental and control group students are listed in Table 4 below.

Table 4.

Results of the Independent Samples t-Test for the Pre-Test Scores of the Writing Skills Rubric for the Experimental and Control Group Students

Group	*n*	*M*	*S*	*SD*	*t*	*p*
Experimental	34	8.97	2.62	68	1.522	.133
Control	36	8.13	1.91			

Upon examining Table 4, it can be observed that the pre-test scores of the Writing Skills Rubric for both the experimental and control groups are close in value, and there is no significant difference (p>.05). Therefore, it is evident that the writing skills of the groups are equivalent according to the measurement tool used.

The results of the normality test for the pre-test scores of the Writing Self-Efficacy Scale for the experimental and control group students are presented in Table 5 below.

Table 5.

Results of the Normality Test for the Pre-Test Scores of the Writing Self-Efficacy Scale for the Experimental and Control Group Students

	Kolmogrov-Smirnov			Skewness	Kurtosis
Group	Value	*SD*	*p*		
Experimental	.096	34	.200	-.191	-.270
Control	.091	36	.200	.177	.063

Upon examining Table 5, it can be seen that the pre-test scores of the experimental group on the "Writing Self-Efficacy Scale" (Kolmogorov-Smirnov Z=.096, p>.05) and the control group on the "Writing Self-Efficacy Scale" pre-test (Kolmogorov-Smirnov Z=.091, p>.05) meet the assumption of normality. After confirming the normality of the data, the results of the independent samples t-test for the pre-test scores of the Writing Self-Efficacy Scale for the experimental and control group students are presented in Table 6.

Table 6.

Results of the Independent Samples t-Test for the Pre-Test Scores of the Writing Self-Efficacy Scale for the Experimental and Control Group Students

Group	*n*	*M*	*S*	*SD*	*t*	*p*
Experimental	34	59.44	8.30	68	1.631	.108
Control	36	56.63	7.06			

Upon examining Table 6, it is observed that there is no significant difference between the pre-test scores of the Writing Self-Efficacy Scale for the experimental and control groups (p>.05), indicating that equivalence has been achieved between the groups.

Data Collection Tools

The data for the study were collected using the "Writing Self-Efficacy Scale" developed by the researcher, and the "Writing Skills Rubric" developed by Bulut (2022). The scales and rubrics used are explained under separate headings.

Writing Self-Efficacy Scale

The data collection tool used to measure the writing self-efficacy of fourth-grade primary school students was developed by the researcher as the Writing Self-Efficacy Scale. This scale, developed by reviewing the relevant literature and conducting necessary validity and reliability analyses, consists of 4 dimensions and 20 items. The highest score that can be obtained from the scale is set at 80, while the lowest score is set at 20. The internal reliability coefficient, assessed as Cronbach's Alpha, was calculated to be .794.

Before starting the analysis, the results of the Kaiser-Meyer-Olkin [KMO] and Bartlett tests were examined to assess the suitability of the dataset for factor analysis. The KMO coefficient evaluates the adequacy of the sample size for factor analysis (Bulut & Uzunoğlu, 2021). As indicated in the literature, a KMO value above .60 and a significant Bartlett test suggest that the data are suitable for factor analysis (Büyüköztürk, 2003).

According to studies conducted by Kaiser (1974), a KMO value around .50 is considered acceptable, values between .50 and .70 are moderate, values between .70 and .80 are good, and values between .80 and .90 indicate very good adequacy (Çolakoğlu & Büyükekşi, 2014). In this study, the KMO value of the scale was calculated to be .849, and the result of the Bartlett test indicated that the Chi-Square value was significant (χ^2 = 903.504, df: 190, p<.001). These results indicate that the data are suitable for factor analysis and that the analysis can be conducted reliably.

As a result of the Exploratory Factor Analysis [EFA] conducted during the research process, the collected data were grouped under 4 factors. According to Comrey and Lee (1992), it is emphasized that each factor should contain at least three items, that items should not belong to multiple factors, and that items with a factor loading below .40 should be removed from the scale (Bulut & Uzunoğlu, 2021). Based on these criteria, the remaining 20 items were grouped under 4 factors.

Writing Skills Rubric

In the study, the Writing Skills Rubric developed by Bulut in 2022 was used to measure the writing skills of fourth-grade primary school students. The rubric consists of 5 dimensions, which are named as word choice, grammar, readability, mechanics, and coherence. Each dimension is rated on a scale from 1 to 4. The scoring scale indicates that 1 point is "barely sufficient," 2 points are "improvable," 3 points are "sufficient," and 4 points are "highly sufficient." The highest score that can be obtained from the rubric is set at 20, while the lowest score is set at 4.

Implementation Process

The school where the study would be conducted was determined using the convenience sampling method, which is one of the non-random sampling techniques. After the school administration and teachers volunteered for the research, they were informed about the researcher and the implementation process. The groups participating in the research were selected without bias using a lottery method from the classes available in the school. The equivalence of the experimental and control groups in terms of writing skills and writing self-efficacy was assessed. The Writing Self-Efficacy Scale, developed by the researcher, was administered to both groups to measure their writing self-efficacy, and the results were analyzed.

To measure the writing skills of the groups, students were asked to write a text on the topic "What Would Happen if There Were No Water?" which was one of the subject headings for that week's Turkish lesson. The texts collected from both groups were evaluated according to the Writing Skills Rubric developed by Bulut (2022). The evaluation results were uploaded to the analysis program, and necessary analyses were conducted. As a result of the analyses, it was found that both the writing skills and writing self-efficacy of the experimental and control groups were equivalent, and the experimental process commenced.

While the control group continued to have Turkish lessons with their existing classroom teacher, the experimental group received 2 hours of Turkish lessons per week conducted by the researcher. Educational digital comics prepared by the researcher, aligned with the 4th-grade Turkish curriculum, were used as topics for the experimental group's Turkish lessons each week. The comics designated for each week of the 8-week experimental process were transferred to the tablets that students brought to class and were used for writing activities in accordance with the flow and guidelines during the 2-hour Turkish lesson.

Students examined the digital comics, noticed the speech bubbles that needed to be filled in, and organized their work during the allocated time. At the end of the lesson, students sent their completed comics to the researcher. The submitted works were reviewed by the researcher each week. Throughout the implementation process, it was observed that the experimental group students eagerly anticipated the "comic lesson", which they called this application. This process was carried out over 8 weeks (16 lesson hours) using 8 different educational digital comics prepared for 8 distinct learning objectives. At the end of the implementation process, the writing skills and writing self-efficacy of both the experimental and control group students were re-evaluated.

To measure the writing self-efficacy of the groups, the Writing Self-Efficacy Scale was administered again, and the results were analyzed. To assess the writing skills of the groups, the same topic "What would happen if there were no water?" was given again in the post-test, and they were asked to write texts. The written texts were evaluated according to the Writing Skills Rubric. The pre-test and post-test results regarding the writing skills and writing self-efficacy of the groups were compared, and the necessary analyses were conducted in line with the sub-problems of the research.

Data Analysis

The analysis of the pre-test and post-test data obtained during the research process was conducted using the SPSS software package. The assumptions for the paired samples test, which will be used for the evaluation of pre-test and post-test within subjects, were met as follows:

1. The measurements of the dependent variable must be at least at the interval scale.
2. The difference scores of the two dependent measurement sets must be normally distributed.

To check the normal distributions of the data, Kolmogorov-Smirnov tests were performed. If normal distribution was observed, the paired samples t-test was applied for within-subject pre-test and post-test evaluations, and the independent samples t-test was applied for between-subject pre-test and post-test evaluations. the following assumptions for the independent samples t-test were found to be satisfied:

- The measurements or scores of the dependent variable are at the interval or ratio scale, and the means of the two groups being compared belong to the same variable.
- The measurements of the dependent variable are normally distributed in both groups.
- The mean scores of the samples being compared are independent.
- The variances of the distributions of the measurements are equal for both groups.

Additionally, Exploratory Factor Analysis was conducted for the data collection tools.

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 = Ethics Committee of Educational Research, Aydın Adnan Menderes University Rectorate

Date of ethical review decision = 25.04.2024

Ethics assessment document issue number = 2024/4-VIII

Findings

This section is written according to the sub-problems of the research. It presents findings related to the impact of educational digital comics on the writing skills and writing self-efficacy of students in the Turkish language course. The six sub-problems of the research are explained under six subheadings. The analyses conducted are presented in tables.

The Writing Self-Efficacy Difference of the Experimental Group Students

The first sub-problem of the research examines the effect of lessons taught with educational digital comics on the writing self-efficacy of students in the experimental group. To conduct this examination, the pre-test and post-test mean scores of the group were obtained. The assumptions required for the necessary analyses were met under the normal distribution of the data. Paired samples t-test was applied to determine whether the difference between the pre-test and post-test mean scores of the experimental group was significant. The analysis results are presented in Table 7.

Table 7.

Results of the Paired Samples t-Test for the Pre-Test and Post-Test Scores of the Experimental Group Students on the Writing Self-Efficacy Scale

Experimental	*n*	*M*	*S*	*SD*	*t*	*p*
Pre-test	34	59.44	8.30	33	-3.057	.004
Post-test	34	65.32	7.06			

When Table 7 is examined, the pre-test mean scores of the experimental group students on the Writing Self-Efficacy Scale are calculated as (M=59.44; S=8.30) and the post-test mean scores are (M=65.32; S=7.06). Looking at the pre-test and post-test mean scores of the experimental group, a significant difference is observed ($t_{(33)}$=-3.057; p<.05). It appears that the Turkish lessons taught with educational digital comics have resulted in a positive increase in the writing self-efficacy of fourth-grade primary school students.

The Writing Self-Efficacy Difference of the Control Group Students

The second sub-problem of the research investigates the effect of lessons taught without using educational digital comics on the writing self-efficacy of students in the control group. For this purpose, the writing self-efficacy scale was administered as a pre-test and post-test to the group with an 8-week interval. A paired samples t-test was applied to determine whether the difference between the pre-test and post-test scores of the control group was significant. The analysis results are presented in Table 8.

Table 8.

Results of the Paired Samples t-Test for the Pre-Test and Post-Test Scores of the Control Group Students on the Writing Self-Efficacy Scale

Control	*n*	*M*	*S*	*SD*	*t*	*p*
Pre-test	36	55.69	7.42	35	-.565	.056
Post-test	36	56.94	8.88			

When looking at Table 8, the pre-test mean scores of the control group students on the Writing Self-Efficacy Scale are calculated as (M=55.69; S=7.42) and the post-test mean scores are (M= 48.91; S= 9.98). It is observed that there is no significant difference in the pre-test and post-test mean scores of the control group ($t_{(35)}$=-.565; p>.05). Therefore, it cannot be said that

the Turkish lessons taught without using educational digital comics created a significant difference in the writing self-efficacy of fourth-grade primary school students.

The Writing Self-Efficacy Difference between the Experimental and Control Group Students

In the third sub-problem of the research, the study investigates whether there is a significant difference between the post-test mean scores of the experimental group students who were taught using educational digital comics and the control group students who continued to be taught without using educational digital comics. For this purpose, the post-test scores of both groups on the writing self-efficacy scale were compared. A paired samples t-test was applied to determine whether the difference between the post-test scores of the experimental and control groups was significant. The analysis results are presented in Table 9.

Table 9.

Results of the Independent Samples t-Test for the Post-Test Scores of the Experimental and Control Group Students on the Writing Self-Efficacy Scale

Group	*n*	*M*	*S*	*SD*	*t*	*p*
Experimental	34	65.32	7.06	68	4.35	.001
Control	36	56.94	8.88			

When looking at Table 9, the post-test mean scores of the experimental group students on the Writing Self-Efficacy Scale are calculated as (M=65.32; S = 7.06) and the post-test mean scores of the control group students are (M=56.94; S=8.88). A significant difference is observed between the post-test mean scores of the writing self-efficacy scale for the experimental and control groups ($t_{(68)}$=4.35; p<.05). This situation favors the experimental group, suggesting that the Turkish lessons taught with educational digital comics are effective in improving the writing self-efficacy of fourth-grade primary school students.

The Writing Skills Difference of the Experimental Group Students

The fourth sub-problem of the research examines whether there is a significant difference between the pre-test and post-test mean scores of the Writing Skills Rubric for the experimental group students who were taught using educational digital comics. To conduct this examination, the pre-test and post-test mean scores of the Writing Skills Rubric for the group were obtained. The assumptions required for the necessary analyses were met under the normal distribution of the data. A paired samples t-test was applied to determine whether the difference between the pre-test and post-test mean scores of the experimental group was significant. The analysis results are presented in Table 10.

Table 10.

Results of the Paired Samples t-Test for the Pre-Test and Post-Test Scores of the Experimental Group Students on the Writing Skills Rubric

Experimental	*n*	*M*	*S*	*SD*	*t*	*p*
Pre-test	34	8.97	2.62	33	-12.463	.000
Post-test	34	16.41	2.50			

When examining Table 10, the pre-test mean scores of the experimental group students on the Writing Skills Rubric are calculated as (M=8.97; S=2.62) and the post-test mean scores are (M=16.41; S=2.50). A significant difference is observed between the pre-test and post-test mean scores of the experimental group students on the Writing Skills Rubric ($t_{(33)}$=-12.463;

p<.05). It is evident that the Turkish lessons taught with educational digital comics have resulted in a positive increase in the writing skills of fourth-grade primary school students.

The Writing Skills Difference of the Control Group Students

The fifth sub-problem of the research investigates whether there is a significant difference between the pre-test and post-test mean scores of the Writing Skills Rubric for the control group students who were taught without using educational digital comics. For this purpose, the Writing Skills Rubric was administered as a pre-test and post-test to the control group with an 8-week interval. A paired samples t-test was applied to determine whether the difference between the pre-test and post-test scores of the control group was significant. The analysis results are presented in Table 11.

Table 11.

Results of the Paired Samples t-Test for the Pre-Test and Post-Test Scores of the Control Group Students on the Writing Skills Rubric

Control	*n*	*M*	*S*	*SD*	*t*	*p*
Pre-test	36	7.25	1.25	35	-8.422	.896
Post-test	36	11.88	3.03			

When looking at Table 11, the pre-test mean scores of the control group students on the Writing Skills Rubric are calculated as (M=7.25; S=1.25) and the post-test mean scores are (M=11.88; S=3.03). It is observed that there is no significant difference between the pre-test and post-test mean scores of the control group on the Writing Skills Rubric ($t_{(35)}$=-8.422; p>.05). Therefore, it cannot be said that the Turkish lessons taught without using educational digital comics created a significant difference in the writing skills of fourth-grade primary school students.

The Writing Self-Efficacy Difference Between the Experimental and Control Group Students

The sixth sub-problem of the research examines whether there is a significant difference between the post-test mean scores of the Writing Skills Rubric for the experimental group students who were taught using educational digital comics and the control group students who continued to be taught without using educational digital comics. For this purpose, the post-test scores of both groups on the Writing Skills Rubric were compared. An independent samples t-test was applied to determine whether the difference between the post-test scores of the experimental and control groups was significant. The analysis results are presented in Table 12.

Table 12.

Results of the Independent Samples t-Test for the Post-Test Scores of the Experimental and Control Group Students on the Writing Skills Rubric

Group	*n*	*M*	*S*	*SD*	*t*	*p*
Experimental	34	16.41	2.32	68	6.976	.027
Control	36	11.88	3.03			

When examining Table 12, the post-test mean scores of the experimental group students on the Writing Skills Rubric are calculated as (M=16.41; S=2.32) and the post-test mean scores of the control group students on the Writing Self-Efficacy Scale are (M=11.88; S=3.03). A significant difference is observed between the post-test mean scores of the Writing

Skills Rubric for the experimental and control groups ($t_{(68)}$=6.976; p<.05). This situation, favoring the experimental group, suggests that the Turkish lessons taught with educational digital comics contributed to the development of the writing skills of fourth-grade primary school students.

Discussion and Conclusion

This study investigates the impact of Turkish lessons taught using educational digital comics on the writing skills and writing self-efficacy of fourth-grade primary school students. The results obtained during the research process are compared and discussed with the findings of similar studies in the field. To evaluate the writing skills of fourth-grade primary school students, a Writing Skills Rubric was used, and the writing contents collected throughout the process were analyzed in terms of word choice, grammar, readability, and mechanics. To assess writing self-efficacy as another variable, the Writing Self-Efficacy Scale was utilized, examining the groups' self-efficacy in terms of writing attitude, independent writing, reflective writing, and writing resistance at the beginning and end of the application process. It was observed that, in the experimental and control groups, which had comparable writing skills and self-efficacy prior to the application, the experimental group demonstrated higher writing skills and self-efficacy compared to the control group after the application.

In the research process, writing skill data were evaluated similarly to the literature in terms of word choice, grammar, readability, and mechanics. Writing skills at the primary school level typically consist of components such as spelling accuracy, word variety, sentence structure, and text organization (Berninger, 2012; Troia, 2016). These components are critical for students to effectively and clearly convey their written texts (Cutler & Graham, 2008). Writing accuracy is associated with the scarcity of spelling and grammar errors in the written text (Puranik & Al Otaiba, 2012). Word variety refers to the student's ability to use different and appropriate words in the text (MacArthur et al., 2015). Sentence structure and text organization enable students to logically sequence and organize their thoughts, providing clear and coherent communication to the reader (Graham & Perin, 2007). Improving these components enhances the overall quality of students' writing skills and supports their academic success (Saddler & Graham, 2005). Research indicates that developing students' writing skills can enhance language skills and learning motivation (Cutler & Graham, 2008; Puranik & Al Otaiba, 2012). Graham and Perin (2007) emphasize that enhancing students' writing skills can boost language skills and learning motivation. Additionally, a study by Cutler and Graham (2008) revealed that improving students' writing skills positively impacts overall language skills and learning motivation. Similarly, evidence presented by Troia (2016) shows that developing writing skills strengthens students' language abilities and increases their engagement in learning processes.

In this study, the effects of educational digital comics on the writing skills and writing self-efficacy of fourth-grade primary school students were examined. The results indicated that the students in the experimental group showed higher levels of writing skills and writing self-efficacy compared to the control group. This finding aligns with previous studies in the literature that emphasize the positive impact of digital technologies on writing development. First, there is strong support in the literature for the use of digital technologies in education to

enhance writing skills (MacArthur et al., 2015; Puranik & Al Otaiba, 2012). MacArthur et al. (2015) found that computer-assisted writing programs improve students' writing quality by encouraging more planning and revision. Similarly, Puranik and Al Otaiba (2012) reported that digital technologies support students' written expression skills and allow them to apply various writing strategies. In this context, the findings of our study are consistent with previous research that highlights the benefits of digital comics in the writing process.

The use of comics as a supportive material for writing skills has been found to be effective in both writing performance and writing self-efficacy. Kusrini et al. (2020) suggested that comics could help students overcome challenges in developing ideas, selecting appropriate vocabulary, and structuring sentences in Japanese writing. Likewise, Selong et al. (2021) found that comics positively impact students' creative writing skills. These studies support our findings, demonstrating that comics enhance students' technical writing skills, such as word choice, grammar, readability, and mechanics, while also fostering a more positive attitude toward the writing process. Additionally, Kolaç et al. (2012) and Yılmaz et al. (2017) emphasized the role of children's literature, particularly comics and digital storytelling, in improving reading and writing skills. Similarly, our study found that educational digital comics positively influence students' writing abilities. Doepker et al. (2018) and Rahayu and Widiastuti (2019) highlighted the role of comics in guided reading processes, showing that comics make writing tasks more engaging and accessible for students. Furthermore, Istiq'faroh et al. (2020) and Montero et al. (2022) found that digital comics significantly enhance students' creativity and writing skills. The findings of our study also suggest that digital comics increase students' interest in the writing process, thereby contributing to their writing development.

As emphasized in the literature, writing skills are an integral part of cognitive development and represent one of the most complex language acquisition processes. Our study highlights the importance of providing structured and effective writing instruction at the fourth-grade level. In line with previous research, our results support the idea that contemporary teaching methods, particularly the integration of digital materials, play a crucial role in writing skill development. In conclusion, this study demonstrates that educational digital comics are an effective tool for improving writing skills and writing self-efficacy. Consistent with the literature, our findings indicate that comics support students' writing processes, increase their motivation, and encourage a more structured approach to writing. Therefore, integrating educational comics into writing instruction could contribute to the enhancement of students' writing abilities.

Based on the information obtained from the literature, it has been established that writing skills emerge as a result of the cumulative advancement of all language skills and are an integral part of cognitive process development. It has been observed that writing self-efficacy, which is closely and directly related to writing skills, plays a significant role in the processes of language acquisition and development. Additionally, it appears crucial to guide the development of writing skills, which tend to increase in fourth grade, in a qualified and accurate manner for fourth-grade students. The importance of using age-appropriate new methods and techniques in the development of writing skills, which is the last and most

challenging skill to acquire among language skills, is supported by studies in the literature. Studies recommend incorporating visual aids, particularly comics, into teaching processes and using such tools to achieve better learning outcomes. All these studies highlight the importance of the concepts used in the research and support the results of the study.

When examining the paragraphs, the mentioned researchers found comic materials suitable for studying writing skills in a manner similar to this study. They identified that comics have a significant impact on developing writing skills. The results of the study suggested that comics, identified as an innovative method that enhances learning outcomes, should similarly be incorporated into skill development and other educational processes.

Recommendations

In this study, educational digital comics were developed by the researcher. To enhance diversity and creativity in the educational environment, students could also be encouraged to design their own comics.

The study found that educational digital comics are effective in the development of challenging skills like writing, making lessons more fluid, clear, and understandable. Based on this, educational digital comics could be developed for subjects or topics that are difficult to comprehend or where maintaining attention is challenging.

The research was conducted specifically for fourth-grade primary school students, where significant improvements in writing skills were observed. Educational digital comics can also be developed for the first-grade period, where writing skills are first acquired, and for other grade levels that continue to develop writing skills.

Due to the visual appeal, fluency, and clarity provided by digital comics, studies could be conducted to examine their impact on skills such as problem-solving, literacy, communication, research, creativity, analytical thinking, and critical thinking.

In this research, the Pixton application was used to develop digital comics in terms of diversity and originality. Various comics can also be developed using more comprehensive, up-to-date, and understandable applications.

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There is no conflict of interest that the authors will declare in the research.

Notice of Use of Artificial Intelligence

The authors did not utilise any artificial intelligence tools for the research, authorship and publication of this article.

Eğitsel Dijital Çizgi Roman Kullanımının Öğrencilerin Yazma Becerisine ve Öz Yeterliğine Etkisi

Özet

Bu araştırmada, ilkokul dördüncü sınıf öğrencilerinin Türkçe dersinde eğitsel dijital çizgi roman kullanımının yazma becerisine ve yazma öz yeterliğine etkisini incelemek amaçlanmıştır. Araştırmada nicel araştırma yöntemlerinden olan ön test-son test kontrol gruplu yarı deneysel desen kullanılmıştır. Araştırmanın evrenini 2022-2023 eğitim-öğretim yılı içerisinde Manisa ilinin ilköğretim 4. sınıfta öğrenim gören öğrencileri oluşturmuştur. Araştırmayı, gönüllü öğretmenlerin olduğu bir ilkokulda öğrenim gören 34'ü deney 36'sı kontrol olmak üzere toplam 70 ilkokul dördüncü sınıf öğrencisi oluşturmuştur. Çalışmanın örneklemini Manisa ili Yunus Emre ilçesine bağlı bir ilkokulda 2022-2023 eğitim-öğretim yılındaki dördüncü sınıf öğrencileri oluşturmuştur. Verilerin toplanması için "Yazma Öz Yeterlik Ölçeği" ve "Yazma Becerisi Rubriği" kullanılmıştır. Araştırma kapsamında bulunan ilkokul dördüncü sınıf öğrencilerinin yazma becerilerini değerlendirmek için Yazma Becerisi Rubriği kullanılmıştır. Diğer bir değişken olan yazma öz yeterliğini değerlendirmek için Yazma Öz Yeterlik Ölçeği kullanılmış, uygulama sürecinin başında ve sonunda grupların öz yeterlikleri yazma tutumu, bağımsız yazma, yansıtıcı yazma ve yazma direnci açısından incelenmiştir. Verilerin analizinde Kolmogorov-Smirnov normallik testi, bağımsız örneklemler t-testi, bağımlı örneklemler t-testi ve açımlayıcı faktör analizi kullanılmıştır. Bu analizler SPSS paket programı kullanılarak yapılmıştır. Uygulama öncesinde yazma becerisi ve yazma öz yeterliği birbirine denk olarak bulunan deney ve kontrol grubunda uygulama sonrası deney grubunun kontrol grubuna oranla yazma becerisi ve yazma öz yeterliklerinin yüksek olduğu görülmüştür. Araştırma sonucunda; eğitsel dijital çizgi romanların yazma becerisini geliştirmede etkili olduğu ve eğitimde çeşitlilik ile yaratıcılığı artırmak için bu araçların öğrenciler tarafından da tasarlanabileceği, ayrıca dijital çizgi romanların diğer derslerde ve becerilerde de kullanılabileceği önerilmiştir.

Anahtar Kelimeler: Yazma becerisi, yazma öz yeterliği, eğitsel dijital çizgi roman.

Giriş

Yazma, iletişim kurmanın vazgeçilmez bir aracı olup, ilkokulda kazanılan ve hayat boyu gerekliliğini koruyan temel bir dil becerisidir. Okuma ve yazma becerilerinin işlenmesinde yazı, bellek üzerinde işlem yapılan en temel unsur olmanın yanı sıra, diğer becerilerin işlevlerini yerine getirmede de bir araçtır (Göçer, 2013). Yazma becerisinin yaşam boyu kullanılması, bu becerinin gelişimini önemli kılmaktadır ve yazma sayesinde düşünce ve yaratıcılık sınırsızca kullanılabilir (Duran, 2010). Yazma becerisinin gelişimini etkileyen birçok faktör bulunmaktadır. Martinez vd. (2011) bu faktörler arasında, yazma öz yeterliğinin yazma becerisinde önemli bir rol oynadığını ve öğrencinin yazma performansını tahmin etmede kullanılabileceğini belirtmiştir.

Yazma öz yeterliği, bireyin yazma performansı sırasında yazma yeteneğini sergileme süreci olarak tanımlanır (Aydın & Duğan, 2018). Yüksek yazma öz yeterliği, öğrencilerin yazma becerilerini geliştirme çabalarını sürdürdüklerini ve hata yapsalar dahi pes etmeden yazma becerilerini geliştirmeye devam ettiklerini gösterir (Demir, 2011). Yazma öz yeterliğini

incelemek, öğrencinin karşılaştığı sorunları anlamaya ve çözüm önerileri üretmeye yardımcı olabilir. Bu, öğretmenlerin öğrencilerin yazma becerisine yönelik yaklaşımlarını öz yeterliklerine göre şekillendirmelerini sağlar. Son yıllarda yazma öz yeterliği üzerine yapılan çalışmalar ülkemizde artmaktadır (Akar & Özber, 2018). Bu alanda yapılan çalışmalar genellikle ilköğretim ikinci kademeyi kapsasa da yazma öz yeterliğinin ilkokul birinci kademede gelişmeye başlaması ve yazma becerisinin dördüncü sınıfta hız kazanması (Tok & Erdoğan, 2017) nedeniyle, bu tür araştırmaların özellikle dördüncü sınıf öğrencilerine yönelik artması gerektiği düşünülmektedir.

Literatürde, yazma becerisini geliştirmek için dijital hikayelerin kullanılmasıyla ilgili araştırmalar bulunmaktadır (Yılmaz & Üstündağ, 2017). Dijital yöntemlerle yazma becerisini geliştirmeyi çeşitlendirmek ve daha etkili sonuçlar elde etmek için farklı tekniklerin kullanılması gerektiği düşünülmektedir. Eğitsel dijital çizgi romanların bu amaçla başarılı olacağı öngörülmektedir. Çizgi romanlar dijital ortama uyarlanarak pratik ve ulaşılabilir materyaller haline getirilebilir. Yazma becerisinin etkililiği, öğrencilerin yazma becerilerine olan güveni ve duygu ile düşüncelerini sağlıklı bir şekilde aktarmalarıyla doğrudan ilişkilidir. Çizgi romanlar, görsel hafıza, seçici dikkat, anlamlandırma ve bağlantı kurma gibi bilişsel süreçler açısından faydalı olup, yazma becerisi ve yazma öz yeterliğine olumlu katkıda bulunabilir. Araştırmanın problem cümlesi şu şekilde belirlenmiştir: "İlkokul dördüncü sınıf Türkçe dersinde eğitsel dijital çizgi roman kullanımının öğrencilerin yazma becerisine ve öz yeterliğine etkisi nedir?"

Bu araştırmanın temel amacı, ilkokul dördüncü sınıf Türkçe dersinde eğitsel dijital çizgi roman kullanımının öğrencilerin yazma becerisine ve öz yeterliğine etkisini belirlemektir. Bu amaç doğrultusunda aşağıda verilen sorulara yanıt aranmıştır:

1. Eğitsel dijital çizgi romanlar kullanılarak ders işlenen deney grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği ön test-son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

2. Eğitsel dijital çizgi romanlar kullanılmadan ders işlenen kontrol grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği ön test-son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

3. Eğitsel dijital çizgi romanlarla ders işlenen deney grubu öğrencileri ve eğitsel dijital çizgi romanlar kullanılmadan ders işlenmeye devam eden kontrol grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

4. Eğitsel dijital çizgi romanlar kullanılarak ders işlenen deney grubu öğrencilerinin Yazma Becerisi Rubriği ön test-son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

5. Eğitsel dijital çizgi romanlar kullanılmadan ders işlenen kontrol grubu öğrencilerinin Yazma Becerisi Rubriği ön test-son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

6. Eğitsel dijital çizgi romanlarla ders işlenen deney grubu öğrencileri ve eğitsel dijital çizgi romanlar kullanılmadan ders işlenmeye devam eden kontrol grubu öğrencilerinin Yazma Becerisi Rubriği son test puan ortalamaları arasında anlamlı bir farklılık var mıdır?

Yöntem

Araştırmanın Modeli

İlkokul dördüncü sınıf Türkçe dersinde eğitsel dijital çizgi roman kullanımının öğrencilerin yazma becerisi ve öz yeterliğine etkisini inceleyen bu araştırmada, nicel araştırma yöntemlerinden ön test-son test kontrol gruplu yarı deneysel desen kullanılmıştır. Ön test-son test kontrol gruplu yarı deneysel modelde, yansız atama yapılmaksızın oluşturulan iki grupta, işlem öncesi ve sonrası eşit şartlarda ölçümler yapılır (Karasar, 2016). Çalışmanın deseni, Tablo 1'de modellenmiştir.

Tablo 1.

Çalışmanın Modeli

Grup	Ön test	Deneysel işlem	Son test
Deney	Yazma öz yeterlik ölçeği Yazma becerisi rubriği	Eğitsel dijital çizgi romanlarla zenginleştirilmiş öğretim Milli Eğitim Bakanlığı [MEB] programı	Yazma öz yeterlik ölçeği Yazma becerisi rubriği
Kontrol			

Çalışma Grubu

Araştırmanın çalışma grubunu, 2022-2023 eğitim-öğretim yılında Manisa ilinde öğrenim gören 70 dördüncü sınıf ilkokul öğrencisinden oluşmaktadır. Bu öğrencilerden 34'ü deney grubuna, 36'sı ise kontrol grubuna atanmıştır. Çalışma grubunu oluşturan deney ve kontrol grubunda yer alan öğrencilerin cinsiyete göre dağılımları Tablo 2'de verilmiştir.

Tablo 2.

Deney ve Kontrol Grubunda Yer Alan Öğrencilerin Cinsiyete Göre Dağılımları

Grup	Kız	Erkek	Toplam
Deney	18	16	34
Kontrol	18	18	36

Tablo 2'ye göre, araştırmanın deney grubu 18 kız ve 16 erkek öğrenci olmak üzere toplam 34, kontrol grubu ise 18 kız ve 18 erkek öğrenci olmak üzere toplam 36 ilkokul öğrencisinden oluşmaktadır. Deney ve kontrol gruplarının Yazma Becerisi Rubriği ve Yazma Öz Yeterlik Ölçeği ön test puanları normallik testi sonuçları Tablo 3'te yer almaktadır.

Tablo 3.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Becerisi Rubriği Ön Test Puanlarının Normallik Testi Sonuçları

	Kolmogorov- Smirnov			Çarpıklık	Basıklık
Grup	Değer	*SD*	*p*		
Deney	.123	34	.200	.216	-.333
Kontrol	.141	36	.069	.360	-.681

Tablo 3'te görüldüğü üzere deney grubunun "Yazma Becerisi Rubriği" ön test (Kolmogorov-Smirnov Z=.123, p>.05) ve kontrol grubunun "Yazma Becerisi Rubriği" ön test (Kolmogorov-Smirnov Z=.141, p>.05) ortalamaları normal dağılım göstermektedir. Aşağıda

verilen Tablo 4'te deney ve kontrol grubu öğrencilerinin yazma becerisi ön test puanlarının denkliklerini gösteren ilişkisiz örneklemler t-testi sonuçları listelenmiştir.

Tablo4.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Becerisi Rubriği Ön Test Puanları İlişkisiz Örneklemler t-Testi Sonuçları

Grup	*n*	*M*	*S*	*SD*	*t*	*p*
Deney	34	8.97	2.62	68	1.522	.133
Kontrol	36	8.13	1.91			

Tablo 4 incelendiğinde, deney ve kontrol grubuna ait Yazma Becerisi Rubriği ön test puanlarının birbirine yakın değerlerde görüldüğü, anlamlı bir fark çıkmadığı (p>.05) dolayısıyla kullanılan ölçme aracına göre grupların yazma becerilerinin birbirlerine denk olduğu görülmektedir.

Yazma öz yeterlik verilerinin normal dağılımına ilişkin deney ve kontrol grubu öğrencilerinin yazma öz yeterlik ölçeği ön test puanlarının normallik testi sonuçları aşağıdaki Tablo 5'te gösterilmiştir.

Tablo 5.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Öz Yeterlik Ölçeği Ön Test Puanlarının Normallik Testi Sonuçları

	Kolmogorov- Smirnov			Çarpıklık	Basıklık
Grup	Değer	*SD*	*p*		
Deney	.096	34	.200	-.191	-.270
Kontrol	.091	36	.200	.177	.063

Tablo 5 incelendiğinde deney grubunun "Yazma Öz Yeterlik Ölçeği" ön test (Kolmogorov-Smirnov Z=.096, p>.05) ve kontrol grubunun "Yazma Öz Yeterlik Ölçeği" ön test (Kolmogorov-Smirnov Z=.091, p>.05) puan ortalamalarının normallik varsayımını karşıladığı görülmüştür. Verilerin normallik varsayımını karşılamasının ardından deney ve kontrol grubu öğrencilerinin yazma öz yeterlik ölçeği ön test puanları ilişkisiz örneklemler t-testi sonuçları Tablo 6'da sunulmuştur.

Tablo 6.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Öz Yeterlik Ölçeği Ön Test Puanları İlişkisiz Örneklemler T-Testi Sonuçları

Grup	*n*	*M*	*S*	*SD*	*t*	*p*
Deney	34	59.44	8.30	68	1.631	.108
Kontrol	36	56.63	7.06			

Tablo 6. incelendiğinde deney grubu ve kontrol grubunun Yazma Öz Yeterlik Ölçeği ön test puanları arasında anlamlı bir farklılık olmadığı (p>.05) ve gruplar arasında denklik sağlandığı görülmektedir.

Veri Toplama Araçları

Çalışmanın verileri araştırmacı tarafından geliştirilmiş olan "Yazma Öz Yeterlik Ölçeği" ve Bulut (2022) tarafından geliştirilen "Yazma Becerisi Rubriği" ile toplanmıştır.

