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24. Sayı Hakemleri

Reviewers of the 24th Issue

Editörden

Nesibe Aydın Eğitim Kurumları tarafından yayımlanan *Eğitim ve Gelecek Dergisi* yirmi dördüncü sayısında sizinle buluşuyor. Dergimizin yirmi dördüncü sayısında yer alan çalışmaları siz değerli okurlarımıza sunuyoruz.

Sema Aydın Ceran tarafından hazırlanan ***"Anne-Çocuk Etkileşimli Bilim Uygulamaları: Annelerin Bilimsel Okuryazarlığı ve Çocukların Bilimsel Yaratıcılıklarının Geliştirilmesi"*** başlıklı çalışmada anne-çocuk etkileşimli bilimsel deney ve etkinlikler içeren uygulamalı ve teorik bir eğitim programı hazırlanmıştır. Çalışma nicel araştırma metodolojisi çerçevesinde ön test-son test kontrol gruplu yarı deneysel desende tasarlanmıştır. Katılımcılar, bir devlet okulunun ilkokul 4. sınıf düzeyinde çocuğu olan 62 anne ve çocuklarıdır (62 çocuk). 2021-2022 eğitim öğretim döneminde altı ay süren çalışmanın verileri Bilimsel Okuryazarlık Testi ve Bilimsel Yaratıcılık Testi ile toplanmıştır. Çalışmadan elde edilen sonuçlar, anne-çocuk etkileşimine dayalı bilim uygulamaları eğitim programının annelerin bilimsel okuryazarlık düzeyini artırdığını göstermektedir.

Enver Durualp, Lügen Ceren Güneş ve Ender Durualp tarafından hazırlanan ***"Dijitalleşen Aile Bağlamında Ebeveynlerin Tutumlarının İncelenmesi"*** başlıklı çalışmada, dijital ebeveynlik tutumlarının çocukların teknolojik araç kullanımına ilişkin birtakım değişkenlere göre tetkik edilmesi amaçlanmıştır. araştırma, nicel boyutta betimsel tarama modelinde tasarlanmıştır. Araştırma, 6-15 yaş arasında çocuğa sahip 273 anne ve 115 baba olmak üzere toplam 388 ebeveynin katılımıyla yapılmıştır. Verilerin derlenmesinde "Bilgi Formu"nun yanı sıra İnan Kaya ve arkadaşlarınca geliştirilen "Dijital Ebeveynlik Tutum Ölçeği" nden yararlanılmıştır. Yapılan analizler neticesinde 11-15 yaşları arasında çocuğu olan, çocuğu 8 saat ve üzerinde teknolojik araç kullanan, teknolojik araç kullanımında çocuğunu denetlemeyen ve kısıtlamayan ebeveynlerin dijital medyanın etkili kullanımını onaylama tutumlarının; çocuğu en fazla televizyon izleyen, çocuğunun aşırı teknolojik araç kullandığını düşünen, çocuğunu her zaman denetleyen ve kısıtlayan ebeveynlerin dijital medya risklerinden koruma tutumlarının anlamlı olarak yüksek olduğu görülmüştür.

Yılmaz Kara ve Kaine Gülözer tarafından hazırlanan ***"Dijital Hikayelerle İngilizce Eğitiminin Yabancı Uyruklu Öğretmen Adaylarının Öz-yeterlik, Başarı ve Görüşlerine Etkisi"*** başlıklı çalışmada, karma desen anlayışı benimsenmiştir. Araştırma 2021-2022 eğitim öğretim yılında 30 yabancı uyruklu öğretmen adayı ile gerçekleştirilmiştir. Dijital hikayeler, eğitim fakülteleri için yabancı dil olarak İngilizce eğitimine uygun olarak geliştirilmiştir. Dijital hikâye eğitimi iki saatlik ders şeklinde on hafta boyunca çevrimiçi olarak uygulanmıştır. Araştırmanın verileri bir Öz-yeterlik Ölçeği, bir Başarı Testi ve Dijital Hikayelerle İngilizce Öğretimi Mülakat Soruları aracılığıyla toplanmıştır. Dijital hikayelerle İngilizce eğitiminin eğitim öncesine göre eğitim sonrasında katılımcıların öz-yeterliklerini ve başarılarını artırdığı tespit edilmiştir. Ayrıca katılımcıların dijital hikayelere yönelik farkındalıklarının arttığı; eğitimi eğlenceli, ekonomik ve öğretici olarak nitelendirdiği ve genel olarak olumlu düşündüklerini belirtmişlerdir.