Uygulama Süreci

Çalışma, uygun örnekleme yöntemiyle seçilen deney ve kontrol gruplarının yazma becerileri ve yazma öz yeterliklerini incelemiştir. Araştırmaya katılacak gruplar, ilkokulda

bulunan dördüncü sınıflardan kura yöntemiyle belirlenmiş ve yazma öz yeterliklerini ölçmek için her iki gruba Yazma Öz Yeterlik Ölçeği uygulanmıştır. Yazma becerileri ise "Su Olmasaydı Ne Olurdu?" başlıklı metinle değerlendirilmiş ve metinler Yazma Becerisi Rubriği'ne göre analiz edilmiştir. Deney grubuna 8 hafta boyunca, haftada 2 saat Türkçe dersi, araştırmacı tarafından hazırlanan eğitsel dijital çizgi romanlar üzerinden işlenmiştir. Her hafta öğrencilere çizgi romanlar aktarılmış ve yazı çalışmaları yapılmıştır. Öğrenciler, ders sonunda düzenledikleri çizgi romanları araştırmacıya göndermiştir. Kontrol grubu ise mevcut sınıf öğretmeniyle derslerine devam etmiştir.

Verilerin Analizi

Araştırma sürecinde elde edilen ön test ve son test verilerinin analizleri SPSS paket programı uygulaması kullanılarak yapılmıştır. Verilerin normal dağılımlarını kontrol etmek amacıyla Kolmogorov-Smirnov testleri yapılmış, normal dağılımının görülmesi halinde denekler içi ön test son test değerlendirmelerinde bağımlı örneklemler t-testi ve denekler arası ön test son test değerlendirmelerinde bağımsız örneklemler t-testi uygulanmıştır. Ayrıca veri toplama araçları için Açımlayıcı Faktör Analizi uygulanmıştır.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Etik değerlendirmeyi yapan kurulun adı = Aydın Adnan Menderes Üniversitesi Rektörlüğü Eğitim Araştırmaları Etik Kurulu

Etik Kurul Etik inceleme karar tarihi = 25.04.2024

Etik değerlendirme belgesi konu numarası = 2024/4-VIII

Bulgular

Deney Grubu Öğrencilerinin Öz Yeterlik Değişimleri

Deney grubu ön test-son test puan ortalamaları arasındaki farkın anlamlı olup olmadığını belirlemek için ilişkili örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 7'de sunulmuştur.

Tablo 7.

Deney Grubu Öğrencilerinin Yazma Öz Yeterlik Ölçeği Ön Test – Son Test Puanları İlişkili Örneklemler t-Testi Sonuçları

Deney	*n*	*M*	*S*	*SD*	*t*	*p*
Ön test	34	59.44	8.30	33	-3.057	.004
Son test	34	65.32	7.06			

Tablo 7 incelendiğinde deney grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği ön test puan ortalamaları (M=59.44; S=8.30) ile deney grubu öğrencilerinin son test puan ortalamaları (M=65.32; S=7.06) olarak hesaplanmıştır. Deney grubu öz yeterlik ölçeği ön test-son test puan ortalamalarına bakıldığında anlamlı bir farklılık olduğu görülmektedir ($t_{(33)}$=-

3.057; p<.05). Eğitsel dijital çizgi romanlarla işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma öz yeterliklerinde olumlu bir artış sağladığı görülmektedir.

Kontrol Grubu Öğrencilerinin Öz Yeterlik Değişimleri

Kontrol grubu ön test ve son testleri farkının anlamlı olup olmadığını belirlemek amacıyla ilişkili örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 8'de sunulmuştur.

Tablo 8.

Kontrol Grubu Öğrencilerinin Yazma Öz Yeterlik Ölçeği Ön Test-Son Test Puanları İlişkili Örneklemler t-Testi Sonuçları

Kontrol	*n*	*M*	*S*	*SD*	*t*	*p*
Ön test	36	55.69	7.42	35	-.565	.056
Son test	36	56.94	8.88			

Tablo 8'e bakıldığında kontrol grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği ön test puan ortalamaları (M=55.69; S=5.93) ve son test puan ortalamaları (M=56.94; S=8.88) olarak hesaplanmıştır. Kontrol grubu öz yeterlik ön test-son test puan ortalamalarına bakıldığına anlamlı bir farklılık olmadığı görülmektedir ($t_{(35)}$=-.565; p>.05). Eğitsel dijital çizgi romanlar kullanılmadan işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma öz yeterliklerinde anlamlı bir fark yarattığı söylenememektedir.

Deney ve Kontrol Grubu Öğrencilerinin Öz Yeterlik Değişimleri

Deney ve kontrol grubu Yazma Öz Yeterlik Ölçeği son testleri farkının anlamlı olup olmadığını belirlemek amacıyla ilişkili örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 9'da sunulmuştur.

Tablo 9.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Öz Yeterlik Ölçeği Son Test Puanları İlişkisiz Örneklemler t-Testi Sonuçları

Grup	*n*	*M*	*S*	*SD*	*t*	*p*
Deney	34	65.32	7.06	68	4.35	.001
Kontrol	36	56.94	8.88			

Tablo 9'a bakıldığında deney grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği son test puan ortalamaları (M=65.32; S=7.06) ile kontrol grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği son test puan ortalamaları (M=56.94; S=8.88) olarak hesaplanmıştır. Deney ve kontrol gruplarına ait, öz yeterlik ölçeği son test puan ortalamalarına bakıldığında anlamlı bir farklılık olduğu görülmektedir ($t_{(68)}$=4.35; p<.05). Deney grubu öğrencilerinin lehine olan bu durumda, eğitsel dijital çizgi romanlarla işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma öz yeterliklerini geliştirmede etkili olduğu söylenebilmektedir.

Deney Grubu Öğrencilerinin Yazma Becerisi Değişimleri

Deney grubunun Yazma Becerisi Rubriği ön test-son test puan ortalamaları arasındaki farkın anlamlı olup olmadığını belirlemek için ilişkili örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 10'da sunulmuştur.

Tablo 10.

Deney Grubu Öğrencilerinin Yazma Becerisi Rubriği Ön Test-Son Test Puanları İlişkili Örneklemler t-Testi Sonuçları

Deney	*n*	*M*	*S*	*SD*	*t*	*p*
Ön test	34	8.97	2.62	33	-12.463	.000
Son test	34	16.41	2.50			

Tablo 10 incelendiğinde deney grubu öğrencilerinin Yazma Becerisi Rubriği ön test puan ortalamaları (M=8.97; S=2.62) ile deney grubu öğrencilerinin Yazma Becerisi Rubriği son test puan ortalamaları (M=16.41; S=2.50) olarak hesaplanmıştır. Deney grubu öğrencilerinin Yazma Becerisi Rubriği ön test-son test puan ortalamalarına bakıldığında anlamlı bir farklılık olduğu görülmektedir ($t_{(33)}$=-12.463; p<.05). Eğitsel dijital çizgi romanlarla işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma becerilerine olumlu bir artış sağladığı görülmektedir.

Kontrol Grubu Öğrencilerinin Yazma Becerisi Değişimleri

Kontrol grubunun Yazma Becerisi Rubriği ön test ve son testleri farkının anlamlı olup olmadığını belirlemek amacıyla ilişkili örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 11'de sunulmuştur.

Tablo 11.

Kontrol Grubu Öğrencilerinin Yazma Becerisi Rubriği Ön Test-Son Test Puanları İlişkili Örneklemler t-Testi Sonuçları

Kontrol	*n*	*M*	*S*	*SD*	*t*	*p*
Ön test	36	7.25	1.25	35	-8.422	.896
Son test	36	11.88	3.03			

Tablo 11'e bakıldığında kontrol grubu öğrencilerinin Yazma Becerisi Rubriği ön test puan ortalamaları (M=7.25; S=1.25) ve Yazma Becerisi Rubriği son test puan ortalamaları (M=11.88; S=3.03) olarak hesaplanmıştır. Kontrol grubu Yazma Becerisi Rubriği ön test-son test puan ortalamalarına bakıldığına anlamlı bir farklılık olmadığı görülmektedir ($t_{(35)}$=-8.422; p>.05). Eğitsel dijital çizgi romanlar kullanılmadan işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma becerilerinde anlamlı bir fark yarattığı söylenememektedir.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Becerisi Değişimleri

Deney ve kontrol grubuna ait Yazma Becerisi Rubriği son testleri farkının anlamlı olup olmadığını belirlemek amacıyla ilişkisiz örneklemler t-testi uygulanmıştır. Analiz sonuçları Tablo 12'de sunulmuştur.

Tablo 12.

Deney ve Kontrol Grubu Öğrencilerinin Yazma Becerisi Rubriği Son Test Puanları İlişkisiz Örneklemler t-Testi Sonuçları

Grup	*n*	*M*	*S*	*SD*	*t*	*p*
Deney	34	16.41	2.32	68	6.976	.027
Kontrol	36	11.88	3.03			

Tablo 12'ye bakıldığında deney grubu öğrencilerinin deney grubunun Yazma Becerisi Rubriği son test puan ortalamaları (M=16.41; S=2.32) ile kontrol grubu öğrencilerinin Yazma Öz Yeterlik Ölçeği son test puan ortalamaları (M=11.88; S=3.03) olarak hesaplanmıştır. Deney ve kontrol gruplarına ait Yazma Becerisi Rubriği son test puan ortalamalarına bakıldığında anlamlı bir farklılık olduğu görülmektedir ($t_{(68)}$=6.976; p<.05). Deney grubu öğrencilerinin

lehine olan bu durum incelendiğinde, eğitsel dijital çizgi romanlarla işlenen Türkçe dersinin, ilkokul dördüncü sınıf öğrencilerinin yazma becerilerinin gelişimine katkıda bulunduğu söylenebilmektedir.

Tartışma ve Sonuç

Bu çalışmada eğitsel dijital çizgi romanlar kullanılarak işlenilen Türkçe dersinin ilkokul dördüncü sınıf öğrencilerinin yazma becerilerine ve yazma öz yeterliklerine etkisi incelenmiştir. Araştırma sürecinde elde edilen sonuçlar alanda yapılan benzer araştırma sonuçlarıyla karşılaştırılıp tartışılmıştır. Araştırma kapsamında ilkokul dördüncü sınıf öğrencilerinin yazma becerilerini değerlendirmek için Yazma Becerisi Rubriği kullanılmış ve süreç boyunca toplanan yazma içerikleri; kelime seçimi, dil bilgisi, okunabilirlik ve mekaniklik açısından incelenmiştir. Diğer bir değişken olan yazma öz yeterliğini değerlendirmek için Yazma Öz Yeterlik Ölçeği kullanılmış, uygulama sürecinin başında ve sonunda grupların öz yeterlikleri yazma tutumu, bağımsız yazma, yansıtıcı yazma ve yazma direnci açısından incelenmiştir. Uygulama öncesinde yazma becerisi ve yazma öz yeterliği birbirine denk olarak bulunan deney ve kontrol grubunda uygulama sonrası deney grubunun kontrol grubuna oranla yazma becerisi ve yazma öz yeterliklerinin yüksek olduğu görülmüştür.

Literatürden elde edilen bilgiler doğrultusunda yazma becerisinin bütün dil becerilerinin birikimli bir şekilde ilerlemesinin sonucunda ortaya çıktığı ve bilişsel süreç gelişiminin ayrılmaz bir parçası olduğu ortaya konulmuştur. Yazma becerisi ile karşılıklı ve doğrudan ilişkili olan yazma öz yeterliğinin, dil edinim ve gelişim süreçlerinde önemli bir role sahip olduğu görülmüştür. Aynı zamanda ilkokul dördüncü sınıfta artış gösterdiği görülen yazma becerisinin gelişimini nitelikli ve doğru yönlendirmek dördüncü sınıf öğrencileri için önemli olduğu görülmektedir. Dil becerilerinin en son ve en zor kazanılan becerisi olan yazma becerisi ve yazma öz yeterliğinin gelişiminde çağa uygun yeni yöntem ve tekniklerin kullanılmasının önemi literatürdeki çalışmalarla desteklenmiştir. Çalışmalarda görsel yardımcıların, özellikle çizgi romanların, öğretim süreçlerine dahil edilmesini ve daha iyi öğrenme sonuçları elde etmek için bu tür araçların kullanımını önerilmektedir. Bütün bu çalışmalar araştırmada kullanılan kavramların önemini ortaya koymakta ve araştırma sonucunu destekler niteliktedir.

Öneriler

Araştırmada eğitsel dijital çizgi romanlar araştırmacı tarafından geliştirilmiştir. Eğitim ortamında çeşitlilik ve yaratıcılığın desteklenmesini artırmak halinde çizgi romanlar öğrencilere de tasarlatılabilir.

Araştırmada eğitsel dijital çizgi romanların yazma gibi gelişimi zor bir beceri gelişiminde etkili olduğu ve derslerin daha akıcı, açık ve anlaşılır geçtiği görülmüştür. Buradan hareketle anlaşılması zor, dikkati sağlamakta zorlanılan ders veya konular için eğitsel dijital çizgi romanlar geliştirilebilir.

Araştırma, yazma becerisi kazanımının yoğun artış gösterdiği ilkokul dördüncü sınıflara yönelik olarak yapılmıştır. Yazma becerisinin ilk kazanım sağlandığı ilkokul birinci sınıf döneminde ve yazma becerisini geliştirmeye devam eden diğer sınıf düzeylerinde eğitsel dijital çizgi romanlar geliştirilebilir.

Dijital çizgi romanların sunduğu görsellik, akıcılık ve kolay anlaşılırlık neticesinde; problem çözme, okuryazarlık, iletişim, araştırma, yaratıcılık, analitik düşünme ve eleştirel düşünme gibi becerilere etkisini inceleyen çalışmalar yapılabilir.

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Content Analysis of Studies on Design Thinking in the Field of Education in Türkiye

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Abstract

In this study, in order to determine the trends of the studies on design thinking in Türkiye published between 2014 and 2024, a total of 34 studies, 18 graduate theses and 16 articles, published in our country by using Google Scholar and National Thesis Center, were examined by document analysis method, one of the qualitative research methods. Content analysis method was used to analyze the data obtained. The analyzed studies were examined within the framework of the basic sections that should be included in an article. As a result of the examinations, it was seen that the number of studies in this field has increased in the last 5 years. It was noticed that researchers mostly adopted the qualitative method and studies on young age groups were limited. In addition, it has been determined that the variables examined are also limited and there is a need to examine many variables in this field. It is recommended that researchers who are considering working in this field should work in young age groups and support their studies with quantitative methods.

Keywords: Design thinking, content analysis, document analysis.

Introduction

With the developments in science and technology, the interests, expectations and needs of societies have also changed (Prensky, 2001). At the same time, the policies, industries and education systems adopted by countries have also participated in this change (Akgündüz et al., 2015). The participation of education systems in this change points to the need to prepare individuals for a rapidly changing world during their education (Chell & Athayde, 2009). Because individuals need to be equipped with skills for the needs of the new century (Akgündüz et al., 2015; Kellner, 2000). These skills are called 21st century skills and defined by Partnership for 21st Century Learning [P21] as problem solving, creativity, critical thinking, innovation, collaboration and communication, technology literacy, information literacy and media literacy (P21, 2015).

There are various learning approaches to help individuals acquire these skills. One of these learning approaches is the design thinking approach. Expressed as a 21st century learning approach, design thinking is an individual-oriented and iterative process cycle for solving problems using visualization of ideas (Carroll, 2015; Chesson, 2017). In the design thinking approach, it is expressed as a process of putting forward a creative idea and specific steps that reveal an invention by developing a prototype within the scope of this idea (Melles et al., 2015). In fact, the design thinking approach is seen as a method that aims to create innovative solutions to problem situations by understanding problems (Von-Thienen et al., 2014).

In the education system, it is now a necessity to embrace design thinking in a broad perspective, to take design beyond architecture and engineering. When thinking about how to better teach mathematics and science, they can be integrated. For this, engineering and technology should also be introduced to understand the importance of design and design thinking. Design also contributes to developing diversity in the benefits that school education can offer our students. (Li et al., 2019). This approach also allows individuals to learn by experience and increase their conceptual learning (Canestraro, 2017; Cook & Bush, 2018; Kwek, 2011). It also helps students to be interested in the design process, generate ideas, and

their thoughts, rather than focusing only on easily available facts and procedures (Li et al., 2019).

The importance of design-oriented thinking is increasing day by day (Verganti et al., 2021). In this context, it is thought that determining the trend of studies on design-oriented thinking and revealing the need will guide future research. In order to reveal the quality of these studies, it has become a need to examine and organize the studies at regular intervals to determine their trends and to question the quality and quantity of the studies conducted in this direction (Sözbilir et al., 2015). It is aimed that the systematic evaluation of the studies put forward by researchers on a framed subject by meeting this need with an inductive way of thinking will provide both a method and a direction to the researchers who will work on this subject. In addition, in today's world where time needs to be used effectively, there is a need to provide researchers with the opportunity to use their time more efficiently with such content analysis studies and to reduce the workload of researchers such as accessing and analyzing the literature (Çalık et al., 2008; Göktaş et al., 2012; Umdu Topsakal et al., 2012). It is possible to reach content analysis studies that provide these opportunities with different dimensions on design thinking (Akdemir, 2017; Çalış & Erenel, 2024; Çeviker Çınar, 2018). However, these studies are in the fields of management (Çalış & Erenel, 2024), business (Çeviker Çınar, 2018) and content analysis studies aimed at explaining the concept of design thinking. In the literature review, it was seen that content analysis studies were not within the scope of education and did not focus on tendency. However, in the field of education, for future research, evaluation of the practices and proposals for policies (Çalık, 2013; Suri & Clarke, 2009), educational research needs to be analyzed and its results synthesized and evaluated (Çalık & Sözbilir, 2014). For this reason, it has been understood that there is a need to determine the situation in the field of design thinking in education. When this need is met, it will provide perspective to researchers who will work on this subject. The importance of this study is that, unlike the studies in the literature, it focuses on the field of education and tries to determine the tendency of the studies. The aim of this study is to determine the tendency of the studies on design thinking. Thus, it is thought that determining the current tendency and revealing the need situation will guide future research. In this context, answers to the following problem situations were sought.

1. How is the spread of studies on design thinking according to years?
2. How is the spread of dependent variables in the studies on design thinking?
3. How is the spread of research methods used in the studies on design thinking?
4. How is the spread of data collection tools used in the studies on design thinking?
5. How is the spread of the sample of the studies on design thinking?

Method

In research, qualitative research method was employed. Document analysis technique was utilized. This technique, involves the examination of written materials that contain knowledge about the phenomena or events to be investigated. (Yıldırım & Şimşek, 2018). Content analysis was utilized to examine the collected data. This is a technique used to reveal

the existence of specific words or constructs in a dataset of texts. Researchers reveal the meaning of these words and concepts and the relationship between them. They then analyze them and make inferences about what is intended to be conveyed in the texts (Büyüköztürk et al., 2020). The researcher took a "document analysis" course during his postgraduate education. In the process of conducting this study, he worked meticulously with the knowledge he gained both in collecting and analyzing the data.

Research Sample

The study was created by adopting the criterion sampling method, which is a type of purposive sampling, due to the in-depth research within the scope of the study's purpose. In criterion sampling, observation units are formed from events, people, situations or objects with certain qualities (Büyüköztürk et al., 2020). This research, a total of 34 studies, including 18 postgraduate theses and 16 articles, conducted in the field of design thinking between 2014 and 2024 were examined.

Research Instruments and Processes

In this study, graduate theses and academic articles in the field of design thinking between 2014 and 2024 were examined. This study was limited to studies conducted in Türkiye. The studies were accessed from Google Scholar and National Thesis Center by using the keywords "design thinking". In the first stage, 52 graduate studies were reached. Irrelevant and identical studies were eliminated. Subsequently, this number was reduced to 34 by eliminating studies according to their non-compliance with the desired criteria. Finally, 18 graduate theses and 16 articles in the scope of "design thinking" were examined.

The researches reached within the framework of this study were analyzed according to the gauge presented in Table 1.

Table 1.

Inclusion and Exclusion Criteria

Inclusion in the study	Exclusion from the study
Publication between 2014-2024	Conference, proceedings and book chapters
Being published in Türkiye	Studies confused with engineering studies
Being in the field of design thinking	
Being published in the field of education	

Data Analysis

The data obtained from the studies examined by content analysis within the framework of the research were categorized and their frequencies were determined by systematic content analysis method. The results are presented as frequency and percentage tables. In the analysis of the data of the studies in this research, the research categorization form put forward by Sözbilir et al. (2012) was edited and benefited from. Data can be produced inductively and deductively depending on the research design. It is more possible to achieve high reliability with code lists created through deduction (Bengtsson, 2016). For this reason, the researcher managed the process through deduction by creating a coding list before starting the analysis process.

To ensure internal validity, an expert in the field who was not involved in this study was consulted for critical evaluation and feedback on the collected data and its analysis. In terms

of reliability, six randomly selected studies were independently analyzed by the researcher and an expert. When the analyses were examined, it was seen that five of the six analyses made by the two researchers were the same. This difference arises from the fact that some studies do not clearly state their methodological sections and rely on the interpretation of the analyst. Accordingly, the reliability value of the research was obtained from the reliability value formula proposed by Miles and Huberman (1994). Percentage of Agreement=Unanimity of Opinion/(Agreement+Disagreement) x 100. The researchers agreed on the appropriateness of the analyzes conducted in the study at a rate of (5/6).100= 83%. Reliability calculations above 80% are considered reliable for the research (Büyüköztürk et al., 2020). In this data analysis form, there are subheadings such as the type of study, year of publication, research strategy, sample for the research, data collection instruments, and data analysis methods. The findings of this work are limited to the results of the researches contained in the scope of the study according to certain gauge.

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 this study was a document review, ethics committee permission was not obtained.

Findings

The studies analyzed in this study were coded according to predetermined criteria and themes were formed. The findings of the themes are explained in order. First, the publication year information of the studies is shown in Table 2.

Table 2.

Percentages and Frequencies Regarding the Year of Publication of the Studies

Year of publication	*f*	*%*
2014	0	0
2015	0	0
2016	0	0
2017	2	5.8
2018	1	2.9
2019	5	14.7
2020	7	20.6
2021	4	11.8
2022	3	8.8
2023	7	20.6
Total	34	100

Looking at the frequency and percentage values of the studies found in Table 2, no studies were found in 2014, 2015 and 2016. The most studies were published in 2020 and 2023 (f=7), and the least study was published in 2018 (f=1). The knowledge of the publications examined in this study according to the dependent variables whose effect they examined in their research is shown in Table 3.

Table 3.

Percentages and Frequencies of the Studies According to Dependent Variables

Dependent variable	*f*	%
STEM education	3	12.5
TOD thinking skills	3	12.5
Process experiences	2	8.3
STEM understanding	1	4.2
Motivation	1	4.2
Teamwork	1	4.2
Functional thinking	1	4.2
Creativity skills	1	4.2
Academic success	1	4.2
Planning skills	1	4.2
Digital literacy	1	4.2
Intellectual experience	1	4.2
Conceptual change	1	4.2
Level of future thinking	1	4.2
Student activism	1	4.2
Cognitive flexibility	1	4.2
Scientific process skills	1	4.2
Self-esteem	1	4.2
Problem solving skills	1	4.2
Total	24	100

Table 3 shows that Science, Technology, Engineering and Mathematics [STEM] education (f=3), Design thinking skills [TOD] (f=3) and process experiences (f=2) variables were examined the most in the studies analyzed. Then, STEM understanding (f=1), motivation (f=1), teamwork (f=1), functional thinking (f=1), creativity skills (f=1), and academic achievement (f=1) were examined respectively. Table 4 shows the information of research methods used in the analyzed studies.

Table 4.

Percentages and Frequencies of the Research Methods Used

Research methods	*f*	%
Qualitative research methods		
Case study	3	5.9
Literature review	3	5.9
Action research	2	8.8
Phenomenology	2	2.9
Empirical	1	8.8
Mixed research methods		
Sequential explanatory design	4	11.8
Nested pattern	3	8.8
Explanatory sequential pattern	2	5.9
Quantitative research methods		
Correlational	1	2.9
Weak experimental design	1	2.9
Screening research	1	2.9
Other	11	32.4
Total	34	100

Table 4 shows that qualitative (f=11), mixed (f=9) and quantitative (f=3) strategies were used in the studies. Among qualitative research strategies, case study (f=2) and literature review (f=2) were preferred the most, while empirical study (f=1) was preferred the least. Among mixed research methods, sequential explanatory design (f=4) was the most preferred method and explanatory sequential design (f=2) was the least preferred method. In

quantitative methods, correlational (f=1), weak experimental design (f=1) and survey research (f=1) methods were used. Information on the data collection instruments of the studies analyzed in this study is presented in Table 5.

Table 5.

Percentages and Frequencies of the Data Collection Tools Used

Data collection tools	*f*	%
Scale	12	25
Semi-structured interview form	9	18.8
Observation	5	10.4
Interview	5	10.4
Daily	4	8.3
Test	4	8.3
Rubrik	4	8.3
Word association	2	4.2
Videos	2	4.2
Mobile messages	1	2.1
Total	48	100

When Table 5 is analyzed, scales (f=12) and semi-structured interview forms (f=9), observations (f=5) and interviews (f=5) were used as data collection tools the most, while mobile messages (f=1) were used the least. The distribution of the sample of the studies analyzed in this study is recognized in Table 6.

Table 6.

Frequencies About to the Sample of the Studies

Sample	*f*	%
Middle school grade 7	8	23.5
Teacher	7	20.6
Teacher candidates	5	14.7
Middle school grade 6	4	11.8
Middle school 5th grade	2	5.9
University students	2	5.9
Pre-school	1	2.9
Primary school 4th grade	1	2.9
High school	1	2.9
Other	3	8.8
Total	34	100

When Table 6 is examined, it is observed that most of the participants were realized with middle school 7th grade students (f=37). The least number of studies were conducted with preschool (f=1), primary school (f=1) and high school (f=1) groups. In this study, the methods of data analysis employed in the workings are presented in Table 7.

Table 7.

Frequencies Related to Data Analysis Methods of the Studies

Data analysis methods	*f*	%
Qualitative analysis		
Content analysis	15	31.2
Descriptive analysis	5	10.6
Other	4	8.5
Quantitative analysis		
One-Way Anova	5	10.6
T-test	5	10.6
Wilcoxon	5	10.6
Mann Whitney U	3	6.4
Document analysis	3	6.4
Correlation	1	2.1
Manova	1	2.1
Total	47	100

When Table 7 is viewed, it is seen that qualitative data analysis techniques (f=24) were mostly used in the studies examined. Among the qualitative data analysis techniques, content analysis (f=15) was used the most. The quantitative data analysis techniques, one-way Anova (f=5), t-test (f=5) and Wilcoxon (f=5) were mostly used.

Discussion and Conclusion

In this study, a systematic content analysis was conducted in order to determine the trends of the studies based on design thinking in the area of education in Türkiye. The study is considered to be important in terms of guiding researchers who will conduct studies in the area of design thinking. For this purpose, 34 studies conducted in the area of design thinking in Türkiye between 2014 and 2024 were analyzed.

When the analyzed studies are examined, the majority of the researches were applied among 2019 and 2024. This indicates that the interest in design thinking has growned in Türkiye in the last 5 years. The increasing need for design thinking (Sürmelioğlu & Erdem, 2021) may be one of the reasons for this situation. In addition, in the 2023 Education Vision document published in 2018 by the Ministry of National Education [MoNE] in our country, it was focused on students' design, production, and interactive work, and it was stated that the establishment of design Skill Workshops will be given importance in this direction (MoNE, 2018). In addition, the MoNE curriculum published in 2024 also attaches importance to design thinking. Its use as a teaching technique is emphasized in many parts of the current program (MoNE, 2024). For this cause, it is thought that workings on design Thinking may have increased.

It was observed that the variables examined in the workings conducted in the field of design Thinking were mostly STEM education (Akyurt, 2023; Erden et al., 2023; Öztürk, 2020), TOD thinking skills (Altun, 2019; Sürmelioğlu, 2021; Yavuz, 2024) and process experiences (Aydemir, 2019; Girgin, 2020). In addition, STEM understanding (Koca, 2023), motivation (Atacan, 2020), functional thinking (Avcı, 2024), future thinking levels (Günsal, 2023), planning skills (Güven Demir & Gümüş, 2022). Considering that the literature has recently developed in this field, it is realized that workings can be carried out reveal the

connection between design thinking and many variables such as 21st century skills, misconceptions, self-efficacy and so on.

It was observed that the studies on design thinking mostly adopted the qualitative research method. In similar STEM education content analysis studies, it was revealed that researchers mostly adopted the quantitative research method (Çavaş et al., 2020; Ecevit et al., 2022; Herdem & Ünal, 2018). It is thought that the reason for this difference may be due to the nature of the design thinking field. In addition, reasons such as the need to work with the study group in a natural ecology and the need for deeply investigation require qualitative research methods to be preferred more (Sözbilir et al., 2015).

When the findings regarding the data collection instruments are analyzed, it is seen that the use of scales is mostly preferred as data collection instruments in the workings. The results of the content analysis conducted by Ecevit et al. (2022) in a similar field also support the preference of the researchers for scales. It is seen that the least preferred data collection instruments is mobile messages. This shows us that there is a need for diversity in studies on design thinking.

As for the results regarding the working groups are analyzed, it is seen that most of the studies were conducted with middle school 7th grade students. It is thought that working with this age level in educational institutions is preferred for reasons such as the class control is more comfortable due to the age of the students and they are a little more distant from the central exam anxiety such as LGS (high school transition examination) compared to the 8th grade level. It may be due to the fact that the features of the working group are certain and that the most appropriate sampling method is purposive sampling (Büyüköztürk et al., 2020) in order to select a sample in a non-random way. The least preferred working groups were pre-school and primary school groups. Since the application of design thinking in young age groups would require more attention and care, it can be thought that the researchers turned to other working groups. Conducting scientific studies and activities with preschool children is important for our country to take its place among competitive countries (Uyanık Balat & Günşen, 2017). It is important for children to acquire theoretical knowledge about basic sciences; physics, chemistry, biology and mathematics from early childhood and to be able to think in a design-oriented way in order to create new products using their knowledge in technology and engineering (Yalçın & Erden, 2021). For this reason, studies conducted with the preschool study group can be increased. When the data analysis findings are examined, it is seen that qualitative data analysis methods were mostly used in the studies examined. The cause of this is due to the fact that qualitative methods are mostly preferred in the preferred methods.

Recommendations

Considering these results, it is important to expand the number of studies on design thinking, which is an emerging field, in Türkiye. With the new curriculum (MoNE, 2024), it is required that the courses be organized in terms of design. For this reasons, it is thought that design thinking will be used more in lessons. Thanks to these studies, it is thought that the studies executed in the area of design thinking in Türkiye can be analyzed descriptively and

systematically and will guide researchers in terms of the applicability of design thinking. According to the findings attained from this research, the following recommendations can be offered to researchers: In studies conducted with students, studies can be conducted with early age groups. There is a need to work with many variables in future studies. Studies examining the effects on attitude, academic achievement, misconceptions, creativity and innovative thinking skills and entrepreneurship can be conducted. In new studies, it can be planned to use more in-depth qualitative research methods supported by quantitative ones.

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The authors did not utilise any artificial intelligence tools for the research, authorship and publication of this article.

Türkiye'deki Eğitim Alanında Tasarım Odaklı Düşünme Üzerine Yapılan Çalışmaların İçerik Analizi

Özet

Bu çalışmada Türkiye'de tasarım odaklı düşünme üzerine, 2014-2024 yılları arasında yayımlanan çalışmaların eğilimlerinin belirlenmesi amacıyla, Google Akademik ve Yükseköğretim Kurulu Ulusal Tez Merkezi [YÖKTEZ] platformlarından faydalanılarak yayımlanmış 18 lisansüstü tez ve 16 makale olmak üzere toplam 34 çalışma, nitel araştırma yöntemlerinden doküman incelemesi yöntemiyle incelenmiştir. Elde edilen verilerin analizinde içerik analizi yöntemi kullanılmıştır. İncelenen çalışmalar, bir makalede olması gereken temel bölümler çerçevesinde incelenmiştir. Yapılan incelemeler sonucunda, çalışmaların büyük çoğunluğu 2019-2024 yılları arasında yapılmıştır. Bu da son 5 yılda Türkiye'de tasarım odaklı düşünmeye ilginin arttığını göstermektedir Araştırmacıların çoğunlukla nitel yöntemi benimsediği ve küçük yaş gruplarında çalışmaların sınırlı olduğu fark edilmiştir. Bunun yanında incelenen değişkenlerin de sınırlı olduğu ve bu alanda pek çok değişkenin incelenmesine ihtiyaç olduğu tespit edilmiştir. Bu alanda çalışmayı düşünen araştırmacılara küçük yaş gruplarında çalışılması, nicel yöntemlerle çalışmalarını desteklemeleri önerilmektedir. Ayrıca, yeni yapılacak çalışmalarda pek çok değişkenle çalışılmasına ihtiyaç vardır. Tutum, akademik başarı, kavram yanılgıları, yaratıcılık ve yenilikçi düşünme becerileri ve girişimcilik üzerinde etkilerin incelendiği çalışmalar yapılabilir.

Anahtar Kelimeler: Tasarım odaklı düşünme, içerik analizi, doküman incelemesi.

Giriş

Bilim ve teknolojide yaşanan gelişmelerle birlikte toplumların ilgi alanları, beklentileri ve ihtiyaçları da değişmiştir (Prensky, 2001). Aynı zamanda ülkelerin benimsedikleri politika, endüstri ve eğitim sistemleri de bu değişimin içine katılmıştır (Akgündüz vd., 2015). Eğitim sistemlerinin de bu değişim içine katılması, bireylerin eğitimleri süresince hızlı bir değişim içerisinde olan dünyaya hazırlanma ihtiyacına işaret etmektedir (Chell & Athayde, 2009). Çünkü bireylerin yeni yüzyılın ihtiyaçlarına yönelik beceriler ile donatılması gerekmektedir (Akgündüz vd., 2015; Kellner, 2000). Bu beceriler 21. yüzyıl becerileri ifadesiyle adlandırılmış, Partnership for 21st Century Learning [P21] tarafından yaratıcılık, problem çözme, eleştirel düşünme, inovasyon, iş birliği ve iletişim, teknoloji okuryazarlığı, bilgi okuryazarlığı ve medya okuryazarlığı şeklinde tanımlanmıştır (P21, 2015).

Tasarım odaklı düşünmenin önemi gün geçtikçe artmaktadır (Verganti vd., 2021). Bu bağlamda tasarım odaklı düşünme üzerine yapılan çalışmaların eğiliminin belirlenerek ihtiyaç durumun ortaya konmasının ileriki araştırmalara yol göstereceği düşünülmektedir. Yapılan araştırmaların belirli aralıklarla incelenip düzenlenerek eğilimlerinin belirlenmesi ve bu doğrultuda araştırmaların niteliğine ve niceliğine ait bilgilerinin sorgulanması, bu çalışmaların kalitesini ortaya koymak adına ihtiyaç haline gelmiştir (Sözbilir vd., 2015). Tasarım odaklı düşünme alanında yapılan araştırmaları farklı boyutlarıyla sentezleyen içerik analizi çalışmalarına ulaşmak mümkündür (Akdemir, 2017; Çalış & Erenel, 2024; Çeviker Çınar,

2018). Fakat bu çalışmalar yönetim alanında (Çalış & Erenel, 2024), işletme alanında (Çeviker Çınar, 2018) ve tasarım odaklı düşünme kavramını açıklamaya yönelik içerik analizi çalışmalarıdır. Alan yazın taramasındaki içerik analizi çalışmalarının eğitim alanında olmadığı ve eğilime odaklanmadığı görülmüştür. Bu çalışmanın önemi ise alan yazındaki çalışmalardan farklı olarak eğitim alanına odaklanması, çalışmaların eğilimini belirlemeye çalışmasıdır. Bu çalışmada tasarım odaklı düşünme üzerine yapılan çalışmaların eğiliminin belirlenmesi amaçlanmaktadır. Böylece mevcut eğilim belirlenerek ihtiyaç durumunun ortaya konmasının ileriki araştırmalara yol göstereceği düşünülmektedir. Bu kapsamda aşağıdaki problem durumlarına cevap aranmıştır.

1. Tasarım odaklı düşünme üzerine yapılan çalışmaların yıllara göre dağılımı nasıldır?

2. Tasarım odaklı düşünme üzerine yapılan çalışmalardaki bağımlı değişkenlerin dağılımı nasıldır?

3. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan araştırma yöntemlerinin dağılımı nasıldır?

4. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan veri toplama araçlarına ilişkin dağılım nasıldır?

5. Tasarım odaklı düşünme üzerine yapılan çalışmaların örneklemine ilişkin dağılım nasıldır?

6. Tasarım odaklı düşünme üzerine yapılan çalışmalarda kullanılan veri analiz yöntemlerinin dağılımı nasıldır?

Yöntem

Bu çalışmada nitel araştırma yöntemlerinden doküman incelemesi yönteminden yararlanılmıştır. Bu çalışmada 2014-2024 yılları arasında tasarım odaklı düşünme alanında yapılmış lisansüstü tezler ve akademik makaleler incelenmiştir. Çalışmalara, "tasarım odaklı düşünme" ve "design thinking" anahtar kelimeleri kullanılarak Google Akademik ve Yüksek Öğretim Kurulu Ulusal Tez Merkezi'nden ulaşılmıştır. İlk etapta 52 lisansüstü çalışmaya ulaşılmıştır. İlgisiz ve aynı olan çalışmalar elenmiştir. Devamında, istenen kriterlere uygun olmama durumlarına göre çalışmalar elenerek bu sayı 34'e indirilmiştir. Nihayetinde, STEM (Fen, teknoloji, mühendislik ve matematik) alanında yapılmış 18 lisansüstü tez ve 16 makale incelenmiştir.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Bu çalışma bir doküman incelemesi olduğundan etik kurul izni alınmamıştır.

Bulgular

Bu çalışmada incelenen araştırmalar, önceden belirlenmiş ölçütlere göre kodlanmış ve temalar oluşturulmuştur. Temalara ait bulgular sırayla açıklanmıştır. İlk olarak, araştırmaların yayım yılı bilgileri Tablo 1'de gösterilmiştir.

Tablo 1.

Çalışmaların Yayım Yılana İlişkin Yüzde ve Frekanslar

Yayım yılı	*f*	%
2014	0	0
2015	0	0
2016	0	0
2017	2	5.8
2018	1	2.9
2019	5	14.7
2020	7	20.6
2021	4	11.8
2022	3	8.8
2023	7	20.6
2024	5	14.7
Toplam	34	100

Tablo 1'de ulaşılan çalışmaların frekans ve yüzde değerlerine bakıldığında 2014, 2015 ve 2016 yıllarında hiç çalışmaya rastlanamamıştır. En fazla 2020 ve 2023 yıllarında (f=7), en az çalışma ise 2018 yılında (f=1) yayımlanmıştır. Bu çalışmada incelenen yayınların araştırmalarında etkisini inceledikleri bağımlı değişkenlere göre dağılımı Tablo 2'de gösterilmiştir.

Tablo 2.

Çalışmaların Bağımlı Değişkenlere Göre Yüzde ve Frekansları

Bağımlı değişken	*f*	%
STEM eğitimi	3	12.5
TOD düşünme becerisi	3	12.5
Süreç deneyimleri	2	8.3
STEM anlayışı	1	4.2
Motivasyon	1	4.2
Ekip çalışması	1	4.2
Fonksiyonel düşünme	1	4.2
Yaratıcılık becerisi	1	4.2
Akademik başarı	1	4.2
Planlama becerisi	1	4.2
Dijital okuryazarlık	1	4.2
Entelektüel deneyim	1	4.2
Kavramsal değişim	1	4.2
Gelecek düşüncesi düzeyi	1	4.2
Öğrenci eylemliliği	1	4.2
Bilişsel esneklik	1	4.2
Bilimsel süreç becerileri	1	4.2
Benlik saygısı	1	4.2
Problem çözme becerileri	1	4.2
Toplam	24	100

Tablo 2'de, incelenen çalışmalarda en çok STEM eğitimi (f=3), Tasarım odaklı düşünme becerisi [TOD] (f=3) ve süreç deneyimleri (f=2) değişkenlerinin incelendiği görülmüştür. Daha sonra sırasıyla STEM anlayışı (f=1), motivasyon (f=1), ekip çalışması (f=1), fonksiyonel düşünme (f=1), yaratıcılık becerisi (f=1), akademik başarı (f=1) gibi konular ele alınmıştır.

Tartışma ve Sonuç

İncelenen çalışmalara bakıldığında, çalışmaların büyük çoğunluğu 2019-2024 yılları arasında yapılmıştır. Bu da son 5 yılda Türkiye'de tasarım odaklı düşünmeye ilginin arttığını göstermektedir. Tasarım odaklı düşünmeye olan ihtiyacın artması (Sürmelioğlu ve Erdem, 2021) bu durumun nedenlerinden biri olabilir. Ayrıca, ülkemizde Millî Eğitim Bakanlığı [MEB] tarafından 2018 yılında yayımlanan 2023 Eğitim Vizyonu belgesinde öğrencilerin tasarlamasına, üretim yapmasına, etkileşimli çalışmalarına odaklanılmış ve bu doğrultuda Tasarım Beceri Atölyelerinin kurulmasına önem verileceği ifade edilmiştir (MEB, 2018). Bu sebeple de tasarım odaklı düşünme üzerine yapılan çalışmaların artmış olabileceği düşünülmektedir.

Tasarım odaklı düşünme ile ilgili incelenen çalışmaların çoğunlukla nitel araştırma yöntemini benimsedikleri görülmüştür. Bu farklılığın sebebinin tasarım odaklı düşünme alanının doğasından kaynaklanabileceği düşünülmektedir. Ayrıca çalışma grubuyla doğal ortamda çalışma gereksinimi, araştırmanın derinlemesine yapılma ihtiyacı gibi sebepler nitel araştırma yöntemlerinin daha fazla tercih edilmesini gerektirmektedir (Sözbilir vd., 2015).

Öneriler

Bu çalışmadan elde edilen sonuçlara göre araştırmacılara şu öneriler sunulabilir: Öğrencilerle yapılan çalışmalarda erken yaş grupları ile çalışmalar yürütülebilir. Yeni yapılacak çalışmalarda pek çok değişkenle çalışılmasına ihtiyaç vardır. Yapılacak yeni çalışmalarda daha derinlemesine nitel araştırma yöntemlerinin nicellerle desteklenerek kullanılması planlanabilir.

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Examining The Effects of the Project Titled "Mineral Hunters: An Adventure in the Footsteps of Geology"*

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Abstract

This study examines the impact of the TÜBİTAK-supported project, "Mineral Hunters: An Adventure on the Trail of Geology" on secondary school students in Eskişehir, Türkiye. The project aimed to increase students' curiosity about the region's underground resources, including semi-precious gemstones and minerals, and to provide hands-on experiences in geology. Conducted over six days with 41 sixth and seventh grade students, the Project works involved both theoretical and applied activities, such as workshops, field trips, and creative tasks. In the study designed with explanatory sequential design from mixed method models, pre-test and post-test were applied in order to measure the knowledge levels of the students before and after the project. Results showed a significant improvement in students' understanding of mineralogy and geology, with seventh-grade students showing higher achievement. The majority of students reported enjoying the project, particularly the hands-on activities and creative drama workshops. However, some students expressed dissatisfaction with the trip's conditions, such as high temperatures and poor internet connectivity. Overall, the project was effective in enhancing students' knowledge, skills, and interest in geology, suggesting the value of experiential learning in fostering deeper engagement with scientific topics. In light of the results obtained from the study, it is recommended that similar works, which allow students to learn by doing and observe on-site, be promoted.

Keywords: Geology, rocks, blue chalcedony, out of school learning, mineralogy, science literacy, TÜBİTAK.

Introduction

Geology is the scientific discipline that examines the formation and development of the Earth, minerals, rocks, earthquakes, volcanic activities, and all processes occurring within and on the surface of the Earth (Monroe & Wicander, 2007). Knowledge of geology helps students understand the relationship between environmental issues and human activities (Vallejo et al., 2019). Additionally, geology education is crucial for the discovery of petroleum, gas, and mineral resources, as well as for understanding natural disasters (Gogoi et al., 2016).

Studies conducted in the United States [USA] and Europe on secondary school students indicate that while they acquire conceptual ideas about rocks, minerals, and structural features (Blake, 1999; Ford, 2005), they face difficulties in understanding geological processes (Reid-Griffin, 2016). Secondary school students' knowledge about the structure and history of the Earth is based on their theoretical understanding, their ability to make experimental observations, and their capacity to describe rock formations. This knowledge can enhance students' observational skills and encourage them to engage more in scientific inquiry when dealing with information, observation, and conceptual questions (Ford, 2005; National Research Council, 1996; Reid-Griffin, 2016).

Curricula should be designed to meet students' needs by offering hands-on, inquiry-based Earth science activities that help them learn geological concepts (American Geological Institute, 2006; Blake, 2004; Johnson, 2004). Presenting geology through extracurricular activities such as fieldwork, laboratory experiments, museum visits, and workshops can help students better understand geological concepts, integrate theoretical and practical knowledge, and enhance their problem-solving skills (Makri et al., 2020). Field trips play a significant role

by providing opportunities for research, inquiry, and problem-solving, allowing students to examine phenomena on-site and fulfill their learning needs (Küçükoğlu, 2014).

Extracurricular learning, including activities like field trips, is defined as educational activities conducted in schoolyards, nearby areas, or off-campus locations (Saraç, 2017). These extracurricular applications include field observations, visits to scientifically functional locations such as school gardens, natural history museums, science and technology museums, as well as virtual reality applications, projects, sports activities, and social, cultural, and scientific programs such as exhibitions, meetings, congresses, panels, and symposiums (Henriksson, 2018; Saraç, 2017). Studies suggest that knowledge acquired in such out-of-school learning environments is retained for a long time and is often more substantial than what is learned in school (Anderson et al., 2006). The participation of students in fieldwork related to nature is considered one of the most effective learning methods in geology education, as field studies significantly contribute to student development (Buldur et al., 2020; Field et al., 2011; Van der Hoven Kraft, 2017). The United Nations and the European Union recommend integrating structured outdoor activities into educational programs (Fonseca, 2023).

Some projects initiated by the Scientific and Technological Research Council of Türkiye [TÜBİTAK], such as those coded 4004, 4005, and 2237-A, include components supporting extracurricular learning. These projects emphasize the necessity of reevaluating out-of-school environments innovatively for educational purposes (Şen, 2021). Projects typically emerge from real-life problems or needs (Arpacı, 2018) and follow a scientific method, beginning with problem identification and encompassing designed processes aimed at solving that problem (Çıray Özkara, 2024). Through the TÜBİTAK 4004 Nature Education and Science Schools Support Program, the Science and Society Directorate organizes scientific events offering residential or non-residential educational opportunities for a diverse audience, from students to teachers, to raise awareness of nature, science, and technology (TÜBİTAK, 2024). It is noted that TÜBİTAK 4004 projects, particularly those featuring hands-on learning experiences, play a crucial role in fostering an appreciation for science, promoting scientific work, and popularizing science among children (Orhan, 2022).

Eskişehir, located in Türkiye's Central Anatolia Region, is positioned within a geological and climatic transition zone and is considered rich in underground resources. Two semi-precious stones unique to Türkiye, meerschaum (lületaşı) and blue chalcedony, are exclusively found in Eskişehir (Gündoğan & Özbaş, 2017; Hatipoğlu et al., 2013; Kadir et al., 2016; Sarıiz, 2000). While meerschaum is widely recognized, blue chalcedony, which holds significant value in the Far Eastern gemstone market, is relatively unknown even within Eskişehir. Alongside these two semi-precious gemstones, Eskişehir hosts a variety of other minerals, including boron minerals, opal, agate, different chalcedony and quartz types, serpentine, and even emeralds, which, though not precisely located today, were mined during the Ottoman period (Erkoyun & Bozkurt, 2005). Many of these minerals can be easily found on the surface and distinguished from ordinary rocks with basic geological training and field experience.

Chalcedony is a type of chalcedonic quartz that is generally sky-blue but can also appear in purplish, pinkish, or whitish hues, forming large, nodular structures. It has been used as a gemstone since ancient times, with the largest and most significant deposit located in the Mayıslar-Sarıcakaya region (Hatipoğlu & Chamberlain, 2009; Hatipoğlu & Kibici, 2010). This deposit was formed by the precipitation of silica transported through fault zones within tectonic breccia and sandstone formations (Hatipoğlu et al., 2013). Meerschaum, a white-colored mineral found in nodules, is formed within ophiolitic units due to the dissolution and precipitation of magnesite pebbles in alkaline environments, with the mineral concentration increasing due to fluid circulation. Today, it is still mined in the Beyazaltın, Türkmentokat-Sarısu, and Nemli regions of Eskişehir (Ece & Çoban, 1994; Sarıız, 2000).

Although blue chalcedony has significant economic potential, unlike meerschaum, it is not legally protected. As a result, it is exported abroad, mainly to the Far East, as raw material. Once processed, its market value increases substantially. The lack of domestic processing of blue chalcedony in Türkiye leads to considerable economic losses. To raise awareness and educate the public about Eskişehir's valuable minerals and rocks, the "Mineral Hunters: An Adventure in the Footsteps of Geology" TÜBİTAK 4004 project was conducted. This project focused on blue chalcedony, highlighting its significance in contrast to meerschaum, which is already well-known and legally protected.

One of the project's key objectives was to increase children's awareness of the natural rocks and minerals in their surroundings using the principle of starting from the familiar and moving outward. Notably, while the secondary school science curriculum included rock-related topics in 2006, these topics were removed from the curriculum after 2013. Instead, they were integrated into secondary-level science education with different learning outcomes. The revised secondary school science curriculum in 2018 emphasizes scientific literacy and the development of research skills through interdisciplinary learning, including social studies. The activities designed within this project aimed to reintroduce the subject of rocks to secondary school students while also helping them explore their local environment and engage with nature.

This study aims to assess the impact of the "Mineral Hunters: An Adventure in the Footsteps of Geology" project by examining how it sparked curiosity and awareness about Eskişehir's underground treasure among secondary school students. The study explores the following research questions:

1. How did the educational process within the project affect students' knowledge levels?
2. Do students' test scores vary by gender?
3. Do students' test scores vary by grade level?
4. How do students evaluate their educational experience within the project?

Method

Research Model

The project examined in this study aims to enhance students' knowledge and skill levels through activities carried out within specific objectives. In this regard, it can be considered an

experimental initiative; however, since it also includes a data collection system where students share their experiences related to the process, it has been designed as a mixed-methods study. The explanatory sequential design provides information on how participants interpret the collected quantitative data (Creswell & Plano Clark, 2018).

The quantitative part of the study follows a weak experimental design, specifically a one-group pre-test post-test experimental design, due to the limitations of the project (sample, duration, observation). The selection of this method was significantly influenced by the fact that the target audience consisted of a single group and that the implementation was carried out only once. In a one-group pre-test post-test experimental design, the effect of the experimental intervention is tested through a single group (Cohen et al., 2002).

The qualitative data, on the other hand, were collected using a basic qualitative research approach with a semi-structured interview method (Özdemir & Tuti, 2023). The project, "Mineral Hunters: An Adventure in the Footsteps of Geology" supported by the TÜBİTAK 4004 Nature Education and Science Schools Program, was carried out between June 3-8, 2024, with six days of theoretical and practical activities.

Universe and Sample

The population of the study consists of 6th and 7th grade secondary school students studying in Eskişehir. Since the research included field trips and observations in different regions and was conducted in June, it was carried out with 41 students selected through quota sampling from various schools with parental permission. In cases where there were multiple applicants from the same school, a lottery method was used for selection. As part of the project, a WordPress website titled "Mineral Hunters: An Adventure in the Footsteps of Geology" was created as a free platform. The selected students were announced through this website. Information about the participating students is provided in Table 1 and Table 2.

Table 1.

Distribution of the Sample by Grade Level

Grade	*n*	*%*
6th grade	19	46.3
7th grade	22	53.7

As seen in Table 1, when examining the distribution of secondary school students participating in the project by grade level, it is observed that 19 students are in the 6th grade, while 22 students are in the 7th grade. Considering student participation in the project based on grade level, it can be said that 7th grade students showed slightly more interest in participating in the project.

Table 2.

Distribution of the Sample by Gender

Gender	*n*	*%*
Female	22	53.7
Male	19	46.3

As seen in Table 2, 22 of the participants in the study are female (53.7%), while 19 are male (46.3%). It can be observed that a balance between female and male students has been achieved in the study based on gender.

Data Collection Tools

In the study, data collection tools included a success test administered as a pre-test and post-test, a scientific fieldwork evaluation questionnaire, and a participant satisfaction survey. These tools were designed to measure students' changes in knowledge levels and their satisfaction with the project. The retention of the knowledge gained by the students was determined using field notes kept during activities such as field trips, the fieldwork evaluation questionnaire, competitions, fun games, designs, and exhibitions.

"Mineral Hunters: An Adventure in the Footsteps of Geology" Project Success Test

The success test, consisting of 15 questions, was prepared by geology engineers and an assessment specialist within the scope of the project topics. It was administered as a pre-test to 41 students on the opening day of the project. The first 10 questions of the success test are related to the theoretical knowledge provided during the training, while the last 5 questions focus on the knowledge to be gained through the activities carried out during the field trip. Therefore, the value of each question was set at 6 points for the first 10 questions and 8 points for the last 5 questions. As a result of the analysis of the items using the ITEMAN program, the item discrimination index was found to be .75, and the item difficulty index was .48. The internal consistency of the test was determined using the Kuder-Richardson-20 (KR-20) test, and the result was .71.

Scientific Fieldwork Evaluation Survey

It was prepared to evaluate the participants' assessment of the field trip to the Sarıcakaya site, where the focus was on finding and examining the blue chalcedony stone extracted from the specific location of the field trip. The form contains 25 criteria. Since there is no similar measurement tool in the literature, the project team developed this tool and presented it for review by the measurement and assessment specialist.

Participant Satisfaction Survey

The survey, prepared by the researchers to make a general assessment of the project activity period, measures the effects of the project on students and identifies the positive and negative aspects for future work in terms of implementation. The survey, consisting of two sections, includes 6 multiple-choice questions and 2 open-ended questions, in addition to a section for personal information.

Data Collection and Analysis

A pre-test success test was administered to the participating students before the introductory meeting on the first day of the project. During the research process, trainers and guides were asked to take field notes. On the last day of the research, the participant satisfaction survey was administered. The post-test was conducted within the week following the implementation. The collected data were analyzed using the SPSS software. The data obtained from the pre-test and post-test were analyzed for significant differences using a paired samples t-Test. The mean scores of the scale and sub-factors were examined for normality distribution, and descriptive statistics for the study group were presented.

In addition, for comparing quantitative data, a t-test was used for variables with two sublevels. The satisfaction survey and fieldwork evaluation form were subjected to descriptive analysis. As a principle of confidentiality, students participating in the research were asked to use pseudonyms, and their real names were not included in the data collection tools. In the findings section of the research, the students' names are not explicitly stated, and codes from P1 to P41 were used to represent each student participant in 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.

Ethics Committee Permission Information:

In this study, all the rules that need to be followed within the scope of the "Regulations on Scientific Research and Publication Ethics of Higher Education Institutions" have been adhered to. None of the actions specified under the title "Actions Against Scientific Research and Publication Ethics" in the second section of the regulation have been performed.

Name of the committee conducting the ethical evaluation = Çanakkale Onsekiz Mart University Rectorate Graduate Education Institute Ethics Committee

Ethics Committee Date of the ethical review decision = 25.07.2024

Publication number of the ethical evaluation document = 11-16

Findings

Findings Related to the Success Test

The Shapiro-Wilk normality test performed on the pre-test and post-test data indicated that the data met the normality assumption. Therefore, in the experimental study, the paired samples t-test, a parametric test, was used to examine the effect of the intervention on the students' knowledge. The results of the paired samples t-Test comparing the students' pre-test and post-test mean scores are presented in Table 3.

Table 3.

Paired Samples t-Test Table (n=36)

		Test statistics	*SD*	*p*	Difference between means	*SE*
Pre-test	Post-test	-14.8	35.0	.000	-6.50	.43
Not. $H_a\ \mu_{\text{Measure 1 - Measure 2}} < 0$						

According to Table 3, a significant difference was observed between the students' pre-test and post-test scores, indicating a positive increase in their knowledge levels within the scope of the project.

Table 4.

Paired Samples t-Test Descriptive Statistics Table (n=41)

	n	*M*	Median	*SD*	*SE*
Pre-test	41	6.03	5.81	2.41	.402
Post-test	41	11.93	12.31	2.11	.351

According to Table 4, the students have learned about the topic through the project activities.

To analyze whether there is a difference in students' pre-test and post-test scores based on gender, the Mann-Whitney U Test was used because the data did not meet the normality assumption (p>.05). The test results are presented in Table 5.

Table 5.

Mann-Whitney U Test Table by Gender

	Test statistics	*p*
Pre-test	190	.82
Post-test	177	.56

According to Table 5, no significant difference was observed in the success scores of students based on gender.

In the analysis of the class level variable, it was found that the normality assumption was not met (p>.05), so the Mann-Whitney U Test was used. The test results are presented in Table 6.

Table 6.

Mann-Whitney U Test Table by Class Level

	Test statistics	*p*
Pre-test	114.5	.216
Post-test	70.0	.006

Not. $H_a\ \mu_{12} \neq \mu_{13}$

When Table 6 is examined, it can be seen that the pre-test and post-test scores of the 6th grade students significantly differ from those of their 7th grade counterparts.

Table 7.

Descriptive Statistics Table According to Class Variable

	Group	*n*	*M*	Median	*SD*	*SE*
Pre-test	6th grade	19	5.53	5.00	2.44	.559
	7th grade	22	6.56	7.00	2.50	.626
Post-test	6th grade	19	11.37	12.00	2.27	.520
	7th grade	22	13.38	13.00	1.36	.340

According to Table 7, students in the 7th grade have higher average pre-test and post-test scores. Additionally, 7th grade students have made more progress compared to 6th grade students.

Findings Related to the Participant Satisfaction Survey

Table 8.

Findings Regarding Students' General Evaluation of the Project Process

Question 1	*f*	%
Avarage	3	7.3
Very bad	1	2.4
Good	11	26.8
Very good	26	63.4

According to Table 8, it is observed that 26 students evaluated the project process as very good, 11 students as good, while three students rated it as average, and one student gave a very bad evaluation.

Table 9.

Findings Regarding Students' Willingness to Recommend the Project to Others

Question 2	*f*	%
I would not recommend it at all.	1	2.4
I would partially recommend it.	1	2.4
I would recommend it.	13	31.7
I would definitely recommend it.	26	63.4

According to Table 9, 26 students stated that they would definitely recommend participating in this type of project to their friends, while 13 students said they would recommend it. One student each stated they would partially recommend it and definitely would not recommend it.

When examining the answers students gave to the question of what aspects of the project they did not like, it was found that their complaints were mainly focused on the instructors not being able to present the lessons in a student-appropriate way and the field trip activities not meeting their expectations. The issues students disliked were related to factors outside the project itself. Some examples of student expressions are:

S15: The date for outdoor activities should be specified according to the weather conditions. Since most of the instructors were from universities, it was boring. If they bring instructors more suited to our age, it wouldn't be so boring.

S31: We couldn't enter the place where the chalcedony was mined in May.

S35: The water was hot, the weather was hot, there were insects, the internet didn't work, there was no internet.

After the project announcement, students applied with certain expectations. The findings regarding how well these expectations were met by the end of the project are presented in Table 10.

Table 10.

Findings Regarding the Project's Ability to Meet Student Expectations

Question 3	*f*	%
No	1	2.4
Partially	10	24.4
Yes	30	73.2

As seen in Table 10, 30 students answered "yes" to the question about whether the project met their expectations, while 10 students answered "partially", and one student answered "no".

Table 11.

Findings Related to Students' thoughts on the Contributions of the Instructors

Question 4	*f*	%
No	1	2.4
Partially	7	17.1
Yes	33	80.5

According to Table 11, it is seen that the students who participated in the training thought that the instructors contributed to their learning processes.

Table 12.

Findings Regarding Students' Thoughts on the Usability of the Knowledge They Gained During the Project at School.

Question 5	*f*	%
No	4	9.8
Partially	13	31.7
Yes	24	58.5

According to Table 12, 24 students believe that the knowledge they gained during the project can be used at school, 13 students think it can be partially used, and 4 students think it cannot be used.

Table 13.

Findings on Students' thoughts Regarding the Usability of the Knowledge They Gained during the Project Outside of School

Question 6	*f*	%
No	2	4.9
Partially	8	19.5
Yes	31	75.6

Table 13 shows that 31 students believe the knowledge they gained during the project is usable outside of school. Eight students think the knowledge is partially usable, while two students have expressed that it is not usable.

Table 14.

The Reasons why Students liked the Training

Reason for liking	*f*
Acquiring new knowledge/skills	21 (13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 28, 29, 30, 38, 39, 40)
Having fun	15 (11, 12, 13, 16, 21, 22, 23, 24, 30, 39)
Making new friends	9 (12, 14, 15, 21, 27, 34, 39, 40)
Quality of instructors	5(15, 17, 18, 22, 34)
Seeing new places	5 (17, 18, 26, 27, 28)
Having many activities	3 (24, 34, 37)
Receiving various rewards	3 (24, 9, 11)
Quality of food	3 (3, 12, 23)
Reinforcing existing knowledge	3 (10, 19, 37)
Learning by doing	1 (6)
Not going to school	1 (14)
Closely examining nature	1 (4)
Feeling special	1 (21)

According to Table 14, it is observed that students were highly satisfied with the training because they gained new knowledge and skills, had fun, and made new friends. Overall, students seem to have a positive attitude toward motivating and innovative practices. Examples of answers from students about why they liked this training are as follows:

S9: "I think it was a great project from the beginning. The nature walk on Tuesday and the blue chalcedony collecting activity were great. I learned different new things. I got various natural stones. The games and other activities were nice… I think it was a good project."

S21: "We were all special, separate from everyone else. That's why we had so much fun. The gifts, the knowledge, and the friends were all great. I am very thankful to everyone.

I gained new knowledge for 6 days. It was the best day of my life. A day like that would never have come my way. That's why I liked it so much."

S24: "They welcomed us very well. We went to the Rock Park. We went to the Mayıslar village of Sarıcakaya. I collected chalcedony there because I was very curious about them. We took a walk, they welcomed us well, they paid attention to us, they made us play games, they treated us well, they showed us gemstones from all 81 districts of Türkiye. They had a fruit activity, gave us special gemstones as gifts, gave us natural gemstones that could be made into bracelets. Whenever we were thirsty, they gave us water."

Table 15.

Shortcomings seen by Students in Educational Activities

Shortcomings	*f*
Temperature	18
No s*hortcomings*	12
Theoretical explanation of lessons	5
Walking duration and route during the trip	5
Bugs	4
Long lessons	3
Random assignment of groups	2
Lack of internet/no signal on phones	2
Physical inadequacy of the educational environments	2
Shortcomings in the food organization	2
Some activities being found to be boring	1

When students were asked about the shortcomings they observed in the educational activities they participated in within the project as part of the Student Satisfaction Survey, Table 15 shows that the students most frequently complained about the temperature. The mining area where the field trip took place is located in the hottest part of the region due to its microclimatic climate. Additionally, walking distances and insect issues encountered during the field trip were also considered shortcomings. In 12 responses, no shortcomings were mentioned. With the exception of the theoretical teaching of the lessons (f=5) and the long lesson durations (f=1), the shortcomings were related to the field trip activities.

Table 16.

Activities that were not liked by the Students

Disliked activities	*f*
Theoretical lessons.	5
Trips	4
Mineral collecting	1

According to Table 16, when students were asked about the activities they did not like, it was generally observed that the activities were liked. However, some students stated that they did not enjoy theoretical lessons (f=5), the field trip (f=4), and the mineral collecting (f=1) activity.

When students were asked why they did not like this training, the following responses were given:

S3: "In some places, they tired us by explaining the topic. However, it was very fun. The only problem was that some of the information and topic explanations were a bit boring."

S16: "The heat made us very uncomfortable. It would have been better if it were cooler. The food was delicious…"

S21: "More field trips could have been made, and we could have gone to Sarıcakaya at a time when the weather was cooler."

Findings Related to the Scientific Fieldwork Evaluation Survey

One of the prominent aspects of this project is that students observe the subject in the field and engage in hands-on, experiential learning. To gather students' opinions about the fieldwork, a fieldwork evaluation survey was used. The responses from the students to this survey are presented in Table 17.

Table 17.

Findings Regarding the Fieldwork Evaluation Form

Evaluation criteria	*M*
1. The fieldwork activities helped in understanding the topics learned.	1.68
2. The fieldwork was a waste of time.	.32
3. The thing I liked most during the field trip was the nature walk.	1.10
4. The thing I liked most during the field trip was collecting stones.	1.77
5. I would like to participate in more field trips because it helped me learn the topics more easily.	1.15
6. I would like to participate in more field trips because they were fun.	1.45
7. What I observed during the field trips did not help in understanding the topics taught in the activities.	.57
8. I like field trips that include nature walks.	1.35
9. The thing I liked most during the field trip was making observations.	1.35
10. I enjoy participating in field trips to understand my surrounding environment.	1.50
11. I gained a lot of experience during the field trip.	1.55
12. Field trips increase people's awareness of environmental issues.	1.40
13. Field trips are important for visualizing the topics learned.	1.77
14. The topics I learned during field trips stay in my mind for a long time.	1.40
15. I would like more field trips to be held because of the knowledge I gained in mineralogy.	1.20
16. I do not like field trips that have too many nature walks.	.62
17. I would like more field trips to be held because they strengthen teamwork.	1.32
18. Learning in the classroom is more effective than learning in the field.	.55
19. Field trips make me more interested in the topics taught in class.	1.50
20. Getting to know the underground resources of my region and country excited me.	1.52
21. The fieldwork did not increase my interest in the science of mineralogy.	.65

One of the most important features of this project is the provision of on-site observation opportunities to students through fieldwork. When the fieldwork evaluation form is examined, as seen in Table 17, it is observed that students better understood the region's underground resources through such a study (M=1.75), got to know the region better (M=1.52), became more interested in theoretical topics (M=1.50), reinforced their learning (M=1.68), and showed increased interest in such activities. It has been observed that the hands-on experiences gained by the students increased the retention of theoretical lessons, creating awareness among the students about its effectiveness.

Discussion and Conclusion

It has been understood that secondary school students who actively participated in the TÜBİTAK 4004 project "Mineral Hunters: An Adventure in the Footsteps of Geology" for six days in different locations and environments acquired basic knowledge related to mineralogy. In TÜBİTAK 4004 projects conducted between 2016-2020, secondary school students were also targeted as the primary audience, and the projects were generally written with goals such as "establishing interdisciplinary relationships," "raising environmental awareness," and "developing scientific process skills" (Bostan Sarıoğlan et al., 2022).

In the "Mineral Hunters: An Adventure in the Footsteps of Geology Project," a significant difference was observed between the pre-test and post-test scores, indicating that the students' knowledge level increased during the project. It can be said that the training sessions provided by expert instructors in areas such as Basic Geology Training and Basic Mineralogy Training were effective in achieving this result. During these sessions, students were introduced to general geology terms that are not included in the elem secondary school science curriculum for 5th, 6th, 7th, and 8th grades. Information was provided on topics such as the formation of the Solar System and the universe, plate tectonics and the formation of the Earth, subfields of geology, geological time periods, rock types and cycles, minerals, fossils, faults, and folds, all of which had different content and visuals compared to the 5th, 6th, and 7th grade science textbooks. Yoloğlu and Uçar (2015) in their study evaluating the contributions of the TÜBİTAK-4004 project they implemented, reported that students showed progress in their knowledge levels and that the project had positive effects on students' social and behavioral development. Karakoç Topal (2022) also noted that after participating in TÜBİTAK 4004 projects, elementary secondary school students' awareness of environmental protection increased, their knowledge of various disciplines improved, and they learned to use certain basic scientific processes and life skills.

In this study, it was found that the gender variable did not have an effect on students' success scores. In a study conducted by Uğraş et al. (2021) with fourth-grade secondary school students, it was stated that students' success scores related to microorganisms did not vary based on gender, and a similar result was obtained in this study.

A significant difference was observed in the pre-test and post-test scores of students in the 6th grade compared to their peers in the 7th grade. Additionally, the 7th grade students made more progress in terms of their pre-test and post-test average scores compared to the 6th grade students. This situation may be attributed to the developmental stage of 7th-grade students. According to Piaget, individuals enter the stage of formal operations at the age of 11 and beyond, and at this stage, they reach a higher level of logical thinking (Sezen & Bülbül, 2011; as cited in Başarer, 2021).

According to Mahgoup (2014), field trips are an essential tool for understanding events and situations more easily and for facilitating learning. Field trips provide students with the opportunity to learn through practical experiences, ensuring that learning becomes more permanent. Additionally, field trips enhance students' social interactions by allowing them to interact in a social environment and share their experiences. In this study, it was observed that

students were able to distinguish semi-precious gemstones and minerals, gained awareness of geology and mineralogy, and achieved the targeted digital competencies through field trips and hands-on activities. This result aligns with one of the objectives of the TÜBİTAK 4004 program, which is to provide participants with an interdisciplinary perspective through observations and applications in various fields (TÜBİTAK, 2024). Out-of-school learning environments, such as field trips, are learning settings that demonstrate the connection between theoretical knowledge and real life, offering students opportunities for skills development such as observation, data collection, and drawing conclusions from the data they gather, as well as experiential learning (Baygül, 2023; Kır et al., 2021). Studies by Tortop (2012), Topçu and Atabey (2016), and Baygül (2023) have also highlighted the significant impact of field trips on increasing students' knowledge levels and scientific awareness on various topics.

A large number of students who indicated that they learned while having fun during the process expressed in the satisfaction survey that they liked the project, that it met their expectations, and that they would recommend it to their friends. Through the creative writing and creative drama workshops conducted on the two days following the field trips, students had the opportunity to express their emotions and thoughts both about the project and the new field of mineralogy. Supporting this result, the statement "Drama activities frequently included in projects have developed the scientific creative thinking skills of participating students and made them enjoy science and scientific work" (Orhan, 2022) is also a point mentioned in many TÜBİTAK 4004 projects. Avcı et al. (2015), in their evaluation of a TÜBİTAK-4004 project conducted with secondary school students, stated that students achieved certain outcomes after the activities, and the poems and activities students prepared as part of the project had a significant impact on them. They concluded that students both had fun and enjoyed the project. It can be said that TÜBİTAK 4004 projects foster positive effects by ensuring active participation of students in the process, especially for secondary school students.

It is evident that students who were introduced to a new field through the project were positively influenced by the hands-on activities they participated in after receiving theoretical training, allowing them to express themselves. These activities provided data for the project's evaluation and assessment phase and contributed to the interdisciplinary structure of the project. However, some students pointed out aspects they didn't like about the project, such as theoretical lessons, high temperatures, insects, and poor internet connection, which caused the field activities to fall short of expectations. Karakoç Topal's (2022) TÜBİTAK-4004 project with secondary school students includes similar results. After the implementation of the project, students evaluated most of the activities as fun, but considered those where the instructor used a straightforward explanation or activities that took place toward the end of the day to be boring.