Ali Osman Engin, Filiz Dündar ve Mustafa Çağrı Engin tarafından hazırlanan ***"Geleneksel Çocuk Oyunlarıyla Yapılan Öğretimin 5. Sınıf Öğrencilerinin Geometri Tutumlarına Etkisi"*** başlıklı çalışmada, geleneksel çocuk oyunlarının yaşatılmasında öğrencilerin geometriye yönelik tutumlarına ve genel eğitim-öğretim etkinliklerindeki önemine etkisinin olup olmadığı incelenmiştir. Bu çalışma nicel bir çalışma olup "eşleştirilmiş kontrol gruplu ön test-son test yarı deneysel tasarım" kullanılmıştır. Araştırmanın çalışma grubunu, Mardin'in Nusaybin ilçesindeki bir devlet ortaokulunda öğrenim gören 21'er kişilik iki farklı 5. sınıftaki toplam 42 öğrenci oluşturmuştur. Bu sınıflardan biri deney grubu, diğeri ise kontrol grubu olarak tanımlanmıştır. Araştırmanın deney grubunda alan ve uzunluk ölçümü geometri konusu 5 geleneksel çocuk oyunuyla işlenirken, kontrol grubunda aynı konu geleneksel/eski

yöntemlerle işlenmiştir. Deney grubuna yapılan uygulamanın öğrencilerin geometriye yönelik tutumları üzerinde anlamlı bir etkisinin olup olmadığını ortaya koymak için bağımlı ve bağımsız t testi kullanılmıştır. T testi sonucuna göre deney grubunda kullanılan geleneksel ve kültürel çocuk oyunlarının kullanımının, geleneksel/eski yöntemlerin kullanıldığı kontrol grubuna göre akademik başarıyı daha fazla geliştirdiği tespit edilmiştir.

Eğitim ve Gelecek Dergisi olarak gösterdiğiniz ilgi ve değerli katkılarınız için teşekkür ediyorum.

Gelecek sayıda buluşmak üzere…

Prof. Dr. Erten GÖKÇE

Eğitim ve Gelecek Dergisi Baş Editörü

Editorial

Journal of Education and Future published by Nesibe Aydın Education Institutions, meets you with the twenty fourth issue. We present the studies in the twenty forth issue of JEF to our valuable readers.

In the article titled ***"Mother-Child Interactive Science Practices: Improving Mothers' Scientific Literacy and Children's Scientific Creativity"***, which is prepared by **Sema Aydın Ceran**, a training program based on mother-child interaction and including scientific experiments and activities that can be done at home and at school was prepared. The study was designed in a quasi-experimental design within the framework of quantitative research methodology. The participants were 62 mothers and their children (62 children) who had primary school 4th-grade level children in a public primary school. The data of the study, which lasted 6 months during the 2021-2022 academic year, were collected with the Scientific Literacy Test and the Scientific Creativity Test. The results obtained from the study indicate that the science practices training program based on mother-child interaction increased the scientific literacy level of mothers.

The article titled ***"Exploring of Parental Attitudes in the Context of the Digitalized Family"***, which is prepared by **Enver Durualp, Lügen Ceren Güneş and Ender Durualp**, attempted to explore parents' digital parenting attitudes by certain variables related to children's use of technological tools. A total of 388 parents, 273 mothers and 115 fathers, with children aged 6-15 years were recruited for the study. The data were collected via Google forms using a demographic information form and the "Digital Parenting Attitude Scale" developed by İnan Kaya et al. The findings revealed that the parents with children aged 11-15 years, with children using technological devices for 8 hours or more, and not supervising or restricting their children in the use of technological tools had a significantly stronger approval attitude toward the effective use of digital media. It was also found that parents with children watching TV the most, thinking that their children excessively use technological tools, and always supervising and restricting their children had a significantly stronger protective attitude against the risks of digital media.

In the article titled ***"The Effect of English Education with Digital Stories on Self-Efficacy, Achievement, and Opinions of Foreign National Teacher Candidates"***, which is prepared by **Yılmaz Kara and Kaine Gülözer**, a mixed pattern approach has been adopted. The research was conducted with 30 foreign national teacher candidates in the 2021-2022 academic year. Digital stories have been developed for education faculties by the teaching of EFL. Digital story training was applied online for ten weeks as a two-hour lesson. The research data were collected through a Self-Efficacy Scale, an Achievement Test, and Interview Questions for Teaching English with Digital Stories. It was determined that English education with digital stories increased the self-efficacy and achievement of the participants after the training compared to the pre-training. In addition, participants' awareness of digital stories increased; they described education as fun, economical, and instructive and thought positively in general.