In another question, students stated that the instructors involved in the project were sufficient, contributed to their learning, and helped them with their school lessons. It was also found that students believed they could use the knowledge gained through the project more effectively outside of the school environment. This statement could be interpreted as indicating

that the topics presented in the project were not fully aligned with the school environment and the teaching programs offered in schools.

Students have liked the project training because they gained new knowledge and skills, had fun, and made new friends during the project. A similar result was reached in the TÜBİTAK 4004 project "7/24 Science Camp" by Tatlı and Eroğlu (2021). Orhan (2022) also supports this result in his study, stating that students coming from different places participated in activities with their peers, were influenced by the opinions of others, gained new knowledge and skills, and thus developed a love for science and scientific work. Metin et al. (2023) also highlighted the positive aspects of TÜBİTAK 4004 projects in their study with seventh-grade secondary school students. They observed that students' ability to deepen existing knowledge, socialize, gain experiences on the topics, have fun, and gain different perspectives on the subject increased.

When students were asked about the activities they did not like in the project, it was generally observed that the activities were well received by the students. However, some students mentioned that they did not like the theoretical lessons, the field trip, and the mineral collecting activity. Upon examining the fieldwork evaluation form, it was noted that students gained a better understanding of the region's underground resources, became more familiar with the area, showed increased interest in theoretical subjects, reinforced their learning, and grew more interested in such activities. These results align with the findings of Dilli et al. (2018), who indicated that out-of-school learning environments, in collaboration with schools, can raise students' awareness of natural resources and how they are used. This can create a foundation for introducing and properly utilizing resources that will guide the future.

Recommendations

In light of the results obtained from the study, it is recommended that similar works, which allow students to learn by doing and observe on-site, be promoted. The need to increase interactive activities and field trips, which are not included in the teaching program related to minerals and mining and are not found in the textbooks of subjects like secondary school science and social studies, has been understood through this project. It has been observed and understood that the drama activities offered to students within the scope of the project were also effective. More activities can be conducted in schools using the creative drama method. Students have developed awareness of topics such as the physical properties and economic value of minerals in a geological context. Therefore, it is believed that increasing such project-based works will be important.

The project was limited to the province of Eskişehir. TÜBİTAK 4004 projects could be developed in different provinces, taking into account the mineral structure of those provinces and expanding the content of the project. Additionally, similar studies could be conducted with students at different levels of education or in different educational stages. In this project, conditions such as high temperatures during the planning process of field trips affected the students. In this context, for future projects, changes in the dates can be made, considering the high temperatures during the implementation process. Based on the fact that students preferred practical and interactive processes, it is suggested that future project work involve

discussions with academics who conduct theoretical teaching, to explore the possibility of transferring theoretical content to students using different techniques, or limiting the time allotted for such lectures in the process.

The project can be evaluated using different assessment tools, such as success tests and field evaluation forms, along with other diverse evaluation methods. The opinions of the instructors and experts who participated in the project implementation process can also be gathered, expanding the evaluation efforts and allowing the effects of the project to be examined from different perspectives. To determine the long-term impacts of the project, follow-up evaluations can be conducted after a period of six months to a year following the implementation process. For the long-term effectiveness of TÜBİTAK 4004 projects, the progress of students who participated in the project can be monitored through feedback conducted at specific intervals. Additionally, it is suggested that the scope of the study be expanded and applied to a broader audience in different contexts.

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Author 1: 21%

Author 2: 19%

Author 3: 18%

Author 4: 17%

Author 5: 15%

Author 6: 10%

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Conflict Statement

There is no conflict of interest that the authors will declare in the research.

Notice of Use of Artificial Intelligence

The authors did not utilise any artificial intelligence tools for the research, authorship and publication of this article.

"Mineral Avcıları: Jeolojinin İzinde Bir Macera" İsimli Projenin Etkilerinin İncelenmesi

Özet

Bu çalışma, TÜBİTAK destekli "Mineral Avcıları: Jeoloji İzinde Bir Macera" projesinin Eskişehir'deki ortaokul öğrencileri üzerindeki etkisini incelemektedir. Proje, öğrencilerin bölgedeki yer altı kaynaklarına, özellikle yarı değerli taşlar ve minerallere olan meraklarını artırmayı ve jeoloji konusunda pratik deneyimler sunmayı hedeflemiştir. Altı gün süren proje çalışmaları 41 altıncı ve yedinci sınıf öğrencisiyle gerçekleştirilmiş ve teorik ile uygulamalı etkinlikler, atölye çalışmaları, saha gezileri ve yaratıcı etkinlikler içermektedir. Karma yöntem modellerinden açımlayıcı sıralı desen ile desenlenen çalışmada, öğrencilerin projeden önce ve sonra bilgi düzeylerini ölçmek amacıyla ön test ve son test uygulaması yapılmıştır. Sonuçlar, öğrencilerin mineraloji ve jeoloji konusundaki bilgilerinde anlamlı bir artış olduğunu göstermiş, yedinci sınıf öğrencilerinin daha yüksek başarı gösterdiği görülmüştür. Öğrencilerin çoğu, özellikle uygulamalı etkinlikler ve yaratıcı drama atölyelerinden keyif aldıklarını belirtmiştir. Ancak bazı öğrenciler, alan gezilerinde karşılaşılan hava koşulları ve internet bağlantısının zayıf olması gibi nedenlerle aktivitelerinden memnun kalmadıklarını ifade etmiştir. Genel olarak proje, öğrencilerin jeolojiye olan ilgisini ve bilgilerini artırmada etkili olmuş ve deneyimsel öğrenmenin bilimsel konulara daha derinlemesine ilgi uyandırmada değerli olduğu sonucuna varılmıştır. Çalışmadan elde edilen sonuçlar ışığında; öğrencilerin yaparak yaşayarak öğrenmelerine ve yerinde gözlem yapmalarına imkân tanıyan benzer çalışmaların yaygınlaştırılması önerilmektedir.

Anahtar Kelimeler: Jeoloji, kayaçlar, mavi kalsedon, okul dışı öğrenme, mineraloji, bilim okuryazarlığı, TÜBİTAK.

Giriş

Jeoloji, yerkürenin oluşumu ve gelişimi ile, mineralleri, kayaçları, depremleri, volkanik aktiviteleri, yerküre içinde ve yüzeyinde gelişen bütün süreçleri inceleyen bilim dalıdır (Monroe & Wicander, 2007). Jeoloji bilgisi, öğrencilerin çevre sorunları ile insan faaliyetleri arasındaki ilişkiyi anlamada yardımcı olur (Vallejo vd., 2019). Aynı zamanda jeoloji eğitimi, petrol, gaz ve mineral kaynakların bulunması ve doğal afetlerin anlaşılmasında da önemlidir (Gogoi vd., 2016). Ortaokul öğrencileri üzerinde Amerika Birleşik Devletleri [ABD] ve Avrupa'da yürütülen araştırmalara göre kayaçlar, mineraller, yapısal unsurlar hakkında kavramsal fikirler edindikleri (Blake 1999; Ford 2005) fakat jeolojik süreçleri anlamada zorluk yaşadıkları ortaya konulmuştur (Reid-Griffin, 2016). Ortaokul öğrencilerinin dünyanın yapısı ve tarihi hakkındaki bilgisi, teorik bilgilerine, deneysel gözlemler yapma ve kayaç oluşumlarının özelliklerini tanımlama yeteneklerine dayanır ve öğrencilerin gözlem becerilerini geliştirmelerine, bilgi, gözlem ve fikir sorularında bilimsel araştırmayı daha çok kullanmalarına neden olabilir (Ford, 2005; National Research Council, 1996; Reid-Griffin, 2016).

Öğretim programları öğrencilerin jeoloji ile ilgili kavramları öğrenmeleri için uygulamalı, sorgulamaya dayalı yer bilimi etkinlikleri sunarak, öğrencilerin ihtiyaçlarını karşılayacak şekilde düzenlenmelidir (American Geological Institute, 2006; Blake, 2004;

Johnson, 2004). Jeolojiyi okul dışı aktivitelerle (arazi çalışması, laboratuvar faaliyetleri, müze gezileri, atölye çalışmaları vb.) destekleyerek sunmak, öğrencilerin jeolojik kavramları daha iyi anlamalarına, teorik ve pratik bilgileri birleştirerek problem çözme yeteneklerinin artırılmasına yardımcı olacaktır (Makri vd., 2020). Alan gezileri öğrencilerin araştırma, sorgulama, problem çözme gibi birçok becerilerinin kullanımına fırsat vererek olayın yerinde incelenmesi ve buna bağlı olarak öğrenme gereksinimlerinin karşılanması açısından çok önemli bir işleve sahiptir (Küçükoğlu, 2014).

Türkiye Bilimsel ve Teknolojik Araştırma Kurumu'nun [TÜBİTAK] 4004, 4005, 2237-A vb. kodlu bazı projelerinde okul dışı öğrenmeyi destekleyici içerikler bulunmaktadır. Bu projelerle okul dışı ortamların yenilikçi olarak eğitim-öğretim amaçlı yeniden ele alınması gerekliliği ortaya çıkarılmıştır (Şen, 2021). TÜBİTAK 4004 projelerinin; özellikle yaparak yaşayarak öğrenmeyi temel alan uygulamalı etkinlikleriyle, bilimin ve bilimsel çalışmaların sevdirilmesinde, popüler bilimin çocuklar arasında yaygınlaştırılmasında etkin rol oynadığı belirtilmektedir (Orhan, 2022).

Eskişehir; İç Anadolu Bölgesi'nde yer alan, jeolojik ve iklimsel bir geçiş bölgesi üzerine konumlanmış, yer altı kaynakları açısından zengin bir il olarak görülmektedir. Türkiye'ye özgü birkaç yarı değerli taş ve mineralden iki tanesi olan lületaşı ve mavi kalsedon ise yalnızca Eskişehir'de çıkarılmaktadır (Gündoğan & Özbaş, 2017; Hatipoğlu vd., 2013; Kadir vd., 2016; Sarıiz, 2000). Bu iki taştan lületaşı toplumca tanınıyor olsa da özellikle Uzakdoğu değerli taş piyasasında önemli bir yeri olan mavi kalsedon, çıkarıldığı Eskişehir ilinde yeterince bilinmemektedir. Dünyaca ünlü olan mavi kalsedon gibi yalnızca Eskişehir'de çıkarılan lületaşı başta olmak üzere, bor minerali, opal, akik, çeşitli kalsedon ve kuvars türleri, serpantin ve hatta konumu tam olarak bilinmese de Osmanlı döneminde çıkarıldığı bilinen zümrüt gibi birçok türe ev sahipliği yapan Eskişehir'de bu türlerin birçoğu toprak yüzeyinde kolaylıkla bulunabilmekte, sıradan kayaçlardan temel bir eğitim ve basit bir saha tecrübesi ile ayırt edilebilmektedir (Erkoyun & Bozkurt, 2005).

Bu çalışmada Eskişehir ilinin yeraltı zenginlikleri konusunda ortaokul öğrencilerinde merak ve bilinç uyandırılması, öğrencilerin mineraller ve yarı değerli taşlar konusunda temel bilgileri yaparak yaşayarak edinmeleri ve bu kazanımların uygulamalı farklı yöntem ve tekniklerle öğrencilere aktarılması amacıyla gerçekleştirilen "Mineral Avcıları: Jeolojinin İzinde Bir Macera" projesinin etkilerinin incelenmesi amaçlanmaktadır. Bu amaç kapsamında araştırmada yanıt aranan sorular şöyledir:

1. Proje kapsamında gerçekleştirilen eğitim süreci öğrencilerin bilgi düzeylerinde ne gibi bir değişime yol açmıştır?

2. Öğrencilerin test puanları cinsiyete göre değişmekte midir?

3. Öğrencilerin test puanları sınıf düzeyine göre değişmekte midir?

4. Öğrenciler proje kapsamında katıldıkları eğitim sürecini nasıl değerlendirmektedir?

Yöntem

Araştırmanın Modeli

Bu çalışmada etkileri incelenen proje, belirli amaçlar çerçevesinde yapılan etkinlikler ile öğrencilerin bilgi ve beceri düzeylerini arttırmayı hedeflemektedir. Bu açıdan deneysel bir girişim olarak görülebileceği gibi aynı zamanda öğrencilerin süreç ile ilgili deneyimlerini aktardıkları bir veri toplama sistematiğine sahip olduğundan karma yöntem olarak tasarlanmıştır. Proje, açımlayıcı sıralı desen kullanılarak karma yöntemle yürütülmüş; "Mineral Avcıları: Jeolojinin İzinde Bir Macera" adlı TÜBİTAK 4004 projesine katılan öğrencilerin bilgi düzeyindeki değişimi ölçmek amacıyla tek grup ön test-son test desenine dayalı nicel veri analizi gerçekleştirilmiştir.

Evren ve Örneklem

Araştırmanın evreni Eskişehir ilinde öğrenim görmekte olan ortaokul 6 ve 7. sınıf öğrencileridir. Araştırma farklı bölgelerde gezi gözlem çalışmalarını içerdiği ve haziran ayında yapıldığı için veli iznine sahip farklı okullardan kota örnekleme yoluyla seçilen 41 öğrenci ile yürütülmüştür.

Veri Toplama Araçları

"Mineral Avcıları: Jeolojinin İzinde Bir Macera" adlı TÜBİTAK 4004 projesi kapsamında 41 ortaokul öğrencisiyle altı gün süren etkinlikler gerçekleştirilmiştir. Etkinlikler; teorik eğitimler, yaratıcı drama ve yazarlık atölyeleri, laboratuvar çalışmaları, doğa yürüyüşleri, arazi gözlemleri ve taş toplama etkinlikleri gibi çok yönlü uygulamalı süreçlerden oluşmuştur.

Bu araştırmada veri toplama araçları olarak ön test ve son test şeklinde uygulanan başarı testi ile bilimsel arazi çalışması değerlendirme anketi ve katılımcı memnuniyet anketi kullanılmıştır. Bu araçlar, öğrencilerin bilgi düzeyindeki değişimlerini ve proje ile ilgili memnuniyetlerini ölçmek amacıyla hazırlanmıştır. Öğrencilerin edindikleri bilgilerin kalıcılığı, saha gezilerinde uygulanan arazi çalışması değerlendirme formu ve yarışmalar, eğlenceli oyunlar, tasarımlar, sergi gibi etkinliklerde tutulan alan notları kullanılarak belirlenmiştir.

Mineral Avcıları: Jeolojinin İzinde Bir Macera Projesi Başarı Testi

Jeoloji mühendisleri ile ölçme ve değerlendirme uzmanı tarafından proje konuları kapsamında hazırlanan ve 15 sorudan oluşan başarı testi, ön test olarak 41 öğrenciye projenin açılış gününde uygulanmıştır. Başarı testinin ilk 10 sorusu eğitim kapsamında verilen kuramsal bilgi ile ilgiliyken, son 5 sorusu alan gezisinde yapılan uygulamalar sonucu edinilecek bilgi üzerinedir. Bu nedenle her sorunun değeri ilk 10 soruda 6 puan, son 5 soruda ise 8 puan olarak belirlenmiştir. ITEMAN programı ile maddelerin analizi sonucunda madde ayırt edicilik indeksi .75; madde güçlük indeksi ise .48 olarak bulunmuştur. Madde analizlerinden elde edilen değerler ile testin iç tutarlılığını belirlemek için yapılan Kuder-Richardson-20 (KR-20) testinde sonuç olarak .71 bulunmuştur.

Bilimsel Arazi Çalışması Değerlendirme Anketi

Arazi gezisinin yapıldığı spesifik konumda çıkarılan mavi kalsedon taşını bularak incelemeye odaklanılan Sarıcakaya saha gezisinin katılımcılar tarafından değerlendirilmesi amacıyla hazırlanmıştır. Formda 25 ölçüt yer almaktadır. Literatürde benzer ölçme aracı bulunmadığından, proje ekibi bu ölçme aracını geliştirmiş ve ölçme ve değerlendirme uzmanı görüşüne sunmuştur.

Katılımcı Memnuniyet Anketi

Araştırmacılar tarafından proje etkinlik döneminin genel bir değerlendirmesini yapmak amacıyla hazırlanan anket ile projenin öğrenciler üzerindeki etkileri ölçülerek daha sonraki çalışmalar için uygulama boyutunda olumlu ve olumsuz yönler ortaya konulmuştur. İki bölümden oluşan anket çalışmasında kişisel bilgiler bölümüne ek olarak 6 çoktan seçmeli ve 2 açık uçlu soru yer almaktadır.

Verilerin Toplanması ve Analizi

Katılımcı öğrencilerle projenin açılış gününde yapılan tanışma toplantısından önce ön-test olarak başarı testi uygulanmıştır. Araştırma sürecinde eğitmenler ve rehberlerden alan notları tutmaları istenmiştir. Araştırmanın son günü katılımcı memnuniyet anketi uygulanmıştır. Uygulamadan sonraki hafta içerisinde de son test uygulaması yapılmıştır. Elde edilen veriler SPSS paket programı yardımıyla analiz edilmiştir. Ön test ve son testten elde edilen veriler için anlamlı fark olup olmadığı eşleştirilmiş örneklemler t-testi aracılığıyla analiz edilmiştir. Ölçek ve alt faktör ortalamaları, normallik dağılımına bakılmış, çalışma grubuna ilişkin tanılayıcı istatistiklere yer verilmiştir.

Ayrıca niceliksel verilerin karşılaştırılmasında, iki alt düzeyi olan değişkenler için t-testi kullanılmıştır. Memnuniyet anketi ve arazi çalışması değerlendirme formu ise betimsel analize tabi tutulmuştur. Gizlilik esası gereği araştırmaya katılan öğrencilerin takma adlar kullanmaları istenmiş, veri toplama araçlarında gerçek isimlerine yer verilmemiştir. Araştırmanın bulgular bölümünde öğrencilerin isimleri açık olarak belirtilmeyerek araştırmanın katılımcıları olan her bir öğrenciyi ifade eden Ö1'den Ö41'e kadar kodlar kullanılmıştır.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Etik değerlendirmeyi yapan kurulun adı = Çanakkale Onsekiz Mart Üniversitesi Rektörlüğü Lisansüstü Eğitim Enstitüsü Etik Kurulu

Etik Kurul Etik inceleme karar tarihi = 25.07.2024

Etik değerlendirme belgesi konu numarası = 11-16

Bulgular

Nicel analizler, öğrencilerin ön test ve son test başarı puanları arasında istatistiksel olarak anlamlı bir artış olduğunu ortaya koymuştur. Bu bulgu, projenin öğrencilerin jeoloji ve mineralojiye ilişkin kavramsal bilgi düzeylerini geliştirmede etkili olduğunu göstermektedir. Sınıf düzeyine göre yapılan analizlerde, 7. sınıf öğrencilerinin 6. sınıf öğrencilerine kıyasla daha yüksek başarı düzeyine ulaştıkları görülmüştür. Bu durum, öğrencilerin bilişsel gelişim düzeylerinin ve daha önceki fen bilgisi kazanımlarının proje başarısı üzerinde etkili olabileceğini göstermektedir. Cinsiyet değişkeni açısından anlamlı bir farklılık tespit edilmemiştir.

Nitel veriler, öğrencilerin projeye karşı genel tutumlarının son derece olumlu olduğunu ortaya koymuştur. Öğrenciler, özellikle uygulamalı etkinliklerden, taş toplama ve sınıf dışı gözlem çalışmalarından büyük keyif aldıklarını belirtmişlerdir. Ayrıca yaratıcı drama ve yazarlık atölyelerinde edindikleri deneyimlerin bilimsel bilgiyi ifade etmelerinde ve sosyal iletişim becerilerinin gelişmesinde önemli katkılar sunduğunu ifade etmişlerdir. Bununla birlikte, bazı öğrenciler arazi çalışmalarında karşılaştıkları zorlu hava koşulları, ulaşım ve internet bağlantısı gibi çevresel sınırlılıkları olumsuz deneyimler olarak belirtmişlerdir.

Arazi çalışması değerlendirme anketi sonuçlarına göre, öğrenciler jeolojik yapıların ve yer altı kaynaklarının sahada gözlemlenmesinin öğrenmeyi somutlaştırdığını, doğayla kurdukları doğrudan temasın bilimsel farkındalıklarını artırdığını belirtmişlerdir. Bu bulgular, yerinde gözlem ve uygulamaya dayalı öğrenmenin geleneksel öğretim yöntemlerine kıyasla daha kalıcı ve etkili olduğu yönündeki literatürle uyumludur.

Proje, yalnızca öğrencilerin bilgi ve beceri düzeylerini artırmakla kalmamış; aynı zamanda yaşadıkları çevreye yönelik daha bilinçli bireyler olarak yetişmelerine de katkı sağlamıştır. Öğrencilerin mavi kalsedonun çıkarıldığı bölgeleri tanıması, bu taşın uluslararası pazarda değer görmesine rağmen ülkemizde yeterince işlenmemesinin oluşturduğu ekonomik kaybı fark etmeleri, çevre bilinci ve doğal kaynakların korunması konularında da düşünmelerini sağlamıştır.

Tartışma ve Sonuç

Araştırma kapsamında “Mineral Avcıları: Jeolojinin İzinde Bir Macera” adlı TÜBİTAK 4004 projesine altı gün boyunca farklı mekân ve yerlerde etkin olarak katılan ortaokul öğrencilerinin mineraloji ile ilgili temel kazanımları edindikleri anlaşılmıştır.

“Mineral Avcıları: Jeolojinin İzinde Bir Macera Projesi” başarı testi ön test ve son test puanları arasında anlamlı bir fark gözlemlenmiş olup, öğrencilerin proje kapsamında bilgi düzeylerinin arttığı görülmüştür. Bu sonucun ortaya çıkmasında proje kapsamında alanında uzman eğitmenlerin gerçekleştirdiği Temel Jeoloji Eğitimi, Temel Mineraloji Eğitimi gibi eğitimlerin etkili olduğu söylenebilir.

Bu araştırmada cinsiyet değişkenin öğrencilerin başarı puanlarında etkili olmadığı görülmüştür. Uğraş vd. (2021) ilkokul dördüncü sınıf öğrencileriyle gerçekleştirdikleri çalışmalarında öğrencilerin mikroorganizmalara ilişkin başarı puanlarının cinsiyete göre değişmediği ifade edilerek, bu çalışmadaki ile benzer bir sonuç elde edilmiştir.

6. sınıfta öğrenim gören öğrencilerin ön test ve son test puanlarında 7. sınıfta yer alan akranlarına göre anlamlı bir şekilde farklılık görülmüştür. Ayrıca 7. sınıftaki öğrenciler ön test ve son test puan ortalamalarıyla 6. sınıftaki öğrencilere göre daha fazla ilerleme sağlamışlardır. Bu durum 7. sınıf öğrencilerinin gelişim döneminden kaynaklanmış olabilir.

Mahgoup'a göre (2014) alan/saha gezileri, olay ve durumların kolaylıkla anlaşılmasında ve öğrenmenin kolaylaşmasında oldukça önemli bir araçtır. Alan gezileri öğrencilere uygulamalı olarak öğrenme şansı sunarak öğrenmenin kalıcı olmasını sağlamaktadır. Ayrıca saha gezileri öğrencilerin birbirleriyle sosyal bir ortamda etkileşim kurmalarını artırarak deneyimlerini paylaşmaları için etkileşimli bir sosyal ortam imkânı sunar. Bu araştırmada öğrencilerin arazi gezileri ve uygulamalı çalışmalar ile yarı değerli taş ve mineralleri ayırt edebildikleri, jeoloji ve mineroloji bilimi ile ilgili farkındalık kazandıkları, hedeflenen dijital yeterliliklere sahip oldukları görülmüştür. Bu sonuç TÜBİTAK 4004 programının amaçlarından biri olan farklı konularda gerçekleştirilen gözlem ve uygulamalarla katılımcılara disiplinler arası bir bakış açısı kazandırmak (TÜBİTAK, 2024) amacı ile örtüşmektedir.

Sonuç olarak, "Mineral Avcıları: Jeolojinin İzinde Bir Macera" projesi, fen eğitimi alanında okul dışı öğrenme ortamlarının etkili kullanımına güçlü bir örnek teşkil etmektedir. Proje, öğrencilerin bilimsel süreç becerilerini, doğaya karşı duyarlılıklarını, yerel kaynaklara yönelik farkındalıklarını ve disiplinler arası düşünme kapasitelerini geliştirmiştir. Projenin çıktıları, deneyimsel öğrenmenin hem kavramsal hem de duyuşsal alanlarda kalıcı kazanımlar sağladığını göstermektedir. Bu bağlamda benzer yapıdaki projelerin farklı bölgelere yaygınlaştırılması, farklı yaş gruplarına uyarlanması ve hava koşulları gibi çevresel faktörler dikkate alınarak zamanlamalarının planlanması önerilmektedir. Ayrıca, öğrenci merkezli etkileşimli etkinliklerin ve yaratıcı öğrenme yöntemlerinin fen eğitimine entegrasyonu, bilimin topluma daha etkili biçimde aktarılmasında önemli bir araç olarak değerlendirilmektedir.

Öneriler

Çalışmadan elde edilen sonuçlar ışığında; öğrencilerin yaparak yaşayarak öğrenmelerine ve yerinde gözlem yapmalarına imkân tanıyan benzer çalışmaların yaygınlaştırılması önerilmektedir. Mineraller ve madenlerle ilgili öğretim programında yer almayan ve ortaokul fen bilimleri, sosyal bilgiler dersleri gibi derslerin kitaplarında bulunmayan etkileşimli ve saha gezilerini içeren etkinliklerin artırılması gerekliliği bu proje ile anlaşılmıştır. Proje kapsamında öğrencilere sunulan drama etkinliklerinin de etkili olduğu gözlemlenmiş ve anlaşılmıştır. Okullarda yaratıcı drama yöntemi kullanılarak daha fazla sayıda etkinlik gerçekleştirilebilir. Çalışma kapsamında öğrencilerin jeolojik anlamda minerallerin fiziksel özellikleri, ekonomik değeri gibi konularda farkındalıkları oluşmuştur. Bu nedenle bu tür proje çalışmalarının artırılmasının önemli olacağı düşünülmektedir.

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Exploring the Impact of Flipped Classroom Model in Primary School: A Bibliometric and Content Analysis

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Abstract

Many recent studies have shown that the Flipped Classroom Model [FCM] significantly benefits students' learning processes. This study used bibliometric analysis to evaluate the existing studies on using the flipped classroom model at the primary school level from a broad perspective. According to the results of the bibliometric analysis, it was found that the most frequently used keywords in articles on the use of FCM at the primary school level were flipped classroom, flipped learning, blending learning, primary school, motivation, and academic achievement, respectively. According to the co-citation analysis, Bergman, Hwang, Zainuddin, Lo, and Bishop are the most cited authors in this field. The most cited journals were Computers & Education, Educational Technology & Society. In the content analysis, researchers include 30 articles with the highest citations among the studies on using FCM in primary school. The findings reveal that the number of studies in this field increased between 2014 and 2021 but then decreased. On the other hand, results show that FCM can improve primary school students' academic achievement, critical thinking, motivation, self-efficacy and self-regulation skills. The data provides promising evidence that the flipped classroom model can be effective at the primary school level. This study provides a general perspective for researchers who will conduct studies on the relevant section.

Keywords: Flipped classroom, primary school, bibliometric analysis, content analysis.

Introduction

In the early 20th century, in parallel with the developing digital information society, a contemporary pedagogical model emerged that proposes a different perspective on the educational process (del Arco et al., 2022). The "Flipped Classroom" model moves the knowing and understanding stages, including the primary teaching and learning skills in Bloom's Taxonomy, out of the classroom (Anderson & Krathwohl, 2001; Campión, 2019). According to Bloom, people are innately ready to learn, and their learning capacities are unlimited. However, educational processes determine the use of this equipment and its limits (Bloom, 1976). At this point, the FCM draws attention to its potential to transform teaching and learning processes (Flipped Learning Network [FLN], 2014; Hamdan et al., 2013; Phillips & Trainor, 2014). FCM is the combination of in-class activities with out-of-class activities. Here, direct learning is usually carried out outside the classroom using information technologies, while interactive learning is carried out inside the classroom (Cui & Coleman, 2020). In other words, FCM represents a learning approach in which technological tools transform the group classroom learning process into an individual learning experience. According to this model, students prepare for classroom time by spending pre-class time with content-oriented materials and activities and acquiring basic knowledge. The content presented before class is an essential element that encourages critical thinking and meaningful learning in the classroom (Abeysekera & Dawson, 2015; FLN, 2014; McLaughlin et al., 2016). Therefore, students need to have sufficient prior knowledge and practical study skills to understand the material before the lesson and to successfully achieve the teaching objectives (Bergmann & Sams, 2012; Chang et al., 2022; Chen-Hsieh et al., 2017; Chuang et al., 2018). In FCM, in the classroom, more complex skills are practiced, analyzed, and evaluated in the same teaching-learning process. In this way, while higher-level skills are effectively acquired in the classroom, more basic skills are left to the student's work processes outside the classroom, creating a

student-centered learning environment (Parra-Giménez, 2017). In this direction, it can be said that FCM aims to maximize student engagement with advanced technologies by allocating more time in the classroom for interactive learning and student guidance. FCM generally allows students to take a more active role in the classroom. It focuses on acquiring prior knowledge through online video lessons and preparing for discussion, problem-solving, collaborative, and higher-level activities in the classroom. It also supports a blended learning approach by encouraging students' active participation in inquiry-based learning methodologies (Afshari et al., 2021; Baker, 2000; Bergmann & Sams, 2012; Lage et al., 2000).

FCM is based on peer tutoring, which was introduced by Mazur in the 1990s to help students learn simple tasks at home (Mazur, 1997). As a concept, Dr. J. Wesley Baker presented "The Classroom Flip: Using Web Course Management Tools to Become the Guide by the Side" at a conference. In this presentation, he proposed an approach in which the role of the teacher is changed through the displacement of in-class and out-of-class learning processes and the use of web-based tools (Baker, 2000). At the same time, academics such as Maureen J. Lage, Glenn J. Platt, and Michael Treglia at the University of Miami embraced this approach to meet the needs of students with diverse learning preferences and limited class time. This practice involved twice-weekly 75-minute classes in which students read relevant book chapters, watch videos, or listen to presentations before coming to class. The learning process was supported by group discussions, activities, and questions in the classroom, and the subject was reinforced with various activities after the students' questions were answered. This practice provided students with a learning environment where their responsibilities increased and were supported with additional materials (Lage et al., 2000). However, it took about seven years for FCM to become widespread. In 2007, Jonathan Bergman and Aaron Sams, chemistry teachers at Woodland High School, put their PowerPoint presentations and lecture videos online to share course materials when students could not attend class. This practice attracted attention when they realized that it was more effective than traditional teaching, mainly because it allowed students to have the flexibility to learn at their own pace. Bergman and Sams adopted FCM, thinking this method could be applied to other students. This practice is the first example of flipped classroom practices today. Thanks to the videos shared by Bergman and Sams, FCM gained popularity quickly (Bergmann & Sams, 2012).

Today, FCM is applied in many disciplines worldwide (Hao, 2016). When the studies in the field of education are examined, it is seen that this model provides several advantages in the teaching-learning process. In this context, many studies in the literature show that FCM increases students' academic achievement (Atwa et al., 2022; Han, 2023; Hwang & Lai, 2017; O'Flaherty & Phillips, 2015; Yang & Chen, 2020) and motivation (Bi et al., 2023; Zhao et al., 2021). In addition, many studies are showing that the CMS model reduces students' cognitive load (Abeysekera & Dawson, 2015; Chen & Mokmin, 2024; Cheng et al., 2023; Gao & Hew, 2023; Turan & Göktaş, 2016), encourages active participation in the lesson, improves problem-solving skills (Hsu & Wu, 2023), improves self-efficacy (Enfield, 2013; Lai & Hwang, 2016), improves critical (Atwa et al., 2022; Hsu & Wu, 2023; Ma, 2023) and creative thinking skills (Cai et al., 2023; Hsu & Wu, 2023). Latorre-Cosculluela et al. (2021) emphasized the most crucial feature of FCM: considering students' characteristics. It is seen that FCM generally provides various benefits at different levels of education. This situation reflects the importance

of using FCM in education. In this study, the 30 studies published in the field of primary school education in the Web of Science [WoS] database for content analysis and the most cited studies by the criteria are presented in Table 1.

Table 1.

Aims and Results of the Analyzed Articles

Authors & Year	Aim of the study	Journal title	The number of citations
Lai & Hwang (2016)	Examining the efficacy of a self-regulated FC (flipped classroom) method in enhancing students' academic outcomes in a mathematics class.	Computers & Education	356
Chang & Hwang (2018)	Effects of a flipped learning guide based on augmented reality	Computers & Education	175
Strelan et al. (2020)	The aim of this meta-analysis is to examine the effect of the FCM on student performance.	Educational Research Review	150
Hwang & Lai (2017)	To examine the impacts of an e-book-based flipped learning approach on students' learning achievement and self-efficacy in primary school mathematics courses.	Educational Technology & Society	89
Şahin & Tavil (2023)	Examining how integrating the FCM into vocabulary instruction affects young learners' vocabulary learning and retention.	Journal Language Teaching & Learning	73
Hinojo-Lucena et al. (2020)	To analyze the impact of flipped learning in contrast to traditional teaching approaches.	International Journal of Environmental Research and Public Health	67
Zou (2020)	Examining the perceptions of gamified FCM English language teaching classes on primary school level students and teachers	Journal of Computers in Education	52
Sánchez, et al. (2019)	To examine the effectiveness of FCM compared to traditional methodology in preschool, primary and secondary education levels	Sustainability	40
Aidinopoulou & Sampson (2017)	Examining the application of the flipped classroom model for teaching primary school social studies.	Educational Technology & Society	39
Ye et al. (2019)	To compare the effects of an interactive problem-posing guided slide learning mode and a traditional slide learning mode in a primary school natural science course.	Interactive Learning Environments	35
Tsai et al. (2015)	Examining impacts of flipped classroom and problem-based learning (FPBL) on the development of students' learning performance.	International Journal of Information and Communication Technology Education	31
Galindo-Dominguez, (2021)	Evaluating whether the FC method is more effective compared to alternative methodologies.	Educational Technology & Society	26
Cruickshank & Mainsbridge (2021)	Investigating teachers' experiences of online delivery of physical education in primary school.	Issues in Educational Research	23

Continue to Table 1

Gómez-García et al. (2020)	Investigating how the combination of FC and gamification impacts the enhancement of motivation, autonomy, and self-regulation in learning, within the context of a didactic unit focusing on healthy habits and nutrition.	Nutrients	23
Yang & Chen (2020)	Investigating the use of FC in primary EFL classrooms in China	Education and Information Technologies	23
Hui et al. (2018)	Examining the effect of learning activity design to improve learning attitudes	Open Learning	18
Županec et al. (2018)	Evaluation of the effectiveness of a flipped biology classroom in primary schools and comparison of students' engagement levels with the conventional classroom approach	Journal of Baltic Science Education	18
Cui & Yu (2019)	Knowledge and concept maps' prevalence in promoting deeper learning in the FC.	British Journal of Educational Technology	17
Girmen & Kaya (2019)	Improving the process of developing primary school 4th-grade students' basic language skills with digital story activities and games based on the FCM	International Journal of Instruction	17
Vicente et al. (2020)	It presents "Sustainable City," an educational robotics-based STEAM project to bring climate change issues closer to primary school students.	Sustainability	16
Doğan et al. (2023)	Analysis of recent research findings regarding the efficacy of implementing the FC method in science instruction.	Research in Science & Technological Education	14
Hwang et al. (2021)	Examining how the use of concept maps as a guide to problem-posing activities in a flipped learning environment can increase students' higher thinking skills	Journal of Computer-Assisted Learning	14
McEvoy et al. (2016)	Evaluate the applicability of the FC program	Health Education Journal	13
Tutal & Yazar (2021)	Evaluation of foundational research exploring the impacts of FC on academic performance, retention of knowledge and attitudes towards coursework.	Asia Pacific Education Review	11
Sáez-López & Cózar-Gutiérrez (2017)	It explores the application of block-based visual programming using the Scratch application in the field of Primary Social Studies. The study uses a Design-Based Research approach to evaluate the benefits and practices brought by the intervention while incorporating data triangulation, Bloom's classical taxonomy, the Technological Pedagogical Content Knowledge (TPACK) model, and the Reverse Classroom model.	Revista Complutense de Educacion	10
Hultén & Larsson (2018)	To contribute to understanding of the FCM.	Scandinavian Journal of Educational Research	9

Continue to Table 1

Gao & Hew (2023)	Examines the impact of a theory-based (5E framework) FCM on the comprehension of computational thinking (CT) concepts, problem-solving skills in computing, and students' perspectives on flipped learning in elementary schools.	Journal of Educational Computing Research	9
Botella et al. (2021)	To assess the effect of implementing the Parkour Didactic Unit within the FL model on primary school students' motivation.	Acta Gymnica	8
Zou & Zhang (2021)	Investigating how teachers and students view the effects, feasibility, and possibilities of the flipped EFL classroom.	ELT Journal	5
Erbil & Kocabaş (2020)	Exploring changes in motivation and academic achievement among 4th-grade primary school students through the combined and individual implementation of FC and cooperative learning methods.	Studies in Educational Evaluation	5

In line with the literature, many studies on this subject have been conducted at various levels and focused on different variables to better understand the effects of FCM in education. However, in the review studies on FCM in the literature, it was revealed that the studies on this subject were mainly conducted with older students, and there was limited research on the use of FCM in primary school (Fornons & Palau, 2021; Lo, 2020; Loizou & Lee, 2020; Wright & Park, 2022). Similarly, there needs to be a content analysis-based bibliometric study in the literature that reveals the current trends in the use of FCM in primary school. Bergmann and Sams (2015), on the other hand, stated that since the abilities and educational needs of students in primary school differ from those of students at other levels of education, the use of FCM in primary school involves differences in terms of teacher training, video use, and parental involvement compared to other levels. This study will guide future studies by revealing the current trends of studies on using FCM in primary school through content and bibliometric analysis methods. Therefore, this study aims to contribute to a better understanding of the effects of this model on primary school education by examining the effects of FCM at the primary school level through content and bibliometric analysis. For this purpose, we sought answers to the following research questions:

1. What is the distribution of articles on FCM in primary school, regarding years and number of citations?

2. Who are the most cited authors in articles on FCM in primary school?

3. Which journals have the most cited articles on FCM in primary school?

4. What keywords are most frequently used in primary school articles on FCM?

5. What are the most used words in the abstracts of articles on FCM in primary school?

6. What variables are examined in articles on FCM in primary school?

7. What is the distribution of articles on FCM in primary school according to years?

8. Which research methodologies are mostly used in primary school articles on FCM?

9. What sample sizes are preferred in primary school articles on FCM?

10. Which data collection tools are commonly preferred in primary school articles on FCM?

11. Which data analysis methods are mostly used in primary school articles focusing on FCM?

Method

This study presents a systematic evaluation of the use of FCM through bibliometric and content analysis methods. We used the bibliometric analysis method in the study because it provides a broad perspective on the field by considering the studies conducted to date. Bibliometrics uses quantitative analysis and statistical methods to assess data collected from the bibliographic elements of research (Zan, 2019). Bibliometric analysis offers the opportunity to reveal the development of the topic over time (Pinto et al., 2019). In this way, it enables researchers to understand the developments in the field more comprehensively (Zupic & Čater, 2015). In the study, after determining the general framework of the field, we preferred the content analysis method to indicate the research tendencies in FCM use in primary school. Consequently, our aim in scrutinizing research within this domain was to offer insights into contemporary research directions for scholars intending to explore this field further. We used the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols [PRISMA] reporting technique (Page et al., 2021). We selected the study data from the WoS database.

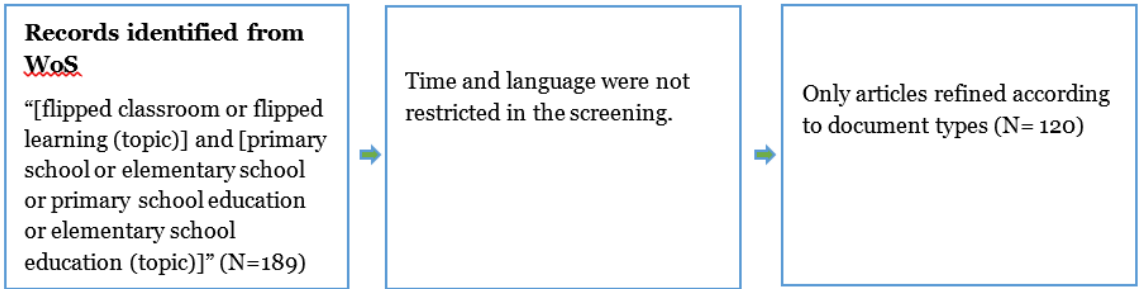
Data Collection

Bibliometric Analysis

In the data collection phase for bibliometric analysis, we aimed to identify studies on the use of FCM in primary school, which is the aim of the research. For this aim, we searched the WoS database using "Advanced Search". As a result of the search, we listed the articles with the words "[*flipped classroom or *flipped learning] and [*primary school or *elementary school or *primary school education or *elementary school education]" in the title, abstract, and keywords. As a result of the search, we reached 189 articles. The selection stages of the articles in the bibliometric analysis data collection process are given below (Figure 1).

Figure 1.

Article Selection Process for Bibliometric Analysis



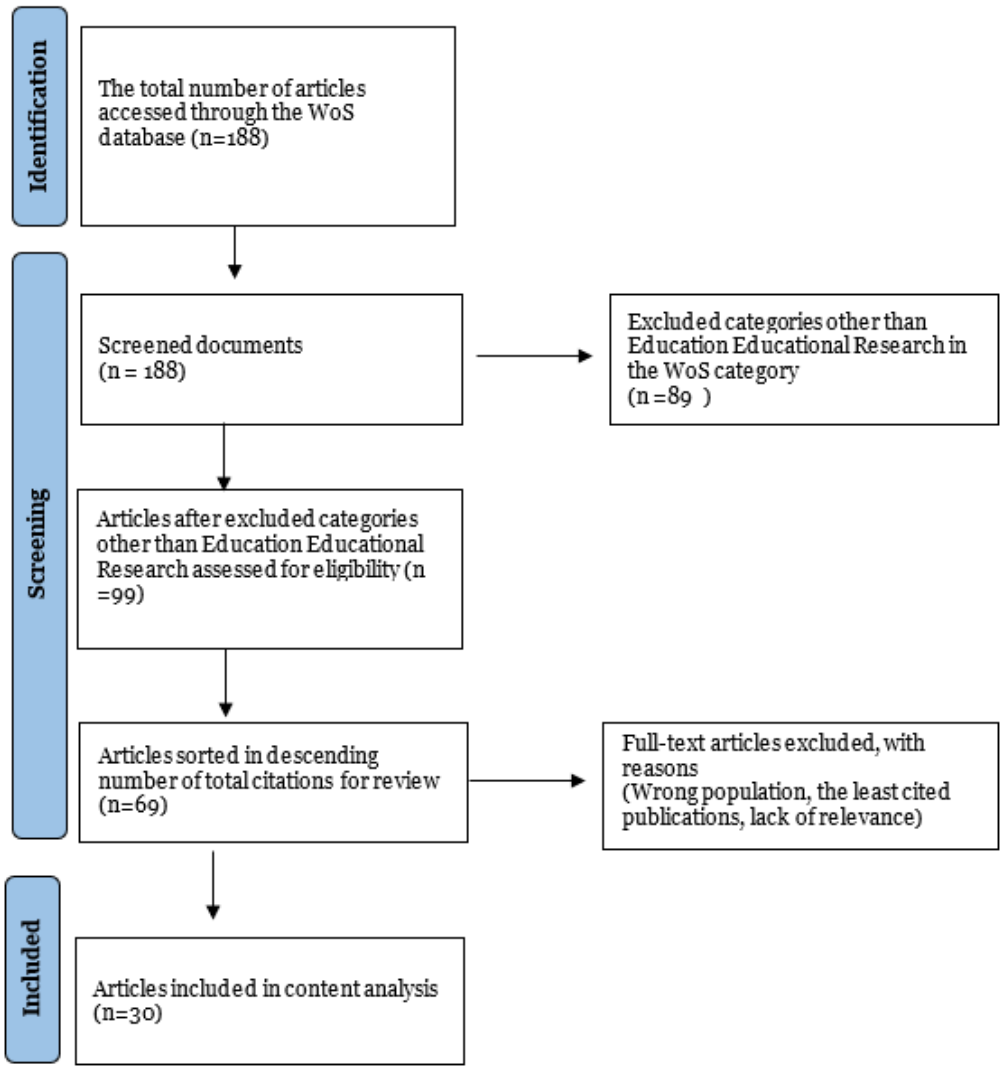
Content Analysis

In the next phase of research, we used content analysis to provide a holistic picture of the research methodologies and areas where FCM is used in primary school to obtain more profound and more comprehensive findings. For the content analysis, we only examined the most cited articles on FCM at the primary school level. The researchers independently

reviewed the articles ("flipped classroom" or "flipped learning") and ("primary school" or "elementary school"). We then reviewed each article's abstract and excluded articles unrelated to FCM, not elementary school education. We analyzed 30 articles that met the study criteria: "research topic, research outcome, variables examined in the study, year of publication, research method, preferred sample sizes, data collection tools, and data analysis methods." While conducting the content analysis, we followed the steps of the PRISMA flow diagram for selecting articles in the data collection process (Figure 2).

Figure 2.

Article Selection Process for Content Analysis



Data Analysis

Data Analysis Process for Bibliometric Analysis

We used VOSviewer software for statistical analysis and visualization of bibliometric analyses. VOSviewer is very functional in directly viewing and interpreting large-scale bibliometric maps (van Eck & Waltman, 2010). Within the scope of bibliometric analysis, the identified studies are brought together, the data of the studies are standardized and classified, and interpreted by analyzing them in line with the research purpose. In this analysis, journals,

authors and their institutions, total number of publications, countries of research, and keyword networks can be analyzed as bibliometric variables.

We used content analysis to analyse the 30 most cited studies that met the criteria. Content analysis is an analysis method that serves as an essential bridge between qualitative analysis and statistical results by quantitatively revealing some features of texts (Bauer, 2003). It provides a better understanding of the data by classifying similar data within the framework of specific themes and concepts (Creswell, 2013). In this study, we categorized and analyzed the data regarding various variables.

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 there is no situation in the data of this study that would require ethical permission, ethical permission was not obtained.

Ethics Committee Permission Information:

Since the research data was obtained by examining documents in a database accessible online, it does not require ethics committee permission.

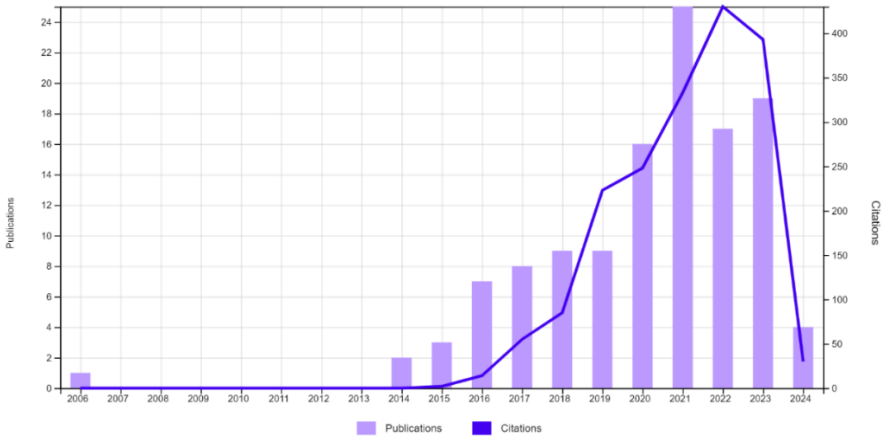
Findings

Findings of Bibliometric Mapping Analysis

Figure 3 shows the graph of the number of publications and citations of the FCM by year. These results show that the first article was published in 2006 and then increased and reached the maximum number of publications (f=25) in 2021.

Figure 3.

Distribution of FCM by Years and Number of Citations



Most Cited Authors

Figure 4 shows the map of the most cited authors and citation analysis. According to the data obtained, the most cited (co-citation) authors in this field are Bergmann (37 citations), Hwang (21 citations) and Zainuddin (20 citations). The 10 authors with must co-cited citations are presented in Table 2.

Figure 4.

Most Cited Authors in FCM-Related Articles (Co-Citation Analysis)

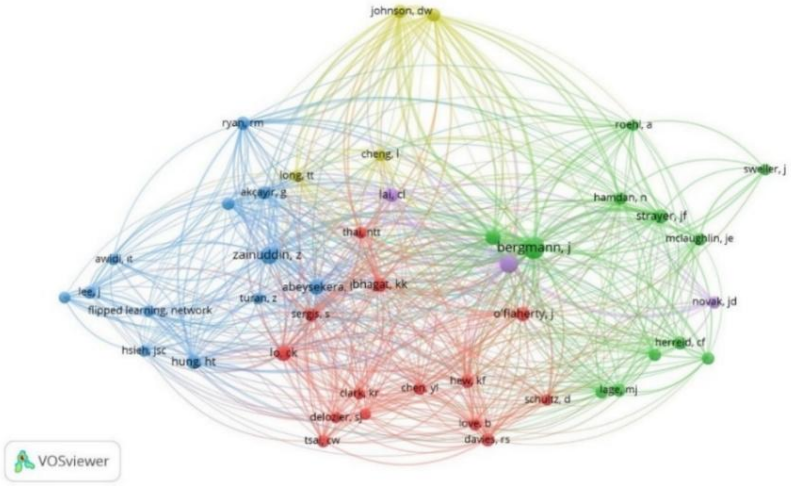


Table 2.

The 10 Most Cited Authors in FCM-Related Articles

Authors	Citations
Bergmann	37
Hwang	21
Zainuddin	20
Lo	14
Bishop	12
Abeysekera	11
Strayer	10
Lai	9
Bhagat	9
Hung	9

Most Cited Journals

Figure 5 shows the most cited journals. The data shows that the most cited journals are Computers & Education (125), Educational Technology & Society (55) and Journal of Chemical Education (42). The 10 most cited journals are presented in Table 3.

Figure 5.

Most Cited Journals in FCM-Related Articles

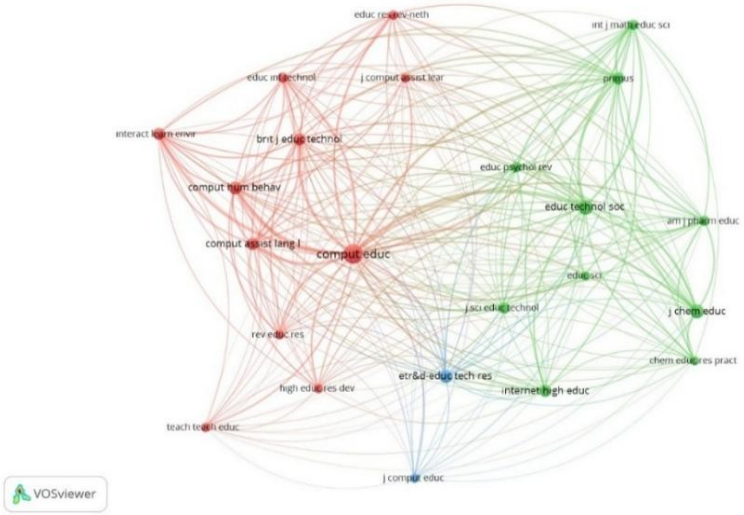


Table 3.

The 10 Most Cited Journals İin FCM-Related Articles

Journals	Citations
Computers & Education	125
Educational Technology & Society	55
Journal of Chemical Education	42
Computers in Human Behavior	36
Educational Technology Research and Development	33
British Journal of Educational Technology	28
Computer Assisted Language Learning	28
Internet and Higher Education	27
Interactive Learning Environments	25
PRIMUS	23

Most Used Keywords in FCM-Related Articles

The findings regarding the keywords used in the articles on the use of the flipped classroom model are presented in Figure 6. These findings show that "flipped classroom" (f=25), "flipped learning" (f=7), "blended learning" (f=5), "primary school" (f=5), "motivation" (f=4), "academic achievement" (f=4) are the most used keywords. The most used keywords in the articles are presented Table 4. In the distribution of keywords over the years (Figure 7), it is clear that recent articles focus on augmented reality.

Figure 6.

Most Used Keywords in FCM-Related Articles

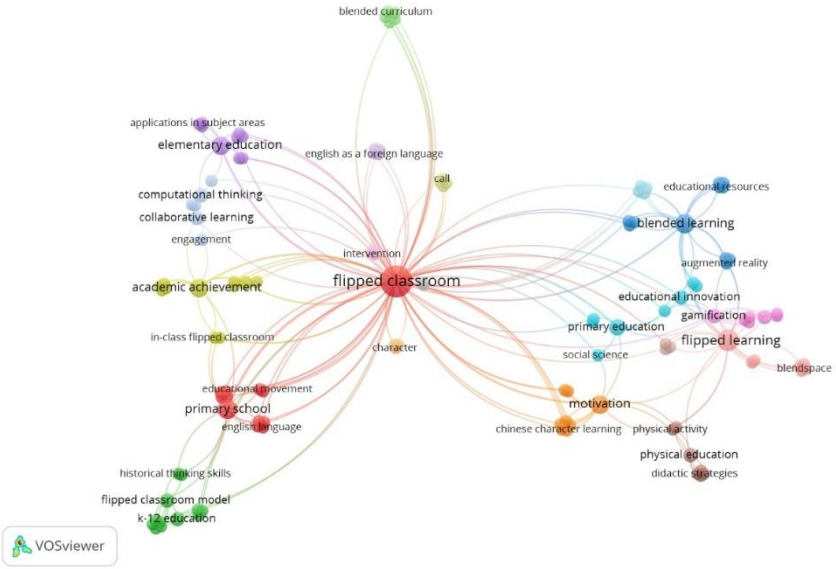


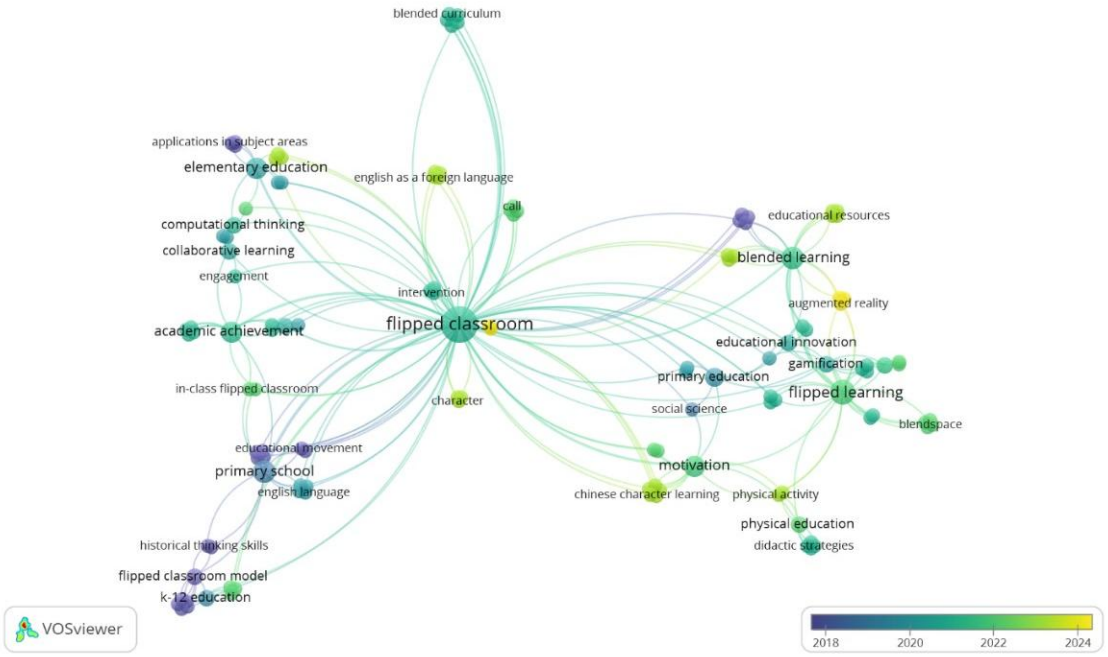
Table 4.

The Most Used 10 Keywords in the Articles

Keywords	*f*
Flipped classroom	25
Flipped learning	7
Blended learning	5
Primary school	5
Motivation	4
Academic achievement	4
Elementary education	4
Primary education	3
K-12 education	2
Flipped classroom model	2

Figure 7.

Distribution of Most used Words in Article Abstracts by Year



Words used in Abstract Sections of FCM-Related Articles

Figure 8 includes the most commonly used words in article abstracts. According to the data obtained, the most common words in the abstract sections are “teaching” (f=20), “level” (f=18), “analysis” (17), “group” (f=15), “effect” (f=15) and “development” (f=13). The most used words in the abstract sections are presented Table 5.

Figure 8.

Words used in the Abstract Sections of FCM-Related Articles

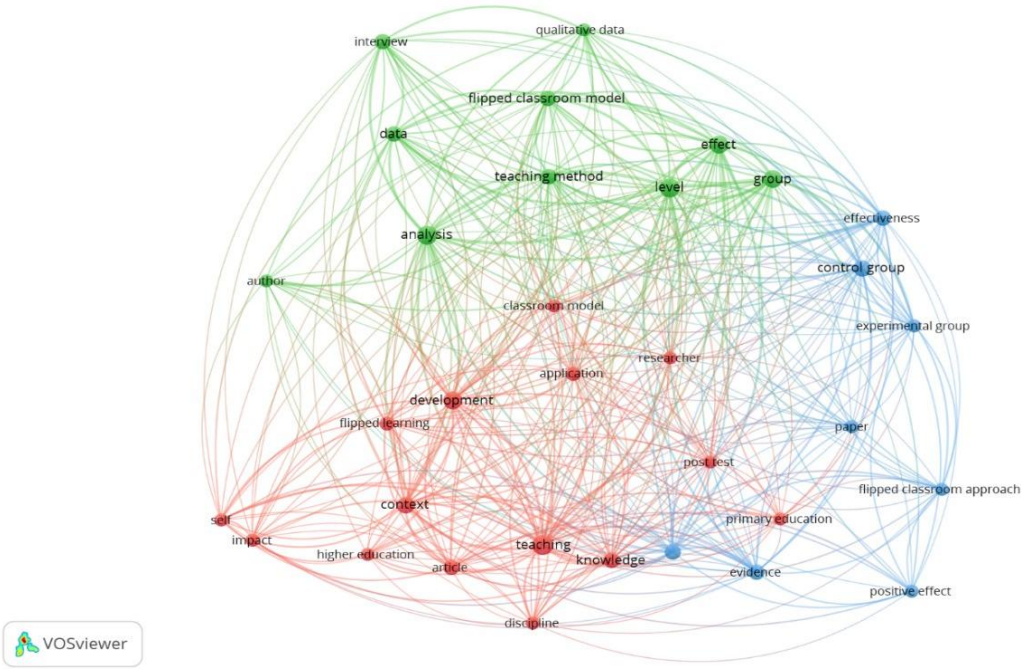


Table 5.

The Most Used 10 Words in the Abstract Sections

Words	*f*
Teaching	20
Level	18
Analysis	17
Group	15
Effect	15
Development	13
Context	12
Control group	12
Knowledge	10
Flipped classroom model	10

Countries with the Most Cited Papers on FCM

Figure 9 shows the countries with the most cited articles on the use of the flipped classroom model. Accordingly, the top five countries with the highest number of papers in this field are Taiwan (386 citations), Australia (250 citations), Spain (99 citations), Greece (98 citations), and China (94 citations). The most cited countries and the number of documents are presented in Table 6.

Figure 9.

Countries with the Most Cited Articles on FCM

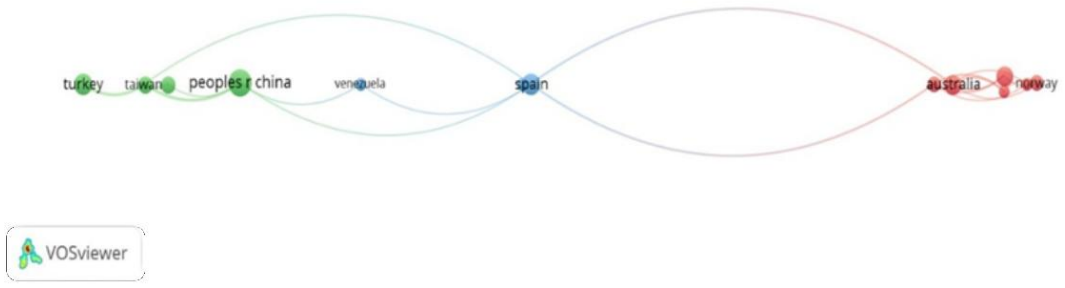


Table 6.

The Most Cited 10 Countries and Number of Documents

Countrys	Documents	Citations
Taiwan	3	386
Australia	4	250
Spain	6	99
Greece	2	98
China	12	94
Venezuela	1	72
Norway	2	59
USA	6	26
Turkey	5	20
Serbia	1	18

Top 30 Cited Articles

It is essential to pay attention to the content of the studies. A highly cited study indicates that it has been critically evaluated (Jin et al., 2020). This provides insight into the popular topics and their impact on research. This study reviewed the 30 most cited articles related to primary school education in the WoS database. These articles represent the most influential

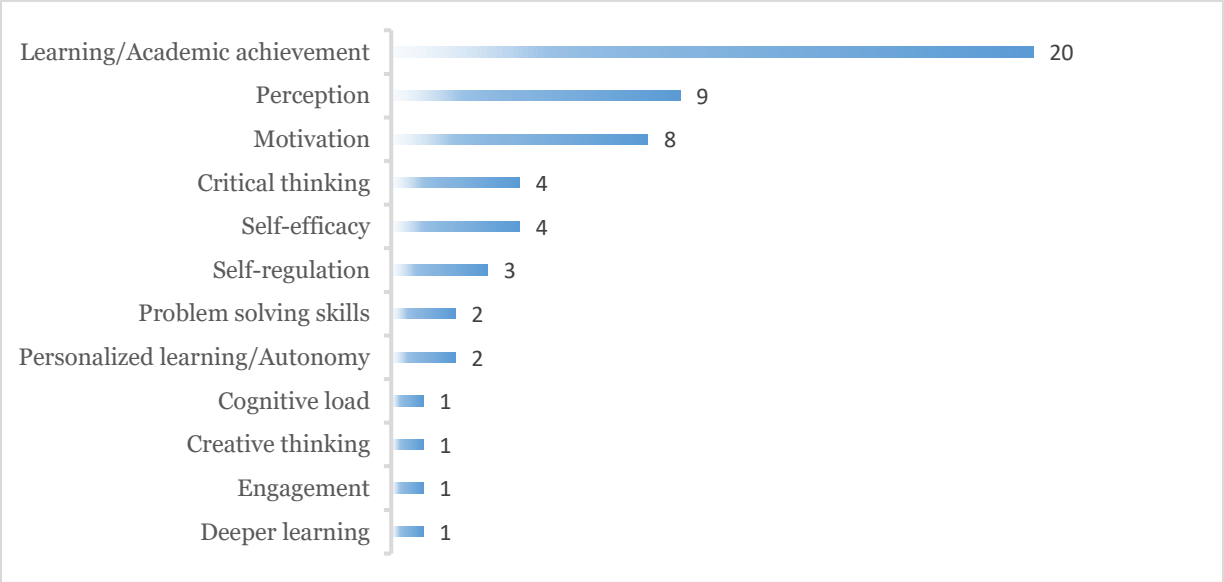
studies in this field and clearly describe this research area. The information about the studies included in the content analysis is examined under the following headings.

Variables Analyzed in Articles on the Use of the FCM in Primary Schools

Content analysis revealed that articles examined the flipped classroom model in primary school education depending on different variables. Figure 10 shows the variables analyzed in the articles. According to the findings, learning/academic achievement, perception and motivation variables were examined the most.

Figure 10.

Variables Analyzed in the Articles

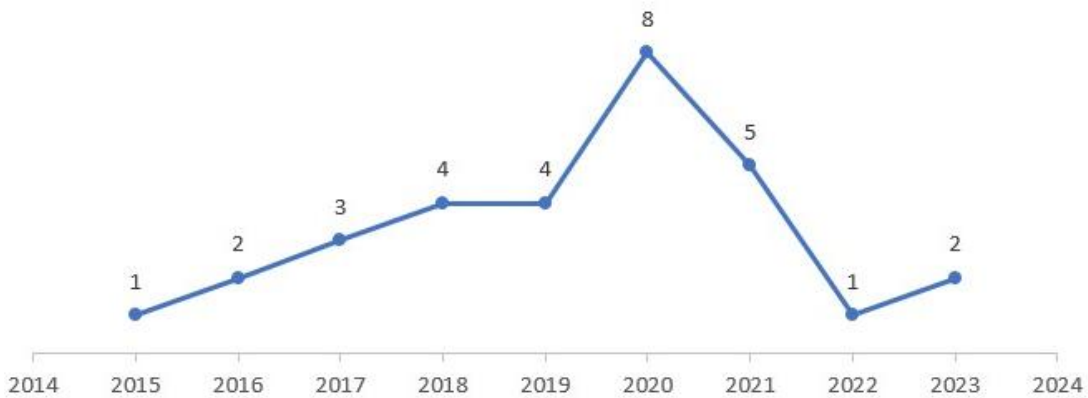


Distribution of Articles on the Use of FCM in Primary Schools by Years

Figure 11 shows that the first study was published in 2015. It reached its highest number with two studies in 2016, three in 2017, 4 in 2018, 4 in 2019, and 8 in 2020, respectively. In 2021, this number decreased to five, with one study in 2022 and 2 in 2023.

Figure 11.

Distribution of Studies by Year

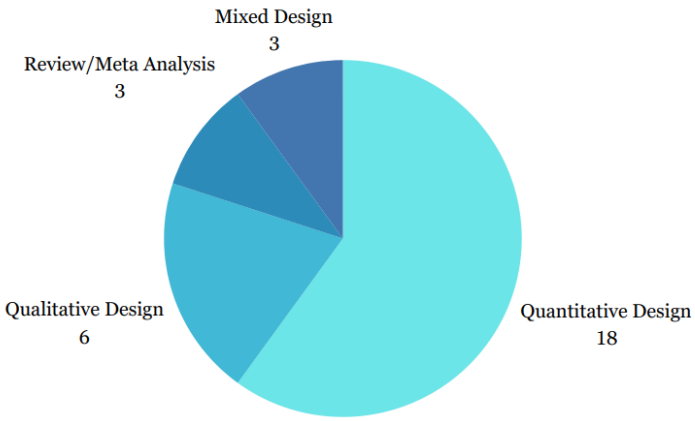


The Method used in the Articles on the use of the FCM in Primary School

The research methods used in the articles analyzed using the FCM in primary schools are presented in Figure 12. According to the findings, the quantitative research method was used the most.

Figure 12.

Research Methods used in the Articles



Sample Size used in Articles on the Use of FCM in Primary Schools

As seen in Table 7, the most preferred sample size is groups of 21-50 people, while the least preferred is groups of 1-20 people.

Table 7.

Sample Size of Studies

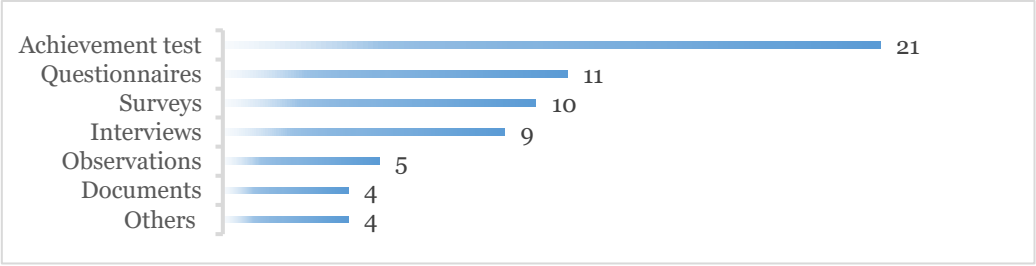
Sampling groups	*f*
1-20	2
21-50	8
51-100	7
101-200	7
201-300	5
Not indicated	1

Data Collection Tools Used in Articles on the Use of FCM in Primary Schools

The data collection tools used in the studies on the use of FCM in primary schools are presented in Figure 13. According to the findings, the most preferred data collection tool is achievement tests, while observations and documents are the most miniature preferred data collection tools.

Figure 13.

Data Collection Tools used in the Articles

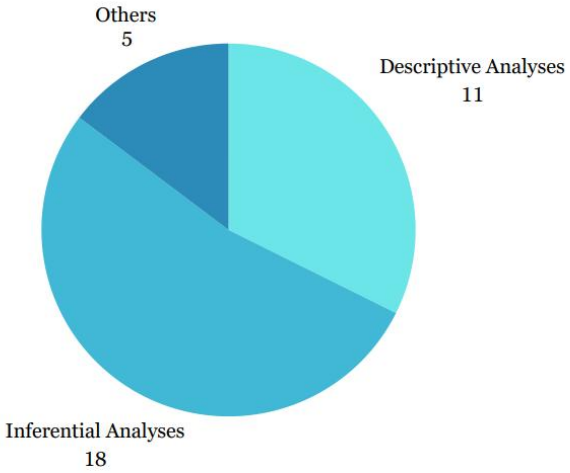


Data Analysis Methods used in Articles on the Use of FCM in Primary Schools

Figure 14 shows the data analysis method. According to the findings, inferential analysis is the most preferred data analysis method.

Figure 14.

Data Analysis Methods used in the Article



Discussion and Conclusion

This study aims to conduct a bibliometric analysis of articles on using FCM at the primary school level and to reveal the methodological research trends of the most cited articles. In this context, bibliometric mapping and content analysis of the data obtained from the WoS database were conducted. According to the results of the bibliometric analysis, it was found that the most frequently used keywords in articles on the use of FCM at the primary school level were flipped classroom, flipped learning, blending learning, primary school, motivation, and academic achievement, respectively. When the distribution of keywords by year is analyzed, it can be said that augmented reality has become a focal point in recent years. Moreover, Ibáñez and Delgado-Kloos (2018) stated in their study that it would be helpful to investigate how augmented reality learning activities can be part of blended teaching strategies such as flipped classrooms. Since Bergman and Sams (2012) popularized the implementation of flipped classrooms worldwide, there has been an interest in integrating augmented reality technology into FCM in recent studies. However, augmented reality studies on the combination of augmented reality with advanced teaching methods such as flipped and blended learning are still in their infancy (Hung & Yeh, 2023; Khodabandeh, 2023; Khodabandeh & Mombini, 2024; Teo et al., 2022). The utilization of augmented reality tools, identified as one of the most promising emerging digital technologies in education, has sparked innovation and enthusiasm among both teachers and students, encouraging novel approaches to learning (Khodabandeh, 2023). Alongside this trend, flipped learning has gained traction in recent years and is progressively becoming a favored educational methodology (Ekici, 2021). For example, Chang and Hwang (2018) found that the AR-based flipped learning model benefits students by improving their project performance and learning motivation, critical thinking tendencies, and group self-efficacy. The most used words in the abstract were teaching, level, analysis, group, and effect. According to the co-citation analysis, Bergman,

Hwang, Zainuddin, Lo, and Bishop are the most cited authors in this field. It can be said that the contribution of these authors to the flipped model in the related literature is undeniable. The most cited journals were Computers & Education, Educational Technology & Society. It can be said that the aim and scope of these journals is to accept publications related to the technology of education. Educational and instructional technology is a relatively young academic discipline, and scientific journals in related fields only started to emerge in the 1970s (Zawacki-Richter & Latchem, 2018). Moreover, the fact that the Computers & Education journal has been published since 1976 can be explained by the fact that it is among the most cited journals in this field.

The content analysis results showed that learning/academic achievement, perception, and motivation variables were mainly discussed in the articles. Considering the related literature, it is understood that learning/academic achievement (Lin et al., 2019; Tutal & Yazar, 2021; Zainuddin, 2018; Zheng et al., 2020; Zhu, 2021); perception (Chang & Hwang, 2018; Chen et al., 2016); motivation (Lee et al., 2021; Yilmaz, 2017; Zhao et al., 2021) variables are studied. In their research, Bishop and Verleger (2013) found that most studies have investigated student perceptions. In addition, Akçayır and Akçayır (2018), in their research on the advantages and challenges of the flipped classroom, found that the most frequently reported advantage of the flipped classroom in their review study was the increase in student learning performance. Moreover, Zheng et al. (2020) found in their meta-analysis that the flipped classroom model has a moderate effect size on learning achievement and learning motivation.

It was found that the most common research trend in the analyzed articles was quantitative design. There are similar studies in the related literature. For example, Bond (2020) found that the most preferred method was quantitative design in his systematic review of K-12 student engagement through flipped learning. On the other hand, in the review study on flipped learning research, mixed-method research design is the most used research design (Birgili et al., 2021; Zainuddin et al., 2019). Moreover, Turan and Akdag-Cimen (2020) stated that mixed and quantitative methods are their study's most commonly used research methods. In the articles examined within the scope of the research, it is understood that achievement tests, questionnaires, surveys, and interviews are the most common data collection tools, respectively. Bond (2020) found that surveys, interviews, and ability tests were the most preferred data collection tools in his systematic review of articles on K-12 student engagement through flipped learning. Zou et al. (2022), in their systematic review of research on flipped language classrooms, found that tests, questionnaires, and interviews were the most used data collection tools, respectively. According to the sample size, it is understood that the sample numbers in which the most data were collected were 21-50, 51-100, and 101-200, respectively. Lo and Hew (2017) found similar results in their review study on FCM at the K-12 level.

Recommendations

As a result, these analyses inform future researchers about the unexplored research content related to FCM and highlight the gaps waiting to be explored in this field using bibliometric techniques. It also offers critical perspectives on the related literature. Some recommendations related to the study are listed below:

FCM and learning/academic achievement, as well as perception and motivation variables, are widely used in the articles. Looking at different variables in future studies is essential for the related literature.

As a result of the analysis, it was revealed that the augmented reality variable has recently been used in keywords related to FCM. In future studies, there may be studies in which inversion and augmented reality variables are carried out together.

The analysis found that achievement tests, questionnaires, and surveys were the most commonly used data collection tools. Different data collection tools can be recommended, especially alternative measurement and evaluation techniques.

The data for this study were obtained from the Web of Science database based on specific criteria. Although PRISMA guides the study's criteria, it has limitations in some aspects. Moreover, different criteria or databases will produce different results with the data obtained. Therefore, different studies can be designed for different databases or criteria. In addition, certain studies' titles, abstracts, or keywords may not contain words that match the search strings we used to perform this systematic review (Cevikbas & Kaiser, 2023). This may be another limitation of the study.

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BIOGRAPHICAL NOTES

Contribution Rate of Researchers

Author 1: 25%

Author 2: 25%

Author 3: 25%

Author 4: 25%

Conflict Statement

It is stated that the authors did not declare any conflict of interest within the scope of this research and that the research was carried out in accordance with the principles of impartiality and honesty.

Notice of Use of Artificial Intelligence

The authors did not utilise any artificial intelligence tools for the research, authorship and publication of this article.

İlkokulda Ters Yüz Sınıf Modelinin Kullanımına İlişkin Yapılan Çalışmalardaki Eğilimler: Bibliyometrik ve İçerik Analizi

Özet

Son zamanlarda yapılan birçok çalışma, Ters Yüz Sınıf Modelinin [FCM] öğrencilerin öğrenme süreçlerine önemli ölçüde fayda sağladığını göstermiştir. Bu çalışmada, ters yüz sınıf modelinin ilkokul düzeyinde kullanımına ilişkin mevcut çalışmaları geniş bir perspektiften değerlendirmek için bibliyometrik analiz kullanılmıştır. Bibliyometrik analiz sonuçlarına göre, FCM'nin ilkokul düzeyinde kullanımıyla ilgili makalelerde en sık kullanılan anahtar kelimelerin sırasıyla ters yüz sınıf, ters yüz öğrenme, harmanlayarak öğrenme, ilkokul, motivasyon ve akademik başarı olduğu bulunmuştur. Ortak atıf analizine göre, Bergman, Hwang, Zainuddin, Lo ve Bishop bu alanda en çok atıf alan yazarlardır. En çok atıf alan dergiler ise Computers & Education, Educational Technology & Society'dir. İçerik analizinde araştırmacılar, ilkokulda FCM kullanımına ilişkin çalışmalar arasında en çok atıf alan 30 makaleye yer vermiştir. Bulgular, bu alandaki çalışmaların sayısının 2014-2021 yılları arasında arttığını ancak daha sonra azaldığını ortaya koyuyor. Öte yandan sonuçlar, FCM'nin ilkokul öğrencilerinin akademik başarılarını, eleştirel düşünme, motivasyon, öz yeterlilik ve öz düzenleme becerilerini geliştirebileceğini gösteriyor. Veriler, ters yüz sınıf modelinin ilkokul düzeyinde etkili olabileceğine dair umut verici kanıtlar sunmaktadır. Bu çalışma, ilgili bölümde çalışma yapacak araştırmacılar için genel bir bakış açısı sağlamaktadır.

Anahtar Kelimeler: Ters yüz sınıf, ilkokul, bibliyometrik analiz, içerik analizi.

Giriş

20. yy.ın başlarında gelişen dijital bilgi toplumuna paralel olarak eğitim sürecine farklı bir bakış açısı öneren çağdaş bir pedagojik model ortaya çıkmıştır (del Arco vd., 2022). Bu model, Bloom taksonomisinde öğretme ve öğrenme sürecinin basit becerilerini içeren bilme ve anlama aşamalarını sınıf dışına taşıyan "Ters Yüz Sınıf" modelidir (Anderson & Krathwohl, 2001; Campión, 2019). Bloom'a göre insanlar doğuştan öğrenmeye hazırdır ve öğrenme kapasiteleri sınırsızdır. Ancak bu donanımların ve sınırların kullanımını belirleyen eğitim süreçleridir (Bloom, 1976). Bu noktada Ters Yüz Sınıf Modeli [TYSM] öğretme ve öğrenme süreçlerini dönüştürme potansiyeli ile dikkat çekmektedir (Flipped Learning Network [FLN], 2014; Hamdan vd., 2013; Phillips & Trainor, 2014). TYSM, sınıf içi etkinliklerin sınıf dışı etkinliklerle birleştirilmesidir. Burada doğrudan öğrenme genellikle bilgi teknolojileri kullanılarak sınıf dışında, etkileşimli öğrenme ise sınıf içinde gerçekleştirilmektedir (Cui & Coleman, 2020). Diğer bir ifadeyle TYSM, grup halindeki sınıf içi öğrenme sürecinin teknolojik araçlarla bireysel öğrenme deneyimine dönüştüğü bir öğrenme yaklaşımını temsil eder. Bu modele göre, öğrenciler ders öncesi zamanlarını içeriğe yönelik materyal ve etkinliklerle geçirip temel bilgileri edinerek sınıf içi zamana hazırlanırlar. Ders öncesi sunulan içerikler, eleştirel düşünme ve sınıf içi anlamlı öğrenmeyi teşvik eden önemli unsurlardandır (Abeysekera & Dawson, 2015; FLN, 2014; McLaughlin vd., 2016).

Bergmann ve Sams (2015), ise ilkokuldaki öğrencilerin yetenekleri ve eğitim ihtiyaçları diğer eğitim kademelerindeki öğrencilerden farklılık gösterdiği için TYSM'nin ilkokulda kullanılmasının; öğretmen eğitimi, video kullanımı ve velilerin sürece dahil edilmesi gibi konularda diğer kademelere göre farklılıklar içerdiğini belirtmiştir. Bu çalışmanın, TYSM'nin ilkokulda kullanımına ilişkin çalışmaların içerik ve bibliyometrik analiz yöntemi ile mevcut eğilimlerini ortaya koyarak literatürdeki boşlukları doldurmak adına gelecekteki çalışmalara yön vereceği düşünülmektedir. Bu nedenle bu çalışmada, ilkokul düzeyinde TYSM'nin etkilerini içerik ve bibliyometrik analiz yöntemiyle inceleyerek bu modelin ilkokul eğitimine etkilerinin daha iyi anlaşılmasına katkı sağlamak amaçlanmaktadır. Bu amaçla aşağıdaki araştırma sorularına cevap aranmıştır:

1. İlkokulda TYSM ile ilgili makalelerin yıllara ve atıf sayılarına ilişkin dağılımı nedir?

2. İlkokulda TYSM ile ilgili makalelerde en çok atıf alan yazarlar kimlerdir?

3. İlkokulda TYSM ile ilgili makalelerde en çok atıf alan dergiler hangileridir?

4. İlkokulda TYSM ile ilgili makalelerde en çok kullanılan anahtar kelimelerin dağılımı nedir?

5. İlkokulda TYSM ile ilgili makalelerin özetlerinde en çok kullanılan kelimelerin dağılımı nedir?

6. İlkokulda TYSM ile ilgili makalelerde incelenen değişkenler nelerdir?

7. İlkokulda TYSM ile ilgili makalelerin yıllara göre dağılımı nedir?

8. İlkokulda TYSM ile ilgili makalelerdeki metodolojik eğilimler nelerdir?

9. İlkokulda TYSM ile ilgili makalelerde en çok tercih edilen örneklem büyüklükleri nelerdir?

10. İlkokulda TYSM ile ilgili makalelerde en çok tercih edilen veri toplama araçları nelerdir?

11. İlkokulda TYSM ile ilgili makalelerde en çok tercih edilen veri analiz yöntemleri nelerdir?

Yöntem

Bu çalışma, TYSM kullanımının bibliyometrik ve içerik analizi yöntemleriyle sistematik bir şekilde değerlendirmesini sunmaktadır. Günümüze kadar yapılan çalışmaları dikkate alarak alana geniş bir perspektiften bakma imkânı sağladığı için çalışmada bibliyometrik analiz yöntemi kullanılmıştır. Bibliyometri, çalışmaların bibliyografik bileşenlerinden elde edilen bilgilerin nicel analizler ve istatistikler aracılığıyla incelenmesidir (Zan, 2019). Bibliyometrik analiz, ele alınan konunun zaman içindeki gelişimini ortaya koyma imkânı sunmaktadır (Pinto vd., 2019). Bu sayede araştırmacıların alandaki gelişmeleri daha kapsamlı bir şekilde anlamalarını sağlamaktadır (Zupic & Čater, 2015). Çalışmada alanın genel çerçevesi belirlendikten sonra ilkokulda TYSM kullanımı alanındaki araştırma eğilimlerini ortaya koymak için içerik analizi tercih edilmiştir. Böylece bu alandaki nicel ve nitel çalışmalar incelenerek alanla ilgili araştırma yapan veya yapmak isteyen araştırmacılara mevcut çalışma

eğilimleri sunulmaktadır. Çalışmada Sistematik İnceleme ve Meta-Analiz Protokolleri için Tercih Edilen Raporlama Öğeleri kullanılmıştır (Page vd., 2021). Çalışmanın verileri ise Web of Science [WoS] veri tabanından seçilmiştir.

Araştırmanın Etik İzinleri:

Bu çalışmada "Yükseköğretim Kurumları Bilimsel Araştırma ve Yayın Etiği Yönergesi" kapsamında uyulması gerektiği belirtilen tüm kurallara uyulmuştur. Yönergenin ikinci bölümü olan "Bilimsel Araştırma ve Yayın Etiğine Aykırı Eylemler" başlığı altında belirtilen eylemlerin hiçbiri gerçekleştirilmemiştir. Bu araştırmanın verilerinde etik izin alınacak bir durum olmadığı için etik izin alınmamıştır.

Etik Kurul İzin Bilgileri:

Araştırma verileri, çevrim içi olarak erişilebilen bir veri tabanındaki dokümanların incelenmesiyle elde edildiği için etik kurul izni gerektirmemektedir.

Bulgular

Elde edilen sonuçlar, TYSM'nin yıllara göre yayın ve atıf sayılarına dair önemli bulgular sunmaktadır. İlk makalenin 2006 yılında yayımlandığı ve ardından yayın sayısının artarak 2021 yılında en yüksek değere (f=25) ulaştığı gözlemlenmiştir. En fazla atıf alan dergiler arasında sırasıyla Computers & Education (125 atıf), Educational Technology & Society (55 atıf) ve Journal of Chemical Education (42 atıf) öne çıkmaktadır. Ters yüz sınıf modelinin kullanımı ile ilgili makalelerde en çok tercih edilen anahtar kelimeler arasında "ters yüz sınıf" (f=25), "ters yüz öğrenme" (f=7), "harmanlanmış öğrenme" (f=5), "ilkokul" (f=5), "motivasyon" (f=4) ve "akademik başarı" (f=4) bulunmaktadır. Ters yüz sınıf modeli ile ilgili en fazla atıf alan makalelerin yapıldığı ülkeler arasında Tayvan (386 alıntı), Avustralya (250 alıntı), İspanya (99 alıntı), Yunanistan (98 alıntı) ve Çin (94 alıntı) ilk sıralarda yer almaktadır. Yapılan içerik analizi, makalelerde ters yüz sınıf modelinin ilkokul eğitiminde farklı değişkenlere bağlı olarak incelendiğini ortaya koymaktadır. En çok incelenen değişkenler arasında öğrenme/akademik başarı, algı ve motivasyon dikkat çekmektedir.

Tartışma ve Sonuç

Bu çalışma ilkokul düzeyinde TYSM'nin kullanımına ilişkin makalelerin bibliyometrik analizi ve en çok atıf alan makalelerin metodolojik araştırma eğilimlerini ortaya koymak amaçlanmıştır. Bu kapsamda WoS veri tabanından elde edilen verilerin bibliyometrik haritalama analizini ve içerik analizi gerçekleştirilmiştir. Bibliyometrik analiz sonuçlarına göre ilkokul düzeyinde TYSM'nin kullanımına ilişkin makalelerde en çok kullanılan anahtar kelimelerin sırasıyla ters yüz sınıf, ters yüz öğrenme, harmanlanmış öğrenme, ilkokul, motivasyon ve akademik başarı olduğu bulunmuştur. Anahtar kelimelerin yıllara göre dağılımı incelendiğinde, son yıllarda artırılmış gerçekliğin odak noktası haline geldiği söylenebilir. Dahası Ibáñez ve Delgado-Kloos (2018) yaptıkları çalışmada artırılmış gerçeklik öğrenme etkinliklerinin ters çevrilmiş sınıf gibi harmanlanmış öğretim stratejilerinin nasıl bir parçası olabileceğini araştırmanın faydalı olacağını belirtmişlerdir. Bergman ve Sams (2012) ters yüz sınıf modelinin uygulanmasını dünyaya yaygınlaştırdığından beri, artırılmış gerçeklik ile ters yüz ve harmanlanmış sınıflar gibi ileri öğretim yöntemlerinin birleşimine yönelik artırılmış gerçeklik çalışmaları henüz başlangıç aşamasında olmasına rağmen son zamanlarda yapılan

çalışmalar, artırılmış gerçeklik teknolojisinin ters yüz sınıf modeline entegrasyonunun araştırıldığını ve bu konudaki literatürde çeşitli bulguların yer aldığını göstermektedir (Hung & Yeh, 2023; Khodabandeh, 2023; Khodabandeh & Mombini, 2024; Teo vd., 2022).

İncelenen makalelerde en çok kullanılan araştırma yönteminin nicel yöntem olduğu olduğu ortaya çıkmıştır. İlgili alan yazında benzer çalışmaların olduğu görülmektedir. Örneğin, Bond (2020) tarafından gerçekleştirilen ters yüz öğrenme yoluyla öğrenci katılımını inceleyen K-12 yönelik sistematik bir inceleme çalışmasında, en yaygın olarak tercih edilen nicel yöntemlerin kullanıldığı belirlenmiştir. Diğer taraftan, ters yüz öğrenme üzerine yapılan araştırmalarda, sistematik inceleme çalışmalarında en sık karşılaşılan yöntemlerin karma yöntemler olduğu görülmüştür (Birgili vd., 2021; Zainuddin vd., 2019). Dahası, Turan ve Akdag-Cimen (2020) ise yaptıkları çalışmada karma ve nicel yöntemlerin en yaygın kullanılan araştırma metotları olduklarını belirtmişlerdir.

Araştırma kapsamında incelenen makalelerde en çok akademik başarı testi kullanıldığı anlaşılmaktadır. Bond (2020), ters yüz öğrenme yoluyla öğrenci katılımını inceleyen K-12 odaklı sistematik bir incelemesinde, en sık kullanılan veri toplama araçlarının anketler, görüşmeler ve yetenek testleri olduğunu ortaya koymuştur. Zou vd. (2022) ters çevrilmiş dil sınıfları üzerine yapılan araştırmaları sistematik inceledikleri makalelerde en çok sırasıyla test, anket ve görüşme veri toplama araçları kullanıldığını bulmuşlardır. Örneklem büyüklüğüne göre en çok verilerin toplandığı örneklem sayılarının sırasıyla 21-50, 51-100, 101-200 olduğu anlaşılmaktadır. Lo ve Hew'in (2017) K-12 düzeyinde ters çevrilmiş sınıflarıyla ilgili yaptıkları çalışmada benzer sonuçların çıktığı görülmektedir.

Öneriler

Araştırmada elde edilen sonuçların, gelecek araştırmacılar için ters yüz sınıf modeliyle ilgili keşfedilmemiş araştırma içeriği hakkında bilgi sunduğu, bibliyometrik teknikler kullanılarak bu alanla ilgili araştırılmayı bekleyen boşlukları vurguladığı ve ilgili alan yazına yönelik eleştirel bakış açıları sunduğu düşünülmektedir. Çalışma sonuçlarından hareketle bazı öneriler aşağıda sıralanmıştır:

Ters yüz sınıf modeliyle ilgili çalışmalarda öğrenme/akademik başarı, algı ve motivasyon değişkenlerinin sıklıkla incelendiği bulgulanmıştır. İleride yapılması planlanan araştırmalarda farklı değişkenlere bakılmasının ilgili alan yazın açısından önemli olduğu söylenebilir.

Ters yüz modeli ile ilgili son zamanlarda artırılmış gerçeklik değişkenin anahtar kelimelerde kullanıldığı yapılan analizler sonucunda ortaya çıkmıştır. İleride yapılacak olan çalışmalarda ters yüz ve artırılmış gerçeklik değişkenlerinin birlikte yürütüldüğü çalışmaların yapılması önerilmektedir.

Bu çalışma verileri, Web of Science veri tabanında belirli kriterler göz önüne alınarak gerçekleştirilmiştir. Çalışma Sistematik İnceleme ve Meta-Analiz Protokolleri için Tercih Edilen Raporlama Öğeleri rehberliğinde yapılsa da bazı yönlerden kısıtlılığı olduğu söylenebilir. Dahası farklı kriterler veya veri tabanlarından elde edilen verilerle farklı sonuçlar çıkacağı düşünülmektedir. Bu yüzden farklı veri tabanları veya kriterlere yönelik faklı çalışmalar tasarlanabilir. Buna ilaveten belirli çalışmaların başlıkları, özetleri veya anahtar

kelimeleri bu sistematik incelemeyi gerçekleştirmek için kullandığımız arama dizeleriyle eşleşen kelimeleri içermemiş olabilir (Cevikbas & Kaiser, 2023). Bu da araştırmanın diğer bir sınırlılığı olabilir.

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Which Cartoons Can Be Used in Fourth Grade Social Studies Course?*

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Abstract

It is thought that cartoons, which play an important role in children's development processes and create different effects on them in areas such as acquiring knowledge, gaining skills, developing values and attitudes, can be used as teaching materials. In this context, the aim of the research is to determine the cartoons that can be used in teaching the subjects in the fourth grade social studies course. Document analysis, one of the qualitative research methods, was used in the study. The data source of the research consists of cartoons on TRT Çocuk's (TRT Kids) official YouTube channel. The research data were analyzed by document analysis. According to the results obtained from the study, 28 cartoon scenes compatible with 28 of the 31 topics determined for the social studies course were reached. In the research, it was determined that cartoons named "Elif ve Arkadaşları (Elif and Her Friends), Canım Kardeşim (My Dear Sister), Nane ile Limon (Mint and Lemon), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Erdem (Erdem), Küçük Hazerfen (Little Hezarfen), Bulmaca Kulesi (Puzzle Tower), Dijital Tayfa (Digital Crew), Rafadan Tayfa (Rafadan Crew), Pak ile Pırpır (Pak and Pırpır), Keloğlan (Kaloghlan), Dedektif Reptır (Detective Reptır), Aslan (Aslan), Siberay (Siberay), Kukla Stüdyosu (Puppet Studio), Barbaros (Barbaros), Kuzucuk (Kuzucuk), Taktik 6 (Tactic 6), Pırıl (Pırıl) and Mutlu Oyuncak Dükkanı (Happy Toy Shop)" can be used in teaching the subjects determined for the social studies course. It can be recommended to use the identified cartoons in teaching social studies course.

Keywords: Fourth grade, social studies, cartoon, TRT Kids.

Introduction

Education is a driving force that states resort to in order to keep up with the changing world and ensure their continuity. States ensure continuity by running to work courses such as life information, social studies, Turkish organized within the framework of citizenship education programs. Social studies, which is one of these courses, is a course that aims to raise a good and effective citizen first of all and then aims to raise a qualified world citizen (Öztürk et al., 2023). Based on this definition, it can be said that social information has a mission such as raising effective citizens. Sönmez (2010) has expressed social studies course as the process of establishing a connection based on proof with social reality and the living information obtained as a result of this. The Ministry of National Education [MoNE] (2005) stated that "In order to help the individual realize his social existence; reflecting the subjects of social sciences and citizenship knowledge such as history, geography, economics, sociology, anthropology, psychology, philosophy, political science and law; involving the unification of learning areas under a unit or theme; he defined it as a primary school lesson created based on the collective understanding of teaching, in which the interaction of a person with his social and physical environment is examined in the context of the past, present and future." Based on these definitions, it can be said that social studies is an interdisciplinary course that ensures the adaptation of the individual to the society, uses the information produced by various social sciences, combines its content under themes or units, and explains the interaction of human beings with their environment by taking into account the time dimension. Social studies course has found its place in programs in many different ways in the historical process.

The social studies course was included in the educational programs of the United States of America [USA] for the first time in the world in 1916 (Moffatt, 1957). Although educators who advocated a child-centered modern approach decried the development of social studies in

the USA in the 1930s and 40s, social studies could not move away from being a predominantly history and geography course until the 1960s. Between the 1960s and 70s, reforms were made under the name of "new social studies" thanks to the widespread use of Bruner's theory of learning through invention, and social studies subjects began to be determined (Safran, 2008). The reform of "new social studies" started to fall out of fashion in the 1970s (Öztürk, 2009). In the 1980s, it was observed that the traditional approach increased its influence in social studies teaching (Naylor & Diem, 1987; as cited in Öztürk, 2009). Towards the middle of the 1990s, National Council for the Social Studies [NCSS] determined certain criteria suitable for the "new social studies" reform in social studies education (Öztürk, 2009). The social studies course is included in the educational programs of Türkiye, Japan, South Korea, Canada and Australia, except for the USA (Safran, 2008).

Social studies curricula were updated in Türkiye in 2005, 2015, 2018 and 2024. It is seen that in these programs that have been created, the issues that need to be taken into account regarding the teaching of the social studies course have been determined. In the 2018 program, under the heading "Considerations for the Implementation of the Social Studies Course Curriculum", literary products and various traditional or modern art products (painting, music, sculpture, architecture, cinema, theater, etc.) it is emphasized that space should be given. In the 2024 curriculum, under the title "Basic Approach and Specific Objectives of the Social Studies Course", art literacy is mentioned among the literacy skills to be acquired by students. From this point of view, it can be said that one of the materials that can be used in the social studies course can be cartoons and animations covered by cinema, which is a rhythmic art.

Cartoon is defined as "A motion picture consisting of successively drawn pictures to indicate the movements of its characters in relation to a subject" (Turkish Language Association [TLA], 2023). Yazıcı et al. (2019) define cartoons as a fictional drawing or painting designed for purposes such as satire and humor in the modern sense. Güneş (2010) refers to cartoons as a type of film that is utilized because it has the function of sending a message to the audience. In other words, it can be said that cartoons are a visual art form created by successive filming of pictures drawn to express an event or movement. Animations, on the other hand, are a revitalization technique in which successive frames of connected movement follow each other in a second (Akören, 2018). The use of animation technique in cartoons can be shown among the most important features that distinguish cartoons from other feature films (Netco Animation Studio, 2016). Because of this feature, it can be accepted that cartoons open the door to a colorful and fairytale world.

It can be said that cartoons reflect the fairy tale function of the past and give place to extraordinary things, as in fairy tales, and in this context, they are today's fairy tales (Aydın, 2018). As a matter of fact, it is seen that the Keloğlan (Kaloghlan) cartoon is directly adapted from a fairy tale, and cartoons such as Yusufname (Yusuf's Tale), Küçük Hezarfen (Little Hezarfen) also reflect the function of fairy tales. In addition to offering an extremely colorful and entertaining course, cartoons are gaining the intense appreciation of the masses and making their influence felt in all areas of life due to the fact that they know no boundaries in their imagination and are connected with the imaginary aspect of life (Kalaycı, 2015). The

primary task of cartoons that appeal to children as a mass is to offer them a fun time, to convey the truth and educate them while offering this time (Kamacıoğlu, 2017). According to Güler (1989), cartoons have a social function due to their use as a means of communication. Cartoons are of an instructive nature and aim to entertain while educating the person on the one hand (Kurtdede Fidan & Kılıç, 2020). It is stated that the connection of animation and cartoons with children and their power to convey messages can also be used for educational purposes (Şen & Tay, 2023).

In addition to the fact that cartoons have an audience that appeals to all ages, children constitute the majority of the viewing audience. According to Güler (1989), the reason why cartoons are watched by children is that they are close to the child's emotional, cognitive areas and behaviors and that they can easily identify with cartoon heroes. Considering that children can learn more easily based on visual and auditory elements, their interaction with cartoons gains even more importance (Arslan et al., 2023). Cartoons, which are especially loved by children, appeal to children's imagination and are reflected in their daily lives and games, and become role models for children with their heroes (Hacıbektaşoğlu, 2014). As a matter of fact, Adak Özdemir and Ramazan (2012), in their field study on the effect of cartoons on children's behaviors, revealed that children imitate the events experienced in cartoons in daily life, prefer cartoons with supernatural and imaginary heroes more, identify these characters with themselves and believe in them. Cartoons can easily transfer the cultural accumulation, values, traditions, customs and norms of the society to future generations (Yağlı, 2013). By simplifying complex concepts, cartoons enable children to learn and react emotionally without realizing it (Köprülü, 2016). According to Kamacıoğlu (2017), cartoons not only entertain children but also transfer culture and guide them. Therefore, cartoons can be used as educational tools.

Cartoons, which are defined as the art of animation that symbolically conveys a certain message (Pekşen Akça & Baran, 2017), can be useful for children when instructive content suitable for the child's age and developmental level is created (Pekşen Akça & Baran, 2018). As a result of the research on the effectiveness of cartoons that can be used in the transfer of values in education, it is seen that cartoons have a positive effect on student motivation and achievement (Aslan, 2020). For this reason, it is understood that cartoons can be used within the scope of the course because they facilitate the permanent trace of the behaviors aimed to be gained in the social studies course, the introduction of different cultures and civilizations, and the establishment of a connection with other course-related units (Oruç & Teymuroğlu, 2016). When the literature was reviewed, different researches on the use of cartoons in education were found. When the researches are reviewed; Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler) (Doğrusöz, 2023; Karaca Yalçın, 2022), Niloya (Niloya) (Karakuş, 2015; Ufak & Yorulmaz, 2022; Ünal Kaya, 2022; Yolasığmazoğlu, 2022) In addition to examining cartoons such as Küçük Hazerfen (Little Hezarfen) (Selanik Ay & Korkmaz, 2017; Üzer & Çetin, 2018) and Rafadan Tayfa (Rafadan Crew) (Aslan & Yılar, 2019; Aydoğan & Samur, 2021; Kurtdede Fidan & Kılıç, 2020; Geçgel & Terzioğlu, 2022; Karaca, 2022; Kurudayıoğlu & Şahin, 2020; Sadioğlu et al., 2018; Şentürk & Keskin, 2019; Yaralı & Avcı, 2017; Yıldız, 2022) as well as examining cartoons one by one (Alicenap, 2015; Coşkun & Önem, 2024; Erşan & Er, 2022; Kadan & Aral, 2017; Kaplan & Topçuoplu Ünal, 2023; Köse, 2023; Sildir Daşar, 2024; Taşkın & Boran, 2024; Türkoğlu & Türkoğlu, 2022; Yener et al., 2021;

Yeten, 2022) studies were also found. In these studies, cartoons were examined in terms of many features such as containing elements of national culture, reflecting universal and national values, society and family concepts, adaptation to society, importance in terms of character development, use in teaching vocabulary, children's tendency to identify with cartoon characters, and it was emphasized that they can be used as educational tools. When the literature was reviewed, no study on cartoons that can be used in teaching social studies course subjects was found. Therefore, it is thought that this research will provide a basis for determining the existence of social studies course subjects in cartoons and the study is considered important in this respect. It is expected that the research will provide teachers with material options and draw a road map within the scope of social studies course. Considering the characteristics of cartoons that have a child audience and are expected to contribute to education with their educational and instructive aspects, this study aims to determine which cartoons can be used to teach the subjects in the fourth grade social studies course. Within the scope of this purpose, answers to the following problems and sub-problems were sought.

1. Fourth grade social studies course;

    1.1. "Individual and Society"

    1.2. "Life in Nature"

    1.3. "Our Culture"

    1.4. "Democracy and Citizenship"

    1.5. "Economy"

    1.6. "Technology" and

    1.7. "Global Relations"

Which cartoons can be used in teaching the subjects in the subject areas?

Method

Research Design

In this research, which aims to determine which cartoons can be used in the fourth grade social studies course, a qualitative research approach has been adopted. Qualitative research is a research in which qualitative data collection methods such as observation, interview and document analysis are used, and a qualitative process is followed to reveal perceptions and events in a realistic and holistic manner in the natural environment (Yıldırım & Şimşek, 2021). Qualitative research was used in the research because the analysis of cartoons, which have the quality of a document, was performed. The research process was carried out with document review, which is one of the qualitative research methods. Document review refers to the examination of documents related to the subject being investigated in accordance with scientific principles (Kıral, 2020). The reason why document review is preferred in the research is that cartoons, which are in the nature of documents, are examined in accordance with scientific principles within the framework of the subjects of the social studies course.

Data Source

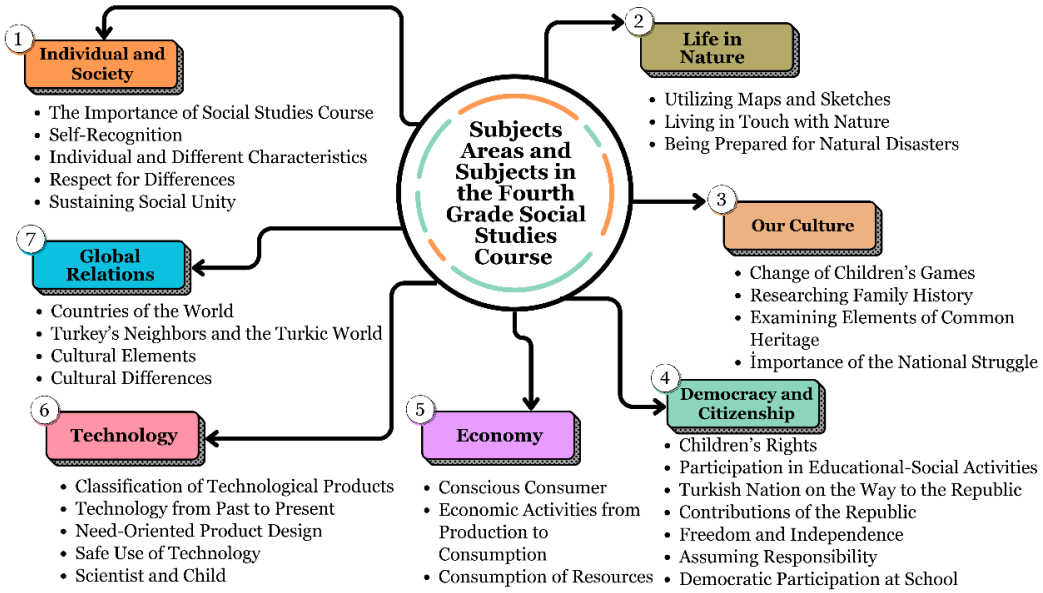
In the research, criterion sampling, one of the purposeful sampling types, was used to create a sample. The criterion for the cartoons to be included in the sample was determined as being broadcast on the official YouTube channel of TRT Çocuk (TRT Kids) and the cartoons accessed in this way constituted the data source of the research. The reason for determining the official YouTube channel of TRT Kids as a criterion is that this channel is a state channel and easily accessible by the viewers.

Research Process

In the research, the fourth grade achievements and learning outcomes of the 2018 and 2024 social studies curricula, which are the last two curricula as of the current year, were examined in order to classify the subjects of the life studies course. As a result of this examination, subject areas and subjects in the social studies course were formed. The subject areas and subjects identified in the fourth grade social studies course are presented in Figure 1.

Figure 1.

Subject Areas and Subjects in the Fourth Grade Social Studies Course



Following the presentation of the subjects and subsubjects in the fourth grade social studies course, data analysis began. In the analysis of the cartoons, Forster's (1994) document analysis steps of "accessing documents, checking the authenticity of documents, understanding documents, analyzing data, and using data" were followed.

Accessing Documents

At the stage of accessing the documents of the research, the cartoons that constitute the data source were accessed from TRT Kids's official YouTube channel.

Checking the Originality of the Documents

Since the cartoons were accessed from TRT Kids's official YouTube channel, it was thought that the cartoons examined were original.

Understanding the Documents

The cartoons on TRT Kids's official YouTube channel were analyzed one by one in the context of the research problem. The cartoons on the official YouTube channel of TRT Kids were examined one by one in terms of age group, language used, character drawings, cartoon duration, educational aspect, and inappropriate cartoons were excluded.

Analyzing the Data

At this stage of data analysis, it was tried to identify the appropriate cartoons from the official YouTube channel of TRT Kids for each subject. For the subjects associated with more than one cartoon scene, the number of cartoon scenes included was limited to 6 scenes. While choosing among the cartoons belonging to the subjects with more than one scene, it was taken into consideration that the scenes of the cartoons complemented each other as a whole and met the subject. Three researchers examined the cartoons independently of each other to identify the cartoons. The researchers determined the scenes of the cartoons that could be used in the subjects determined for the fourth grade social studies course. The agreement between the researchers was calculated using Miles and Huberman's (1994) formula (Reliability=agreement/agreement+disagreement) and the agreement coefficient was calculated as -93.

Using the Data

Finally, the cartoon scenes that were determined to be used in teaching the subjects in each subject area determined to be included in the fourth grade social studies course were presented in tables. In the tables, the subjects in the subject area, the cartoons and episodes associated with the subjects, the time intervals of the related scenes and the QR codes to provide easy access are given. The process of using the data in the tables was carried out with results, discussion and recommendations.

Ethical Permissions of the Research:

In this research, all the rules specified in the "Directive on Scientific Research and Publication Ethics of Higher Education Institutions" were followed. None of the actions specified under the second section of the Directive, "Actions Contrary to Scientific Research and Publication Ethics", were carried out.

Ethics Committee Permission Information:

Since the research was conducted with publicly available documents, it does not require ethics committee approval.

Findings

Findings Related to the First Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Individual and Society" subject area are presented in Table 1 with the time intervals and QR codes of the relevant scenes.

Table 1.

Cartoons That Can Be Used in Teaching the Subjects in the "Individual and Society" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
The importance of social studies course	-	-	-
Self-recognition	-	-	-
Individual and different characteristics	Taktik 6 (Tactic 6-Episode 1)-1. Bölüm Başlama Vuruşu (Kickoff)	The first 3 minutes 7 seconds	
	Nane ile Limon (Mint and Lemon)-Resim Sergisi (Art Exhibition)	Between 6 minutes 20 seconds and 10 minutes 13 seconds	
	Pırıl (Pırıl)-İstersen Yaparsın (You can do it if you want)	Between 6 minutes and 12 minutes 36 seconds	
	Mutlu Oyuncak Dükkânı (Happy Toy Shop)-Farklı Yetenekler (Different Abilities)	Between 5 minutes 25 seconds and 13minutes	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Engelsiz (Unimpeded)	The first 11 minutes 15 second	
Respect for differences	Taktik 6 (Tactic 6)-1. Bölüm Başlama Vuruşu (Episode 1 Kickoff)	Between 9 minutes 26 seconds and 10 minutes 30 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Benim Portrem (My Portrait)	Between 8 minutes 40 seconds and 9 minutes 50 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Aynı Fikirde Değiliz (We Disagree)	The first 10 minutes 45 seconds	
	Rafadan Tayfa (Rafadan Crew)-Göz Bağı (Blindfold)	Between 4 minutes 35 seconds and 15 minutes	
	Rafadan Tayfa (Rafadan Crew)-Kendini Onun Yerine Koy (Put Yourself in Her Place)	The first 14 minutes 15 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Bana Göre (According to Me)	The first 11 minutes	
Sustaining social unity	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Dayanışma (Solidarity)	The first 13 minutes 56 seconds	
	Nane ile Limon (Mint and Lemon)-Öğrenci Kulüplerinde Dayanışma (Solidarity in Student Clubs)	The first 10 minutes 35 seconds	

According to Table 1, it was determined that five subjects were included in the "Individual and Society" subject area created for the fourth grade social studies course. These are the importance of the social studies course, self-knowledge, individual and different characteristics, respecting differences and maintaining social unity. When the cartoons on TRT Kids's official YouTube channel were examined; 5 cartoon scenes suitable for the subject of individual and different characteristics, 6 cartoon scenes suitable for the subject of respecting differences and 2 cartoon scenes suitable for the subject of maintaining social unity were identified. No cartoon scenes related to the importance of social studies course and self-

knowledge were found. It was determined that cartoons named "Taktik 6 (Tactic 6), Nane ile Limon (Mint and Lemon), Pırıl (Pırıl), Mutlu Oyuncak Dükkânı (Happy Toy Shop), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Elif ve Arkadaşları (Elif and Her Friends), Rafadan Tayfa (Rafadan Crew)" could be used in teaching the subjects in the fourth grade "Individual and Society" subject area. The cartoon scenes in the table last an average of 7 minutes and 80 seconds.

Findings Related to the Second Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Life in Nature" subject area are presented in Table 2 with the time intervals and QR codes of the relevant scenes.

Table 2.

Cartoons That Can Be Used in Teaching the Subjects in the "Life in Nature" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Utilizing maps and sketches	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Akıllı Yol Bilgisayarı (Smart Road Computer)	The first 8 minutes 30 seconds	
	Kuzucuk (Kuzucuk)-Pusula (Compass)	Between 3 minutes 20 seconds and 5 minutes 10 seconds	
	Nane ile Limon (Mint and Lemon)-Harita (Map)	Between 5 minutes 30 seconds and 10 minutes 20 seconds	
	Barbaros (Barbaros)-12. Bölüm (Episode 12)	Between 9 minutes and 10 minutes 50 seconds	
	Bulmaca Kulesi (Puzzle Tower)-Su Kanalları (Water Channels)	Between 4 minutes 30 seconds and 10 minutes 54 seconds	
	Aslan (Aslan)-Mahalle Metrosu (Neighborhood Metro)	Between 7 minutes 30 seconds and 11 minutes	
Living in touch with nature	Elif ve Arkadaşları (Elif and Her Friends)-Hava Durumum (My Weather)	Between 3 minutes 20 seconds and 8 minutes 50 seconds	
Being prepared for natural disasters	Aslan (Aslan)-Deprem Tahmin Makinesi (Earthquake Prediction Machine)	The first 11 minutes	
	Nane ile Limon (Mint and Lemon)-Kendi Müzik Aletini Kendin Yap (Make your own musical instrument)	Between 2 minutes 45 seconds and 12 minutes	

Table 2 shows that three subjects were identified for the "Life in Nature" subject area created for the fourth grade social studies course. These are utilizing maps and sketches, living in touch with nature and being prepared for natural disasters. When the cartoons on TRT Kids's official YouTube channel were examined; 6 cartoon scenes suitable for the subject of utilizing maps and sketches, 1 cartoon scene suitable for the subject of living in touch with nature, and 2 cartoon scenes suitable for the subject of being prepared for natural disasters were identified. It was determined that cartoons named "Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Kuzucuk (Kuzucuk), Nane ile Limon (Mint and Lemon),

Barbaros (Barbaros), Bulmaca Kulesi (Puzzle Tower), Aslan (Aslan), Elif ve Arkadaşları (Elif and Friends)" could be used in teaching the subjects in the fourth grade "Life in Nature" subject area. The cartoon scenes in the table last an average of 5 minutes and 64 seconds.

Findings Related to the Third Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Our Culture" subject area are presented in Table 3 together with the time intervals and QR codes of the relevant scenes.

Table 3.

Cartoons That Can Be Used in Teaching the Subjects in the "Our Culture" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Change of children's games	Rafadan Tayfa (Rafadan Crew)-39. Bölüm Çember Yarışı (Episode 39 Circle Race)	Between 5 and 7 minutes	
	Kukla Stüdyosu (Puppet Studio)-7. Bölüm Sokak Oyunları (Episode 7 Street Games)	The first 10 minutes 50 seconds	
Researching family history	Nane ile Limon (Mint and Lemon)-Trencilik (Playing Trains)	Between 3 minutes 20 seconds and 9 minutes 20 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Radyo Tiyatrosu (Radio Theater)	The first 3 minutes 50 seconds	
Examining elements of common heritage	Rafadan Tayfa (Rafadan Crew)-Bugün Bayram (Today is Eid)	Between 1 and 16 minutes	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Hata (Error)	The first 7 minutes	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Kostüm Yarışması (Costume Contest)	The first 11 minutes 26 seconds	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Restorasyon (Restoration)	The first 12 minutes 10 seconds	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Dünya Çocukları (Children of the World)	The first 11 minutes 24 seconds	
	Aslan (Aslan)-Bayram Hediyeleri (Eid Gifts)	Between 1 minutes 50 seconds and 2 minutes 40 seconds	
Importance of the National Struggle	Aslan (Aslan)-30 Ağustos Özel Bölüm (August 30 Special Section)	Between 3 minutes and 11 minutes 12 seconds	
	Rafadan Tayfa (Rafadan Crew)-İstiklal Marşı (National Anthem)	The first 13 minutes 7 second	

When Table 3 is examined, it is seen that there are four subjects in the "Our Culture" subject area created for the fourth grade social studies course. These are the change of children's games, researching family history, examining elements of common heritage and the importance of the National Struggle. When the cartoons on TRT Kids official YouTube channel were examined; 2 cartoon scenes suitable for the subject of the change of children's games, 2

cartoon scenes suitable for the subject of researching family history, 6 cartoon scenes suitable for the subject of examining common heritage elements, 2 cartoon scenes suitable for the importance of the National Struggle were identified. It was determined that the cartoons named "Rafadan Tayfa (Rafadan Crew), Kukla Stüdyosu (Puppet Studio), Nane ile Limon (Mint and Lemon), Elif ve Arkadaşları (Elif and Her Friends), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler) and Aslan (Aslan)" can be used in teaching the subjects in the fourth grade "Our Culture" subject area. The cartoon scenes in the table last an average of 8 minutes and 40 seconds.

Findings Related to the Fourth Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Democracy and Citizenship" subject area are presented in Table 4 with the time intervals and QR codes of the relevant scenes.

Table 4.

Cartoons That Can Be Used in Teaching the Subjects in the "Democracy and Citizenship" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Children's rights	Nane ile Limon (Mint and Lemon)-Kısa Film (Short Film)	The first 10 minutes 6 seconds	
Participation in educational-social activities	Nane ile Limon (Mint and Lemon)-Eğitsel Kol Seçimi (Educational Arm Selection)	Between 1 minutes and 10 minutes 45 seconds	
Turkish nation on the way to the republic	Siberay (Siberay)-Cumhuriyet Bayramı Özel Bölümü (Republic Day Special Episode)	Between 10 minutes 30 seconds and 12 minutes 13 seconds	
Contributions of the republic	Pırıl (Pırıl)-Cumhuriyet Bayramı Özel Bölümü (Republic Day Special Episode)	Between 10 minutes 22 seconds and 12 minutes 40 seconds	
Freedom and independence	Rafadan Tayfa (Rafadan Crew)-İstiklal Marşı (National Anthem)	The first 13 minutes 7 seconds	
	Canım Kardeşim (My Dear Sister)-23 Nisan Kutlu Olsun (Happy April 23rd)	The first 11 minutes 29 seconds	
	Aslan (Aslan)-30 Ağustos Özel Bölüm (August 30 Special Episode)	Between 3 minutes and 11 minutes 12 seconds	
Assuming responsibility	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler)-Doğru Karar (The Right Decision)	The first 11 minutes 24 seconds	
	Pırıl (Pırıl)-Yazı mı, Tura mı? (Heads or Tails?)	The first 3 minutes	
Democratic participation at school	Nane ile Limon (Mint and Lemon)-Sınıf Başkanı (Class President)	Between 50 seconds and 9 minutes 35 seconds	

Table 4 shows that there are 7 subjects in the "Democracy and Citizenship" subject area created for the fourth grade social studies course. These are children's rights, participation in educational-social activities, Turkish nation on the way to the republic, contributions of the republic, freedom and independence, assuming responsibility and democratic participation at school. When the cartoons on TRT Kids official YouTube channel were examined; 1 cartoon

scene suitable for the subject of children's rights, 1 cartoon scene suitable for the subject of participation in educational-social activities, 1 cartoon scene suitable for the subject of Turkish nation on the way to the republic, 1 cartoon scene suitable for the subject of the contributions of the republic, 3 cartoon scenes suitable for the subject of freedom and independence, 2 cartoon scenes suitable for the subject of assuming responsibility and 1 cartoon scene suitable for the subject of democratic participation at school. It was determined that cartoons named "Nane ile Limon (Mint and Lemon), Canım Kardeşim (My Dear Sister), Siberay (Siberay), Pırıl (Pırıl), Rafadan Tayfa (Rafadan Crew) and Nasreddin Hoca Zaman Yolcusu (Nasreddin Hoca Time Traveler)" can be used in teaching the subjects in the fourth grade "Democracy and Citizenship" subject area. The cartoon scenes in the table last an average of 8 minutes.

Findings Related to the Fifth Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Economy" subject area are presented in Table 5 with the time intervals and QR codes of the relevant scenes.

Table 5.

Cartoons That Can Be Used in Teaching the Subjects in the "Economy" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Conscious consumer	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hoca Time Traveler) - Moda (Fashion)	The first 12 minutes 20 seconds	
	Dedektif Reptır (Detective Reptır)-25. Bölüm Kendimi Kaybettim (Episode 25 I Lost Myself)	The first 12 minutes 10 seconds	
	Pırıl (Pırıl)-Açı Sandalyesi (Angle Chair)	The first 3 minutes 40 seconds	
Economic activities from production to consumption	Elif ve Arkadaşları (Elif and Her Friends)-Zerzevatçı (Agriculturist)	Between 3 minutes and 6 minutes 25 seconds	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hoca Time Traveler)-Tarım Yapıyor (Doing Agriculture)	The first 11 minutes	
Consumption of resources	Nane ile Limon (Mint and Lemon)-Ağacın Geri Dönüşümü (Recycling the Tree)	Between 1 minute 50 seconds and 11 minutes	
	Keloğlan (Kaloghlan)-İsraf (Extravagance)	The first 14 minutes 10 seconds	
	Canım Kardeşim (My Dear Sister)-Tasarruf Yap, İsraf Etme (Save Money, Don't Waste)	The first 10 minutes 50 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Oyuncak Makinesi (Toy Machine)	Between 2 minutes and 11 minutes 10 seconds	
	Bulmaca Kulesi (Puzzle Tower)-İlginç Bilgiler 1 (Interesting Facts 1)	Between 13 minutes 50 seconds and 16 minutes 48 seconds	
	Rafadan Tayfa (Rafadan Crew)-Enerji Muhafızları (Energy Guardians)	Between 3 minutes 20 seconds and 9 minutes	

When Table 5 is examined, it is seen that there are three subjects in the "Economy" subject area created for the fourth grade social studies course. These are conscious consumer, economic activities from production to consumption and consumption of resources. When the cartoons on TRT Kids's official YouTube channel were examined; 3 cartoon scenes suitable for the subject of conscious consumer, 2 cartoon scenes suitable for the subject of economic activities from production to consumption, and 6 cartoon scenes suitable for the subject of consumption of resources were identified. It was determined that cartoons named "Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Dedektif Reptır (Detective Reptır), Pırıl (Pırıl), Elif ve Arkadaşları (Elif and Her Friends), Nane ile Limon (Mint and Lemon), Keloğlan (Kaloghlan), Canım Kardeşim (My Dear Sister), Bulmaca Kulesi (Puzzle Tower) and Rafadan Tayfa (Rafadan Crew)" could be used in teaching the subjects in the fourth grade "Economy" subject area. The cartoon scenes in the table last an average of 8 minutes and 20 seconds.

Findings Related to the Sixth Sub-Problem

The cartoons that were determined to be used in teaching the subjects in the fourth grade "Technology" subject area are presented in Table 6 with the time intervals and QR codes of the related scenes.

Table 6.

Cartoons That Can Be Used in Teaching the Subjects in the "Technology" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Classification of technological products	-	-	-
Technology from past to present	Nane ile Limon (Mint and Lemon)-Elektriğin Evrimi (Evolution of Electricity)	Between 1 minutes and 9 minutes 30 seconds	
	Pak ile Pırpır (Pak and Pırpır)-1. Bölüm (Episode 1)	Between 1 minutes 30 seconds and 2 minutes 12 seconds	
	Nane ile Limon (Mint and Lemon)-Saatler (Watches)	Between 5 minutes 30 seconds and 11 minutes 15 seconds	
	Nane ile Limon (Mint and Lemon)-Bilgisayarın Tarihi (History of the Computer)	The first 10 minutes 10 seconds	
	Nane ile Limon (Mint and Lemon)-Haberleşme (Communication)	Between 8 minutes and 10 minutes 30 seconds	
Need-oriented product design	Elif ve Arkadaşları (Elif and Her Friends)-Bir Fikrim Var (I Have an Idea)	Between 6 minutes 30 seconds and 11 minutes 30 seconds	
	Nane ile Limon (Mint and Lemon)-İcat (Invention)	The first 10 minutes 4 seconds	
	Dijital Tayfa (Digital Crew)-Genç Mucit (Young Inventor)	The first 11 minutes 2 seconds	
	Bulmaca Kulesi (Puzzle Tower)-Ada (Island)	Between minutes 2 and 9	

Continue to Table 6

	Rafadan Tayfa (Rafadan Crew)-İcat Peşinde (Pursuit of Invention)	The first 14 minutes 10 seconds	
Safe use of technology	Nane ile Limon (Mint and Lemon)-Biber'in Bilgisayar Tutkusu (Pepper's Passion for Computer)	Between 2 minutes 56 seconds and 11 minutes 20 seconds	
	Bulmaca Kulesi (Puzzle Tower)-Gözlük (Glasses)	The first 5 minutes 20 seconds	
	Rafadan Tayfa (Rafadan Crew)-Rafadan Ekspres (Rafadan Express)	Between minutes 3 and 8	
	Rafadan Tayfa (Rafadan Crew)-Oyun Makinesi (Game Machine)	Between 5 minutes 45 seconds and 12 minutes 30 seconds	
	Dijital Tayfa (Digital Crew)-İnternet Kapanı (Internet Trap)	The first 12 minutes 33 seconds	
	Bulmaca Kulesi (Puzzle Tower)-İlginç Bilgiler 3 (Interesting Facts 3)	Between 5 minutes 20 seconds and 9 minutes	
Scientist and child	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hoca Time Traveler)-El Cezeri (El Cezeri)	The first 12 minutes 35 seconds	
	Küçük Hazerfen (Little Hazerfen)-Hazerfen'in Uçması (Hazerfen's Flight)	The first 15 minutes 55 seconds	
	Nane ile Limon (Mint and Lemon)-Hazerfen Limon Çelebi (Hazerfen Limon Çelebi)	Between 3 minutes 55 seconds and 7 minutes 50 seconds	
	Erdem (Erdem)-Uçan Balon (Flying Balloon)	The first 13 minutes 48 seconds	
	Nasreddin Hoca Zaman Yolcusu (Nasreddin Hoca Time Traveler)-Başarının Sırrı (Secret to Success)	The first 12 minutes 7 seconds	

According to Table 6, it was determined that there were five subjects in the "Technology" subject area created for the fourth grade social studies course. These are classification of technological products, technology from past to present, need-oriented product design, safe use of technology and scientists and children. When the cartoons on TRT Kids official YouTube channel were examined; 5 cartoon scenes suitable for the subject of technology from past to present, 5 cartoon scenes suitable for the subject of need-oriented product design, 6 cartoon scenes suitable for the safe use of technology and 5 cartoon scenes suitable for the subject of scientist and child were identified. No cartoon scenes related to the classification of technological products were encountered. It was determined that cartoons named "Nane ile Limon (Mint and Lemon), Pak ve Pırpır (Pak and Pırpır), Elif ve Arkadaşları (Elif and Her Friends), Dijital Tayfa (Digital Crew), Bulmaca Kulesi (Puzzle Tower), Rafadan Tayfa (Rafadan Crew), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Küçük Hazerfen (Little Hazerfen) and Erdem (Erdem)" can be used in teaching the subjects in

the fourth grade "Technology" subject area. The cartoon scenes in the table last an average of 8 minutes and 15 seconds.

Findings Related to the Seventh Sub-Problem

The cartoons found to be useful in teaching the subjects in the fourth grade "Global Relations" subject area are presented in Table 7 with the time intervals and QR codes of the relevant scenes.

Table 7.

Cartoons That Can Be Used in Teaching the Subjects in the "Global Relations" Subject Area

Subject	Cartoon-episode	Time interval of the scene	QR code
Countries of the world	Nane ile Limon (Mint and Lemon)-Nane ile Limon Yurtdışında (Mint and Lemon Abroad)	The first 10 minutes 41 seconds	
Türkiye's neighbors and the Turkic world	Nane ile Limon (Mint and Lemon)-Türk Dünyası (Turkish World)	The first 10 minutes 17 seconds	
Cultural elements	Nane ile Limon (Mint and Lemon)-Misafir Öğrenci (Guest Student)	Between 1 minute 15 seconds and 9 minutes 45 seconds	
Cultural differences	Canım Kardeşim (My Dear Sister)-Dünyamız Kocaman (Our World is Huge)	The first 9 minutes 28 seconds	
	Elif ve Arkadaşları (Elif and Her Friends)-Yeni Arkadaş (New Friend)	The first 11 minutes 28 seconds	

Table 7 shows that there are four subjects in the "Global Relations" subject area created for the fourth grade social studies course. These are countries of the world, Türkiye's neighbors and the Turkic world, cultural elements and cultural differences. When the cartoons on the TRT Kids official YouTube channel were examined, one cartoon scene suitable for the themes of world countries, Türkiye's neighbors and the Turkish world and cultural elements, and two cartoon scenes suitable for the theme of cultural differences were identified. It was determined that cartoons named "Nane ile Limon (Mint and Lemon), Canım Kardeşim (My Dear Sister), Elif ve Arkadaşları (Elif and Her Friends)" can be used in teaching the subjects in the fourth grade "Global Relations" subject area. The cartoon scenes in the table last an average of 9 minutes and 88 seconds.

Discussion and Conclusion

Cartoons have an important place in children's world from an early age and have various effects on children's development of knowledge, skills, values and attitudes. Especially in this period when children are introduced to cartoons at an early age, movies with content suitable for children should be selected and harmful content should be avoided (Atan, 2024). In this direction, the aim of this research was to identify the cartoons that are expected to contribute to education with their educational and instructive features within the framework of the social studies course. For this purpose, the subject within the scope of the fourth grade social studies course, which corresponds to the 9-11 age range (Bakırcıoğlu, 2020), which is defined as the second childhood period of children, were taken as the basis. The cartoons on

the official YouTube channel of TRT Kids were examined, and scenes compatible with the fourth grade subject of the last two social studies curricula of 2018 and 2024 were identified.

As a result of examining the 2018 and 2024 curricula, 7 subject areas related to the fourth grade achievements and learning outcomes and 31 subjects in these subject areas were determined. The identified subject areas are Individual and Society, Life in Nature, Our Culture, Democracy and Citizenship, Economy, Technology, and Global Relations. In the subject area of Individual and Society, the importance of the social studies course, self-knowledge, individual and different characteristics, respect for differences, and maintaining social unity; in the subject area of Life in Nature, the use of maps and sketches, living in touch with nature, and being prepared for natural disasters; In the subject area of Our Culture, the exchange of children's games, the research of family history, the study of common heritage elements, the importance of the National Struggle; Children's rights in the subject area of Democracy and Citizenship, participation in educational and social activities, the Turkish nation on the way to the republic, the contributions of the republic, freedom and independence, taking responsibility, the issues of democratic participation in school; the conscious consumer in the subject area of Economy, economic activities from production to consumption, the issues of consumption of resources; classification of technological products in the subject area of Technology, technology from the past to the present, needs-oriented product design, safe use of technology, scientist and child issues, and Global Relations, world countries, Türkiye's neighbors and the Turkic world, cultural elements, cultural differences are included in the subject area. Cartoons that can be used in the teaching of the subjects determined from the cartoons on TRT Kids's official YouTube channel were searched. Appropriate cartoon scenes were found for all subjects except the importance of social studies course, self-knowledge and classification of technological products. Considering that cartoon scenes compatible with the remaining 28 subjects were found, it can be said that there are cartoon scenes that can be used in teaching the subjects in the fourth grade social studies course to children. This may be due to the similarities between the nature of the social studies course and cartoons. As a matter of fact, with the proper teaching of the social studies course, which is directly related to the social life in which the child is involved, it can be realized that the child can consciously recognize the nature, people, and organizations around him/her, pay attention to their relationships with each other, and regulate his/her own behavior by taking these into account (Selanik Ay & Korkmaz, 2017). Useful cartoons based on humanitarian and cultural values not only entertain children but also contribute to their personal and social development and the enrichment of their imagination (Atan, 2024). From this point of view, it can be stated that the social studies course and cartoons have common goals and functions, which ensures the existence of cartoons that can be used for the subjects of the social studies course.

Among the cartoons on the TRT Kids's official YouTube channel, it was determined that the following cartoons were compatible with the social studies course: "Elif ve Arkadaşları (Elif and Her Friends), Canım Kardeşim (My Dear Sister), Nane ile Limon (Mint and Lemon), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Erdem (Erdem), Küçük Hazerfen (Little Hezarfen), Bulmaca Kulesi (Puzzle Tower), Dijital Tayfa (Digital Crew), Rafadan Tayfa (Rafadan Crew), Pak ile Pırpır (Pak and Pırpır), Keloğlan (Kaloghlan), Dedektif Reptır (Detective Reptır), Aslan (Aslan), Siberay (Siberay), Kukla Stüdyosu (Puppet Studio),

Barbaros (Barbaros), Kuzucuk (Kuzucuk), Taktik 6 (Tactic 6), Pırıl (Pırıl) and Mutlu Oyuncak Dükkanı (Happy Toy Shop)". The cartoons named "Elif ve Arkadaşları (Elif and Her Friends), Rafadan Tayfa (Rafadan Crew), Pırıl (Pırıl), Nane ile Limon (Mint and Lemon), Canım Kardeşim (My Dear Sister), Bulmaca Kulesi (Puzzle Tower), Dijital Tayfa (Digital Crew)" can be used in teaching the subjects in the life science course (Öksüz & Öksüz, 2024), "Bulmaca Kulesi (Puzzle Tower) and Keloğlan Masalları (Kaloghlan Tales)" cartoons appeal to the 9-11 age group among the cartoons on TRT Kids official channel (Demiral et al., 2016), "Rafadan Tayfa (Rafadan Crew), Nasreddin Hoca Zaman Yolcusu (Nasreddin Hodja Time Traveler), Canım Kardeşim (My Dear Sister), Pırıl (Pırıl)" cartoons can be utilized in terms of values education(Güden Altmış & Altun, 2021; Özel & Küçükkart, 2023; Şahin, 2019; Yener et al., 2021), The cartoon "Pırıl (Pırıl)" contains content that belongs to both the mathematical concepts and skills that should be in the preschool period and the mathematical concepts and skills belonging to the first and second grade level of primary school (Fırat, 2024) it is seen that there are various studies revealing this. When evaluated in this framework, it can be said that the usability of these cartoons for educational purposes is high and the findings of the research overlap with other researches. Within the scope of this research, when the duration of the cartoon scenes that were determined to be used in teaching the subjects in the fourth grade social studies course was analyzed, it was seen that the average duration was 8 minutes and 19 seconds. Considering the duration of the lesson and children's attention spans, it can be considered that the duration of the scenes is suitable for use in social studies course.

The cartoons broadcasted on the official YouTube channel of TRT Kids were analyzed in line with the fourth grade social studies subjects. As a result of the analysis an evaluation was made for the association of cartoon scenes with the subjects in the Individual and Society subject area. On the basis of the Individual and Society subject, there were no appropriate scenes in the importance of the social studies course and self-knowledge subsubjects, while 5 scenes were identified in individual and different characteristics, 6 scenes in respecting differences, and 2 scenes in sustaining social unity. Social studies course aims to socialize individuals and to make individuals sensitive to the problems of the society in which they live (Selanik Ay & Deveci, 2011). Therefore, the development of cartoon scenes for the social studies course, which contributes to the socialization and social awareness of the individual by taking daily life as a subject, can be considered as an important need. In addition, primary school is a critical period for the cognitive, social and psychological development of the child, and it is also important for self-knowledge and recognizing social building blocks (Dönmez, 2023). Social studies is one of the courses that play an effective role in the character and value development of children in this critical period. For this reason, it is considered a necessity that the cartoons watched by children of this period should include content aimed at the self-knowledge of the individual within the framework of the social studies course.

While there are 6 cartoon scenes that can be used in teaching the subject of making use of maps and sketches in the subject area of Life in Nature, 1 cartoon scene that can be used in teaching the subject of living in touch with nature and 2 cartoon scenes that can be used in teaching the subject of being prepared for natural disasters were found. It was observed that there were cartoons compatible with all subjects in the subject area of Life in Nature. It has also been determined that cartoon scenes are more suitable for the subject of maps and

sketches. The reason for this situation can be considered as the fact that the skill of utilizing maps and sketches is a skill that is frequently used in daily life. Within the scope of the research, it can be stated that cartoons can be used as a tool in teaching the skill of using maps and sketches. When we look at the subject of living in touch with nature, it is seen that it matches only one cartoon scene. In this subject, children are expected to observe weather events, transfer them to graphs and make observations. Since these behaviors require concrete experiences, they may not have found enough space in visual media tools such as cartoons. Finally, under this heading, 2 scenes related to preparation for natural disasters were found appropriate. Türkiye is a country where natural disasters are effective; therefore, individuals should recognize their environment, be aware of their values and act consciously in this direction (Değirmenci & İlter, 2015). Social studies is also an important course that includes subjects related to disaster education and is seen as a criterion in determining the approach towards disaster education (Şulek & Aktın, 2023). However, it is stated that the education that primary school students receive about natural disasters at school is not sufficient (Sağır & Gökrem, 2024). When cartoons are analyzed, it can be said that there are few scenes related to natural disasters. From this point of view, it can be concluded that the cartoons on TRT Kids official YouTube channel can be utilized for natural disasters, but this platform alone cannot be sufficient.

The subject area of our culture was evaluated in the context of the change of children's games, researching family history, examining the elements of common heritage and the importance of the National Struggle. Among the subjects, there were 2 scenes about the change of children's games, 2 scenes about researching family history, 2 scenes about the importance of the National Struggle and 6 scenes about the examination of common heritage elements. The highest number of scenes in this subject area is related to the study of common heritage elements. As a matter of fact, cartoons are characterized as carriers of cultures and are considered important (Özşan & Gürel, 2023). Therefore, the presence of common heritage elements in cartoons ensures the transfer of these elements from generation to generation and makes cartoons an educational tool. However, it was found that games, which play an important role in ensuring the continuity of cultural elements, are less frequently included in cartoon scenes. Deveci (2009) stated that cultural elements are related to the objectives of the social studies course and that it is important to utilize cultural elements in achieving these objectives. In this context, cartoons can be used as an important educational tool in transferring cultural elements in the social studies course. Under the subject area of Our Culture, the subject of researching family history was addressed and associated with two scenes. Investigating family history plays an important role in the transmission of cultural heritage from generation to generation and can also help students gain awareness of their family history. In this context, visual and interactive tools such as cartoons can be used when teaching about family history in social studies courses. Finally, the importance of the National Struggle was evaluated in this subject area and two appropriate scenes were found in the cartoon channel that could be used in teaching this subject. In addition, in a study examining teachers' views on the use of cartoons in social studies courses, teachers stated that they prefer cartoon themes that emphasize cultural values, historical events, social problems, and various historical and natural beauties in the context of social studies teaching (Gezer & İşcan, 2023).

Therefore, the cartoons mentioned in the research can be used in teaching the change of children's games, researching family history, examining common heritage elements and the importance of the National Struggle.

Among the subjects in the subject area of Democracy and Citizenship, 1 cartoon scene was found for the subjects of children's rights, participation in educational-social activities, Turkish nation on the way to the republic, contributions of the republic, democratic participation at school, 3 cartoon scenes for the subject of freedom and independence, and 2 cartoon scenes for the subject of assuming responsibility. In this context, it is seen that there are cartoon scenes related to all subjects in the subject area of Democracy and Citizenship. This result of the research can be interpreted as that the cartoons on TRT Kids official YouTube channel have positive features in terms of being usable in the teaching of democracy and citizenship related subjects in the social studies course. Considering that the main purpose of the social studies course is to raise effective citizens (Memişoğlu, 2017; Tay, 2022), it can be thought that the use of cartoons in the social studies course will be effective in achieving the objectives of the course. Media tools are shown among the effective factors in citizenship education (Kuş & Aksu, 2017). Based on the results obtained in this study, it may be possible to say that cartoons, which can be shown among media tools, have an important function in raising effective citizens.

In the subject area of Economy, which was examined within the scope of the research, 3 cartoon scenes on the subject of conscious consumer, 2 on economic activities from production to consumption and 6 on the consumption of resources were accessed. In other words, all subjects in the subject area of Economy were associated with cartoon scenes. In this context, cartoon scenes can be utilized while teaching the specified subject area in the social studies course. As a matter of fact, it is of great importance for effective citizens to be economically literate in the social studies course, whose main purpose is to raise them as good and effective citizens (Hayta & Akhan, 2014). Economic literacy includes being a producer, consumer, saver, investor and responsible citizen (Akhan, 2013). In this context, students are tried to gain economic literacy skills by being conscious consumers, knowing economic activities and being sensitive about the consumption of resources, which are examined with the subject area of Economy. As a matter of fact, this situation is evaluated that cartoons should not be considered only as a movie and that cartoons offer solutions for production, consumption, sharing and circulation systems (Özer, 2015).

When the cartoons broadcasted on TRT Kids's official YouTube channel were examined within the scope of the subjects in the Technology subject area, cartoons that can be used in the teaching of technology 5, need-oriented product design 5, safe use of technology 6, scientist and child 5 from the past to the present were found, and a cartoon that can be used in the teaching of the classification of technological products was not found. Five cartoon scenes were identified for the subjects of technology from past to present, need-oriented product design, scientist and child, and six cartoon scenes were identified for the subject of safe use of technology. It is seen that the subject area with the highest number of cartoons among the subject areas is the Technology subject area. The reason for this situation is the acceleration of technological developments in the current age and their higher impact and attractiveness

especially on young age groups. Childhood, which is affected positively and negatively in the changing cultural system, has lost its traditional content and transformed into digital childhood (Biricik, 2022). Therefore, it can be stated that children now spend most of their time with technology and cartoon producers frequently include technology-related subjects in cartoons considering this situation. In the technology subject area, the subject with the highest number of cartoon scenes was the safe use of technology. The fact that especially children and young people show more tendency towards the digital world makes it necessary to act consciously against the harms as well as the advantages of innovations in this field (Dursun & Çilingir, 2023). It can be said that utilizing cartoons about the safe use of technology in the social studies course will enable children to act consciously against the harms of technology.

In the subject area of Global Relations, 1 cartoon scene was associated with the subjects of world countries, Türkiye's neighbors, Turkish World and cultural elements, and 2 cartoon scenes were associated with the subject of cultural differences. In this framework, cartoon scenes related to all subjects in the Global Relations subject area were identified. The social studies course aims not only to raise responsible citizens but also to raise individuals who adopt universal values and transform them into behaviors, and globalization and global issues, one of the important components of the course, are included in various teaching materials (Aslan, 2016; Dere & Uçar, 2024). Thus, it can be stated that the identified cartoon scenes can be used in teaching the fourth grade social studies course, which includes the subject of Global Relations. In addition, cartoons have an informative function in the presentation of social studies course subjects (Oruç & Teymuroğlu, 2016). Considering that raising universal citizens is among the functions of the social studies course, cartoons can be a useful tool in teaching students about Global Relations and subjects such as the countries of the world, Türkiye's neighbors, the Turkish world and cultural elements within this framework.

Recommendations

Based on the results of the research, the following recommendations can be made:

By examining the cartoons broadcast on TRT Kids's official YouTube channel, scenes related to the fourth grade subjects of the 2018 and 2024 social studies curricula were identified. In this context, it can be suggested to use cartoons as a teaching tool in teaching social studies course.

The cartoons identified in the study that can be used in teaching social studies subjects can be accessed through the Education Information Network [EBA] platform and their use in schools can be supported.

In this study, cartoons published on TRT Kids official YouTube channel were included in the analysis. Cartoons on other platforms can also be analyzed within the framework of the social studies course or the subjects of other courses.

The cartoons on the official YouTube channel of TRT Kids were analyzed according to their usability in teaching the fourth grade subjects of the social studies course. Studies can be conducted to examine the animated films that can be used for teaching the subjects in the next grade levels of the social studies course.

In the cartoons broadcasted on the official YouTube channel of TRT Kids, which were evaluated within the scope of the research, there was no cartoon that could be used in teaching the importance of social studies course, self-knowledge, and classification of technological products. It can be suggested to design cartoons related to the specified subjects.

In line with the research, it is thought that TRT Kids official YouTube cartoon scenes can be used as teaching materials in the social studies course. In order to support this idea, applied research can be conducted on the effective use of cartoon scenes in the teaching process of the social studies course.

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There is no conflict of interest that the authors will declare in the research.

Notice of Use of Artificial Intelligence

The authors utilized Canva artificial intelligence tool for the shapes of this research.

Dördüncü Sınıf Sosyal Bilgiler Dersinde Hangi Çizgi Filmler Kullanılabilir?

Özet

Çocukların gelişim süreçlerinde önemli bir rol oynayıp onlarda bilgi edinme, beceri kazanma, değer ve tutum geliştirme gibi alanlarda farklı etkiler yaratan çizgi filmlerin birer öğretim materyali olarak kullanılabileceği düşünülmektedir. Bu kapsamda araştırmanın amacı dördüncü sınıf sosyal bilgiler dersindeki konuların öğretiminde kullanılabilecek çizgi filmleri belirlemektir. Araştırmada nitel araştırma yöntemlerinden doküman inceleme kullanılmıştır. Araştırmanın veri kaynağını TRT Çocuk'un resmî YouTube kanalında yer alan çizgi filmler oluşturmaktadır. Çalışma verileri doküman analizi ile analiz edilmiştir. Çalışmadan elde edilen sonuçlara göre sosyal bilgiler dersi için belirlenen toplam 31 konudan 28'iyle uyumlu çizgi film sahnesine ulaşılmıştır. Çalışmada sosyal bilgiler dersi için belirlenen konuların öğretiminde "Elif ve Arkadaşları, Canım Kardeşim, Nane ile Limon, Nasreddin Hoca Zaman Yolcusu, Erdem, Küçük Hezarfen, Bulmaca Kulesi, Dijital Tayfa, Rafadan Tayfa, Pak ile Pırpır, Keloğlan, Dedektif Reptır, Aslan, Siberay, Kukla Stüdyosu, Barbaros, Kuzucuk, Taktik 6, Pırıl ve Mutlu Oyuncak" adlı çizgi filmlerin kullanılabileceği belirlenmiştir. Belirlenen çizgi filmlerin sosyal bilgiler dersinin öğretiminde kullanılması önerilebilir.

Anahtar Kelimeler: Dördüncü sınıf, sosyal bilgiler, çizgi film, TRT Çocuk.

Giriş

Sosyal bilgiler, her şeyden önce iyi ve etkili bir vatandaş yetiştirmek gayesinde olan ve sonrasında ise nitelikli bir dünya vatandaşı yetiştirmeyi hedefleyen bir derstir (Öztürk vd., 2023). Bu tanımdan hareketle sosyal bilgilerin etkili vatandaş yetiştirme gibi bir misyonu olduğu söylenebilir. Sönmez (2010) sosyal bilgileri, toplumsal gerçekle kanıtlamaya dayalı bağ kurma süreci ve bunun sonucunda elde edilen dirik bilgiler olarak ifade etmiştir. Sosyal bilgiler dersi tarihsel süreçte birçok farklı şekilde programlarda yerini bulmuştur.

Sosyal bilgiler öğretim programları Türkiye'de 2005, 2015, 2018 ve 2024 yıllarında güncellenmiştir. 2018 Sosyal Bilgiler Dersi Öğretim Programı'nda edebi ürünlere ve çeşitli geleneksel veya modern sanat ürünlerine (resim, musiki, heykel, mimari, sinema, tiyatro vb.) yer verilmesi gerektiği vurgulanmaktadır. 2024 programında ise öğrencilere kazandırılacak okuryazarlık becerileri içinde sanat okuryazarlığı ifadesi geçmektedir. Buradan hareketle sosyal bilgiler dersinde kullanılabilecek materyallerden birinin de ritmik bir sanat olan sinemanın kapsadığı çizgi film ve animasyonlar olabileceği söylenebilir.

Çizgi film "Bir konuyla ilgili olarak karakterlerinin hareketlerini belirtecek biçimde art arda çizilmiş resimlerden oluşan sinema filmi." olarak tanımlanmaktadır (Türk Dil Kurumu [TDK], 2023). Animasyon tekniğinin çizgi filmlerde kullanılması, çizgi filmleri diğer sinema filmlerden ayıran en önemli özellikler arasında gösterilebilir. Bu özelliğinden dolayı çizgi filmlerin renkli ve masalsı bir dünyaya kapı araladığı kabul edilebilir.

Çizgi filmlerin eskinin masal işlevini yansıttığı ve masallarda olduğu gibi olağanüstülüklere yer verdiği ve bu bağlamda bugünün masalları olduğu söylenebilir (Aydın, 2018). Kitle olarak çocuklara hitap eden çizgi filmlerin öncelikli görevi onlara eğlenceli vakit sunmak, bu vakti sunarken de doğruyu iletmek ve eğitmektir (Kamacıoğlu, 2017). Animasyon ve çizgi filmlerin çocuklarla olan bağından ve mesajları iletmedeki gücünden eğitim amaçlı da yararlanılabileceği belirtilmektedir (Şen & Tay, 2023).

Çizgi filmlerin her yaşa hitap eden kitlesi olmasının yanı sıra izlenme kitlesinin çoğunu çocuklar oluşturmaktadır. Çocukların görsel ve işitsel ögelere dayalı öğrenmeleri daha kolay gerçekleştirebildiği düşünüldüğünde onların çizgi filmler ile olan etkileşimi daha da önem kazanmaktadır (Arslan vd., 2023). Özellikle çocuklar tarafından sevilen çizgi filmler çocukların hayal güçlerine hitap ederek günlük hayatları ve oyunlarına yansımakta, kahramanlarıyla çocuklara rol model olmaktadır (Hacıbektaşoğlu, 2014). Çizgi filmler karmaşık kavramları basitleştirerek, çocukların farkında olmadan öğrenmelerini ve duygusal tepki vermelerini sağlamaktadır (Köprülü, 2016). Kamacıoğlu'na (2017) göre çizgi filmler çocukları eğlendirmenin yanı sıra kültür aktarımı yapar ve onlara kılavuzluk eder.

Çizgi filmlerin; sosyal bilgiler dersinde kazandırılması hedeflenen davranışların kalıcı izli olmasını, farklı kültür ve medeniyetlerin tanıtılmasını ve diğer dersle ilgili ünitelerle bağlantı kurulmasını kolaylaştırdığı için ders kapsamında kullanılabilir olduğu anlaşılmaktadır (Oruç & Teymuroğlu, 2016). Bu çalışmada 4. sınıf sosyal bilgiler dersi kapsamındaki konuların hangi çizgi filmlerle kazandırılabileceğini belirlemek amaçlanmıştır. Bu amaç kapsamda aşağıdaki problem ve alt problemlere yanıt aranmıştır.

1. Dördüncü sınıf sosyal bilgiler dersi;

1.1. "Birey ve Toplum"

1.2. "Doğada Yaşam"

1.3. "Kültürümüz"

1.4. "Demokrasi ve Vatandaşlık"

1.5. "Ekonomi"

1.6. "Teknoloji" ve

1.7. "Küresel İlişkiler"

Konu alanlarında yer alan konuların öğretiminde hangi çizgi filmler kullanılabilir?

Yöntem

Araştırma Deseni

Araştırma nitel araştırma yöntemlerinden doküman inceleme ile yürütülmüştür.

Veri Kaynağı

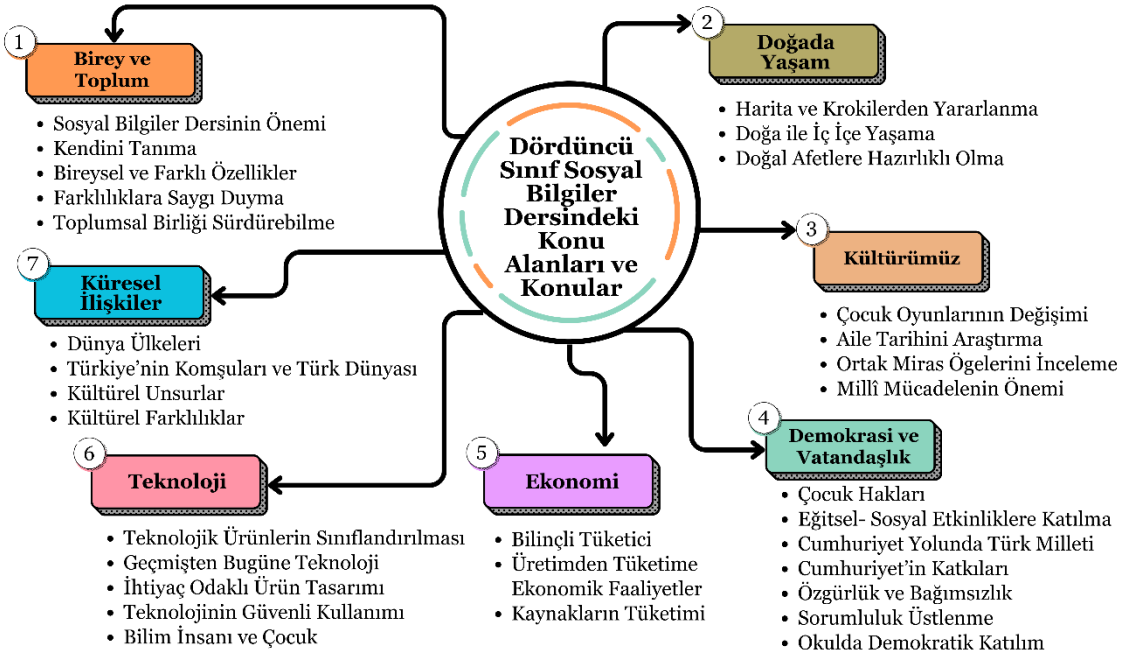
Araştırmanın veri kaynağını TRT Çocuk'un resmî YouTube kanalındaki çizgi filmler oluşturmaktadır.

Araştırma Süreci

Çalışmada hayat bilgisi dersi konularının sınıflandırılması amacıyla içinde bulunulan yıl itibariyle son iki öğretim programı olan 2018 ve 2024 sosyal bilgiler dersi öğretim programlarının dördüncü sınıf kazanımları ve öğrenme çıktıları incelenmiştir. Bu inceleme sonucunda sosyal bilgiler dersindeki konu alanları ve konular oluşturulmuştur. Dördüncü sınıf sosyal bilgiler dersinde yer aldığı belirlenen konu alanları ve konular Şekil 1'de sunulmuştur.

Şekil 1.

Dördüncü Sınıf Sosyal Bilgiler Dersindeki Konu Alanları ve Konular



Çizgi filmlerin analizinde Forster'ın (1994) "dokümanlara ulaşma, dokümanların orijinalliğini kontrol etme, dokümanları anlama, veriyi analiz etme ve veriyi kullanma" şeklindeki doküman analizi adımları takip edilmiştir.

Dokümanlara ulaşma aşamasında çizgi filmlere TRT Çocuk resmî YouTube kanalından ulaşılmıştır. İkinci aşamada dokümanların orijinalliği incelenmiş ve TRT Çocuk'un resmî YouTube kanalından ulaşıldığı için incelenen çizgi filmlerin orijinal olduğu düşünülmüştür. Üçüncü aşamada çizgi filmler araştırmanın problemi bağlamında tek tek incelenmiştir. Veriyi analiz etme aşamasında her bir konu için TRT Çocuk resmî YouTube kanalındaki çizgi filmlerden uygun olanlar tespit edilmeye çalışılmıştır. Birden çok çizgi film sahnesiyle ilişkilendirilen konular için yer verilen çizgi film sahnesi sayısı 6 sahne ile sınırlandırılmıştır. Son aşama olan veriyi kullanma aşamasında dördüncü sınıf sosyal bilgiler dersinde yer aldığı belirlenen her bir konu alanındaki konuların öğretiminde kullanılabileceği tespit edilen çizgi film sahneleri tablolar halinde sunulmuştur. Tablolarda yer alan verilerin kullanılması işlemi sonuç, tartışma ve öneriler ile gerçekleştirilmiştir.

Araştırmanın Etik İzinleri:

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

Etik Kurul İzin Bilgileri:

Araştırma, kamuya açık dokümanlarla gerçekleştirildiği için etik kurul onayı gerektirmemektedir.

Bulgular

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Birey ve Toplum" konu alanında beş konunun yer aldığı belirlenmiştir. Bunlar sosyal bilgiler dersinin önemi, kendini tanıma, bireysel ve farklı özellikler, farklılıklara saygı duyma ve toplumsal birliği sürdürebilme şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; bireysel ve farklı özellikler konusuna uygun 5 çizgi film sahnesi, farklılıklara saygı duyma konusuna uygun 6 çizgi film sahnesi ve toplumsal birliği sürdürebilme konusuna uygun 2 çizgi film sahnesi tespit edilmiştir. Sosyal bilgiler dersinin önemi ve kendini tanıma konularıyla ilgili herhangi bir çizgi film sahnesine ise rastlanılmamıştır. Dördüncü sınıf "Birey ve Toplum" konu alanındaki konuların öğretiminde "Taktik 6, Nane ile Limon, Pırıl, Mutlu Oyuncak Dükkânı, Nasreddin Hoca Zaman Yolcusu, Elif ve Arkadaşları, Rafadan Tayfa" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Doğada Yaşam" konu alanı için üç konunun belirlendiğini göstermektedir. Bunlar harita ve krokilerden yararlanma, doğa ile iç içe yaşama ve doğal afetlere yönelik hazırlıklı olma şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; harita ve krokilerden yararlanma konusuna uygun 6 çizgi film sahnesi, doğa ile iç içe yaşama konusuna uygun 1 çizgi film sahnesi ve doğal afetlere yönelik hazırlıklı olma konusuna uygun 2 çizgi film sahnesi tespit edilmiştir. Dördüncü sınıf "Doğada Yaşam" konu alanındaki konuların öğretiminde "Nasreddin Hoca Zaman Yolcusu, Kuzucuk, Nane ile Limon, Barbaros, Bulmaca Kulesi, Aslan, Elif ve Arkadaşları" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Kültürümüz" konu alanında dört konunun yer aldığı görülmektedir. Bunlar çocuk oyunlarının değişimi, aile tarihini araştırma, ortak miras ögelerini inceleme ve Millî Mücadele'nin önemi şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; çocuk oyunlarının değişimi konusuna uygun 2 çizgi film sahnesi, aile tarihini araştırma konusuna uygun 2 çizgi film sahnesi ve ortak miras ögelerini inceleme konusuna uygun 6 çizgi film sahnesi, Millî Mücadele'nin önemi konusuna uygun 2 çizgi film sahnesi tespit edilmiştir. Dördüncü sınıf "Kültürümüz" konu alanındaki konuların öğretiminde "Rafadan Tayfa, Kukla Stüdyosu, Nane ile Limon, Elif ve Arkadaşları, Nasreddin Hoca Zaman Yolcusu ve Aslan" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Demokrasi ve Vatandaşlık" konu alanında 7 konunun yer aldığını göstermektedir. Bunlar çocuk hakları, eğitsel-sosyal

etkinliklere katılma, cumhuriyet yolunda Türk milleti, cumhuriyetin katkıları, özgürlük ve bağımsızlık, sorumluluk üstlenme ve okulda demokratik katılım şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; çocuk hakları konusuna uygun 1 çizgi film sahnesi, eğitsel-sosyal etkinliklere katılma konusuna uygun 1 çizgi film sahnesi, cumhuriyet yolunda Türk milleti konusuna uygun 1 çizgi film sahnesi, cumhuriyetin katkıları konusuna uygun 1 çizgi film sahnesi, özgürlük ve bağımsızlık konusuna uygun 3 çizgi film sahnesi, sorumluluk üstlenme konusuna uygun 2 çizgi film sahnesi ve okulda demokratik katılım konusuna uygun 1 çizgi film sahnesi tespit edilmiştir. Dördüncü sınıf "Demokrasi ve Vatandaşlık" konu alanındaki konuların öğretiminde "Nane ile Limon, Siberay, Pırıl, Rafadan Tayfa ve Nasreddin Hoca Zaman Yolcusu," isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Ekonomi" konu alanında üç konunun yer aldığının belirlendiği görülmektedir. Bunlar bilinçli tüketici, üretimden tüketime ekonomik faaliyetler ve kaynakların tüketimi şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; bilinçli tüketici konusuna uygun 3 çizgi film sahnesi, üretimden tüketime ekonomik faaliyetler konusuna uygun 2 çizgi film sahnesi ve kaynakların tüketimi konusuna uygun 6 çizgi film sahnesi tespit edilmiştir. Dördüncü sınıf "Ekonomi" konu alanındaki konuların öğretiminde "Nasreddin Hoca Zaman Yolcusu, Dedektif Reptır, Pırıl, Elif ve Arkadaşları, Nane ile Limon, Keloğlan, Canım Kardeşim, Bulmaca Kulesi ve Rafadan Tayfa" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Teknoloji" konu alanında beş konunun yer aldığı belirlenmiştir. Bunlar teknolojik ürünlerin sınıflandırılması, geçmişten bugüne teknoloji, ihtiyaç odaklı ürün tasarımı, teknolojinin güvenli kullanımı ve bilim insanı ve çocuk şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; geçmişten bugüne teknoloji konusuna uygun 5 çizgi film sahnesi, ihtiyaç odaklı ürün tasarımı konusuna uygun 5 çizgi film sahnesi, teknolojinin güvenli kullanımı konusuna uygun 6 çizgi film sahnesi ve bilim insanı ve çocuk konusuna uygun 5 çizgi film sahnesi tespit edilmiştir. Teknolojik ürünlerin sınıflandırılması konusuyla ilgili herhangi bir çizgi film sahnesine ise rastlanılmamıştır. Dördüncü sınıf "Teknoloji" konu alanındaki konuların öğretiminde "Nane ile Limon, Pak ile Pırpır, Elif ve Arkadaşları, Dijital Tayfa, Bulmaca Kulesi, Rafadan Tayfa, Dijital Tayfa, Nasreddin Hoca Zaman Yolcusu, Küçük Hazerfen ve Erdem" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Dördüncü sınıf sosyal bilgiler dersi için oluşturulan "Küresel İlişkiler" konu alanında dört konunun yer aldığının belirlendiğini göstermektedir. Bunlar dünya ülkeleri, Türkiye'nin komşuları ve Türk dünyası, kültürel unsurlar ve kültürel farklılıklar şeklindedir. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmler incelendiğinde; dünya ülkeleri, Türkiye'nin komşuları ve Türk dünyası ve kültürel unsurlar konularına uygun birer çizgi film sahnesi, kültürel farklılıklar konusuna uygun 2 çizgi film sahnesi tespit edilmiştir. Dördüncü sınıf "Küresel İlişkiler" konu alanındaki konuların öğretiminde "Nane ile Limon, Canım Kardeşim, Elif ve Arkadaşları" isimli çizgi filmlerin kullanılabileceği saptanmıştır.

Tartışma ve Sonuç

Araştırmada 2018 ve 2024 öğretim programlarının incelenmesi sonucunda dördüncü sınıf kazanımları ve öğrenme çıktıları ile ilgili 7 konu alanı ve bu konu alanlarında yer alan 31 konu belirlenmiştir. Belirlenen konu alanları; Birey ve Toplum, Doğada Yaşam, Kültürümüz, Demokrasi ve Vatandaşlık, Ekonomi, Teknoloji ve Küresel İlişkiler'dir. Birey ve Toplum konu alanında sosyal bilgiler dersinin önemi, kendini tanıma, bireysel ve farklı özellikler, farklılıklara saygı duyma, toplumsal birliği sürdürebilme konuları; Doğada Yaşam konu alanında harita ve krokilerden yararlanma doğa ile iç içe yaşama, doğal afetlere hazırlıklı olma konuları; Kültürümüz konu alanında çocuk oyunlarının değişimi, aile tarihini araştırma, ortak miras öğelerini inceleme, Millî Mücadele'nin önemi konuları; Demokrasi ve Vatandaşlık konu alanında çocuk hakları, eğitsel-sosyal etkinliklere katılma, cumhuriyet yolunda Türk milleti, cumhuriyetin katkıları, özgürlük ve bağımsızlık, sorumluluk üstlenme, okulda demokratik katılım konuları; Ekonomi konu alanında bilinçli tüketici, üretimden tüketime ekonomik faaliyetler, kaynakların tüketimi konuları; Teknoloji konu alanında teknolojik ürünlerin sınıflandırılması, geçmişten bugüne teknoloji, ihtiyaç odaklı ürün tasarımı, teknolojinin güvenli kullanımı, bilim insanı ve çocuk konuları ve Küresel İlişkiler konu alanında dünya ülkeleri, Türkiye'nin komşuları ve Türk dünyası, kültürel unsurlar, kültürel farklılıklar konuları yer almaktadır. TRT Çocuk resmî YouTube kanalında yer alan çizgi filmlerden belirlenen konuların öğretiminde kullanılabilecek çizgi filmler aranmıştır. Sosyal bilgiler dersinin önemi, kendini tanıma ve teknolojik ürünlerin sınıflandırılması konuları dışındaki tüm konular için uygun çizgi film sahnesi tespit edilmiştir. Kalan 28 konuyla uyumlu çizgi film sahnelerine ulaşılmış olması dikkate alındığında, dördüncü sınıf sosyal bilgiler dersinde yer alan konuların çocuğa öğretiminde kullanılabilecek çizgi film sahnelerinin bulunduğu söylenebilir. Çocuğun içinde bulunduğu toplumsal hayatla doğrudan ilgili olan sosyal bilgiler dersinin gereği gibi öğretilmesi ile çocuğun çevresindeki tabiatı, insanları, kuruluşları bilinçli olarak tanıması, bunların birbirleri ile olan ilişkilerine dikkat etmesi ve kendi davranışlarını da bunları dikkate alarak düzenlemesi gerçekleşebilir (Selanik Ay & Korkmaz, 2017). İnsani ve kültürel değerlere dayalı, faydalı çizgi filmler çocukları sadece eğlendirmez aynı zamanda onların kişisel ve toplumsal gelişimine, hayal dünyasının zenginleşmesine katkı da sağlarlar (Atan, 2024). Buradan hareketle sosyal bilgiler dersinin ve çizgi filmlerin ortak amaç ve işlevlerinin yer aldığı, bunun da sosyal bilgiler dersinin konuları için kullanılabilecek çizgi filmlerin varlığını sağladığı ifade edilebilir.

TRT Çocuk resmî YouTube kanalında yer alan çizgi filmlerden "Elif ve Arkadaşları, Canım Kardeşim, Nane ile Limon, Nasreddin Hoca Zaman Yolcusu, Erdem, Küçük Hezarfen, Bulmaca Kulesi, Dijital Tayfa, Rafadan Tayfa, Pak ile Pırpır, Keloğlan, Dedektif Reptır, Aslan, Siberay, Kukla Stüdyosu, Barbaros, Kuzucuk, Taktik 6, Pırıl ve Mutlu Oyuncak" adlı çizgi filmlerin sosyal bilgiler dersi konuları ile uyumlu olduğu belirlenmiştir. "Elif ve Arkadaşları, Rafadan Tayfa, Pırıl, Nane ile Limon, Canım Kardeşim, Bulmaca Kulesi, Dijital Tayfa" isimli çizgi filmlerin hayat bilgisi dersindeki konuların öğretiminde kullanılabileceğini (Öksüz & Öksüz, 2024), "Bulmaca Kulesi ve Keloğlan Masalları" çizgi filmlerinin TRT Çocuk resmî kanalında yer alan çizgi filmler arasında 9-11 yaş grubuna hitap ettiğini (Demiral vd., 2016), "Rafadan Tayfa, Nasreddin Hoca Zaman Yolcusu, Canım Kardeşim, Pırıl" çizgi filmlerinden değerler eğitimi açısından yararlanılabileceğini (Güden Altmış & Altun, 2021; Özel &

Küçükkart, 2023; Şahin, 2019; Yener vd., 2021), "Pırıl" çizgi filminin hem okul öncesi dönemde olması gereken hem de ilkokul birinci ve ikinci sınıf düzeyine ait matematiksel kavram ve becerilere ait içerikler taşıdığını (Fırat, 2024) ortaya koyan çeşitli araştırmaların olduğu görülmektedir. Bu çerçevede değerlendirildiğinde söz konusu çizgi filmlerin eğitsel amaçlarla kullanılabilirliğinin yüksek olduğu ve araştırma bulgularının diğer araştırmalarla örtüştüğü söylenebilir.

TRT Çocuk resmî YouTube kanalında yayımlanan çizgi filmler, dördüncü sınıf sosyal bilgiler konuları doğrultusunda incelenmiştir. İnceleme sonucunda, Birey ve Toplum konu alanında yer alan konular ile çizgi film sahnelerinin ilişkilendirilmesine yönelik bir değerlendirme yapılmıştır. Birey ve Toplum konu alanı temelinde sosyal bilgiler dersinin önemi ile kendini tanıma konularında uygun sahneye rastlanmazken bireysel ve farklı özelliklerde 5, farklılıklara saygı duymada 6, toplumsal birliği sürdürebilmede 2 sahne belirlenmiştir. Sosyal bilgiler dersi bireylerin toplumsallaşmasını ve bireylerin içinde yaşamış oldukları topluma ait sorunlara duyarlı olmasını amaçlamaktadır (Selanik Ay & Deveci, 2011). Dolayısıyla, günlük yaşamı konu alarak bireyin toplumsallaşmasına ve toplum bilincini kazanmasına katkı sağlayan sosyal bilgiler dersine yönelik çizgi film sahnelerinin geliştirilmesi önemli bir ihtiyaç olarak değerlendirilebilir.

Doğada Yaşam konu alanında yer alan harita ve krokilerden yararlanma konusunun öğretiminde kullanılabilecek 6 çizgi film sahnesine rastlanırken, doğa ile iç içe yaşama konusunun öğretiminde kullanılabilecek 1, doğal afetlere hazırlıklı olma konusunun öğretiminde kullanılabilecek 2 çizgi film sahnesine ulaşılmıştır. Doğada Yaşam konu alanındaki tüm konularla uyumlu çizgi filmin bulunduğu görülmüştür. Ayrıca çizgi film sahnelerinin daha çok harita ve krokiler konusuna uygun olduğu tespit edilmiştir. Bu durumun nedeni, harita ve krokilerden faydalanma becerisinin günlük hayatta sıklıkla başvurulan bir beceri olması olarak düşünülebilir. Araştırma dahilinde çizgi filmlerin harita ve kroki kullanma becerisinin öğretiminde araç olarak kullanılabileceği ifade edilebilir. Doğa ile iç içe yaşama konusuna bakıldığında ise yalnızca bir çizgi film sahnesi ile eşleştiği görülmektedir. Belirtilen konuda çocukların hava olaylarını gözlemlemesi, grafiklere aktarması ve gözlem yapması beklenmektedir. Bu davranışlar somut deneyimler gerektirdiğinden, çizgi film gibi görsel medya araçlarında yeterince yer bulamamış olabilir. Son olarak, bu başlık altında doğal afetlere hazırlık ile ilgili 2 sahne uygun bulunmuştur. Sosyal bilgiler içeriğinde afet eğitimine yönelik konular barındıran önemli bir derstir ve afet eğitimine yönelik yaklaşım belirlemede kriter olarak görülmektedir (Şulek & Aktın, 2023). Çizgi filmler incelendiğinde, doğal afetlerle ilgili az sayıda sahne olduğundan doğal afetlere yönelik konularda TRT Çocuk resmî YouTube kanalındaki çizgi filmlerden faydalanılabileceği ancak bu platformun tek başına yeterli olamayacağı sonucuna varılabilir.

Kültürümüz konu alanında yer alan konulardan, çocuk oyunlarının değişimi ile ilgili 2 sahne, aile tarihini araştırmaya yönelik 2 sahne, Millî Mücadele'nin önemiyle ilgili 2 sahne ve ortak miras öğelerinin incelenmesiyle ilgili 6 sahne bulunmuştur. Bu konu alanında en fazla sahne ortak miras öğelerinin incelenmesiyle ilgilidir. Nitekim çizgi filmler kültürlerin taşıyıcısı olarak nitelenmekte ve önemli görülmektedir (Özşan & Gürel, 2023). Dolayısıyla çizgi filmlerde ortak miras öğelerinin bulunması, bu öğelerin nesilden nesile aktarılmasını ve çizgi

filmlerin eğitici bir araç olmasını sağlar. Ancak kültürel unsurların sürekliliğini sağlamakta önemli bir rol oynayan oyunlara, çizgi film sahnelerinde daha az yer verildiği tespit edilmiştir. Deveci (2009) ise, sosyal bilgiler dersinin amaçları ile kültürel ögelerin ilişkili olduğunu, bu amaçlara ulaşmada kültürel ögelerin yararlanmasının önemli olduğunu ifade etmiştir. Bu bağlamda, sosyal bilgiler dersinde kültürel unsurların aktarılmasında çizgi filmler önemli bir eğitim aracı olarak kullanılabilir.

Demokrasi ve Vatandaşlık konu alanında yer alan konulardan çocuk hakları, eğitsel-sosyal etkinliklere katılma, cumhuriyet yolunda Türk milleti, cumhuriyetin katkıları, okulda demokratik katılım konuları için 1, özgürlük ve bağımsızlık konusu için 3, sorumluluk üstlenme konusu için 2 çizgi film sahnesine ulaşılmıştır. Bu bağlamda Demokrasi ve Vatandaşlık konu alanındaki tüm konularla ilgili çizgi film sahnesine rastlandığı görülmektedir. Araştırmanın bu sonucu TRT Çocuk resmî YouTube kanalındaki çizgi filmlerin sosyal bilgiler dersindeki demokrasi ve vatandaşlık ile ilgili konuların öğretiminde kullanılabilir olma açısından olumlu özellikler taşıdığı şeklinde yorumlanabilir. Sosyal bilgiler dersinin temel amacının etkili vatandaşlar yetiştirmek olduğu (Memişoğlu, 2017; Tay, 2022) düşünüldüğünde çizgi filmlerin sosyal bilgiler dersinde kullanımının dersin amaçlarına ulaşmasında etkili olacağı düşünülebilir.

Araştırma kapsamında incelenen Ekonomi konu alanında bilinçli tüketici konusunda 3, üretimden tüketime ekonomik faaliyetler konusunda 2 ve kaynakların tüketimi konusunda 6 çizgi film sahnesine erişilmiştir. Başka bir ifade ile Ekonomi konu alanında yer alan tüm konular çizgi film sahnesi ile ilişkilendirilmiştir. Bu bağlamda sosyal bilgiler dersinde belirtilen konu alanının öğretimi gerçekleştirilirken çizgi film sahnelerinden yararlanılabilir. Nitekim temel amacı iyi ve etkili birer vatandaş olarak yetiştirmek olan sosyal bilgiler dersinde etkili vatandaşların ekonomi okuryazarı olmaları büyük önem taşımaktadır (Hayta & Akhan, 2014). Ekonomi okuryazarlığı ise üretici, tüketici, birikimci, yatırımcı ve sorumlu vatandaş olmayı içermektedir (Akhan, 2013). Bu kapsamda Ekonomi konu alanı ile incelenen bilinçli tüketici olma, ekonomik faaliyetleri bilme ve kaynakların tüketimi hakkında duyarlı olma ile öğrencilere ekonomi okuryazarlığı becerisi kazandırmaya çalışılmaktadır. Nitekim bu durum, çizgi filmlerin yalnızca bir film olarak değerlendirilmemesi gerektiği ve çizgi filmlerin üretim, tüketim, paylaşım ve dolaşım sistemlerine yönelik çözümler sunduğu şeklinde değerlendirilmektedir (Özer, 2015).

TRT Çocuk resmî YouTube kanalında yayımlanan çizgi filmler Teknoloji konu alanında yer alan konular kapsamında incelendiğinde, geçmişten bugüne teknoloji, ihtiyaç odaklı ürün tasarımı, teknolojinin güvenli kullanımı, bilim insanı ve çocuk konularının öğretiminde kullanılabilecek çizgi filmlere ulaşılmış, teknolojik ürünlerin sınıflandırılması konusunun öğretiminde kullanılabilecek bir çizgi filme ulaşılamamıştır. Geçmişten bugüne teknoloji, ihtiyaç odaklı ürün tasarımı ile bilim insanı ve çocuk konuları için 5, teknolojinin güvenli kullanımı konusu için 6 çizgi film sahnesi tespit edilmiştir. Konu alanları içinde en çok çizgi filme rastlanan konu alanının Teknoloji konu alanı olduğu görülmektedir. Bu durumun sebebi olarak içinde bulunulan çağda teknolojik gelişmelerin hız kazanması ve özellikle küçük yaş grupları üzerindeki etki ve dikkat çekiciliklerinin daha yüksek olması gösterilebilir. Değişen kültürel sistem içerisinde olumlu ve olumsuz yönüyle etkilenen çocukluk, geleneksel

anlamdaki içeriğini kaybetmiş ve dijital çocukluğa dönüşmüştür (Biricik, 2022). Dolayısıyla çocukların artık zamanlarının çoğunu teknoloji ile geçirdikleri ve çizgi film yapımcılarının bu durumu göz önünde bulundurarak çizgi filmlerde teknoloji ile ilgili konulara sıklıkla yer verdikleri belirtilebilir.

Küresel İlişkiler konu alanında yer alan, dünya ülkeleri, Türkiye'nin komşuları, Türk Dünyası ve kültürel unsurlar konularına dair 1 çizgi film sahnesi, kültürel farklılıklar konusu ile ilgili olarak ise 2 çizgi film sahnesi ilişkilendirilmiştir. Bu çerçevede, Küresel İlişkiler konu alanındaki tüm konulara ilişkin çizgi film sahneleri belirlenmiştir. Sosyal bilgiler dersi, yalnızca sorumlu vatandaşlar yetiştirmeyi değil, aynı zamanda evrensel değerleri benimseyip bunları davranışa dönüştüren bireyler yetiştirmeyi amaçlamakta ve dersin önemli bileşenlerinden biri olan küreselleşme ile küresel konular, çeşitli öğretim materyallerinde yer bulmaktadır (Aslan, 2016; Dere & Uçar, 2024). Böylelikle, Küresel İlişkiler konusunu içeren dördüncü sınıf sosyal bilgiler dersinin öğretiminde, belirlenen çizgi film sahnelerinin kullanılabileceği ifade edilebilir.

Öneriler

Araştırma sonuçlarından hareketle şu önerilerde bulunulabilir:

TRT Çocuk'un resmî YouTube kanalında yayınlanan çizgi filmler incelenerek 2018 ve 2024 sosyal bilgiler öğretim programlarının dördüncü sınıf konularıyla ilişkili sahneler belirlenmiştir. Bu bağlamda çizgi filmlerin sosyal bilgiler dersinin öğretiminde bir öğretim aracı olarak kullanılması önerilebilir.

Bu araştırmada TRT Çocuk resmî YouTube kanalında yayınlanan çizgi filmler incelemeye dahil edilmiştir. Diğer platformlarda yer alan çizgi filmler de sosyal bilgiler dersinin ya da diğer derslerin konuları çerçevesinde incelenebilir.

Araştırma kapsamında değerlendirilen TRT Çocuk resmî YouTube kanalında yayınlanan çizgi filmlerde sosyal bilgiler dersinin önemi, kendini tanıma, teknolojik ürünlerin sınıflandırılması konularının öğretiminde kullanılabilecek bir çizgi filme ulaşılamamıştır. Belirtilen konular ile ilgili çizgi filmlerin tasarlanması önerilebilir.