The article titled ***"The Effect of Traditional Child Games on Fifth-Grade Students' Attitudes Related to Geometry"***, which is prepared by **Ali Osman Engin, Filiz Dündar and Mustafa Çağrı Engin**, was quantitative, and *"a pretest-posttest quasi-experimental design with paired control group"* was used. The results were handed with the *"Attitude Scale Towards Geometry"* in the 2021 and 2022 education year. The study group of the research was composed of fourty two 5^{th}-grade students in total in two classes, including 21 students each. They had education at a state secondary school in the Nusaybin district of Mardin. One of these classes was defined as the experimental group, and the other one as the control group. In the experimental group of the research, the geometry subject of measuring

area and length was handled with 5 traditional children's games, and the same subject was taught by using traditional/old methods in the control group. Dependent and independent t-test was used to reveal if the application to the experimental group significantly affected students' attitudes toward geometry. According to the t-tests' result, it may be said that the use of traditional and cultural children's games used in the experimental group developed academic success more than the control group in which the traditional/old methods were used.

Thanks for your interest and valuable contributions for *Journal of Education and Future*.

Look forward to meeting in the next issue…

Prof. Dr. Erten GÖKÇE

Editor in Chief of

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Mother-Child Interactive Science Practices: Improving Mothers' Scientific Literacy and Children's Scientific Creativity

Article Type	Received Date	Accepted Date
Research	10.05.2023	20.09.2023

Sema Aydın Ceran*

Abstract

The aim of this study is to improve mothers' scientific literacy and children's scientific creativity through science practices based on mother-child interaction. For this purpose, a training program based on mother-child interaction and including scientific experiments and activities that can be done at home and at school was prepared. The study was designed in a quasi-experimental design within the framework of quantitative research methodology. The participants were 62 mothers and their children (62 children) who had primary school 4th-grade level children in a public primary school. The data of the study, which lasted 6 months during the 2021-2022 academic year, were collected with the Scientific Literacy Test and the Scientific Creativity Test. The results obtained from the study indicate that the science practices training program based on mother-child interaction increased the scientific literacy level of mothers. In addition, it was concluded that mother-child interactive activities were more effective in children's scientific creativity dimensions such as scientific imagination, creative experimental ability, and creative scientific product design skill. Also, it was determined that the children of mothers with high levels of scientific literacy showed higher success in all sub-dimensions of scientific creativity compared to their controls.

***Keywords*:** Mother training program, mother-child interaction, scientific literacy, scientific creativity in primary school.

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Anne-Çocuk Etkileşimli Bilim Uygulamaları: Annelerin Bilimsel Okuryazarlığı ve Çocukların Bilimsel Yaratıcılıklarının Geliştirilmesi

Makale Türü	Başvuru Tarihi	Kabul Tarihi
Araştırma	10.05.2023	20.09.2023

Sema Aydın Ceran*

Öz

Bu çalışmanın amacı, anne-çocuk etkileşimine dayalı bilim uygulamaları yoluyla annelerin bilimsel okuryazarlıklarını ve çocukların bilimsel yaratıcılıklarını geliştirmektir. Bu amaç doğrultusunda anne-çocuk etkileşimli bilimsel deney ve etkinlikler içeren uygulamalı ve teorik bir eğitim programı hazırlanmıştır. Çalışma nicel araştırma metodolojisi çerçevesinde ön test-son test kontrol gruplu yarı deneysel desende tasarlanmıştır. Katılımcılar, bir devlet okulunun ilkokul 4. sınıf düzeyinde çocuğu olan 62 anne ve çocuklarıdır (62 çocuk). 2021-2022 eğitim öğretim döneminde altı ay süren çalışmanın verileri Bilimsel Okuryazarlık Testi ve Bilimsel Yaratıcılık Testi ile toplanmıştır. Çalışmadan elde edilen sonuçlar, anne-çocuk etkileşimine dayalı bilim uygulamaları eğitim programının annelerin bilimsel okuryazarlık düzeyini artırdığını göstermektedir. Ayrıca anne-çocuk etkileşimli etkinliklerin çocukların bilimsel hayal gücü, yaratıcı deneysel yetenek ve yaratıcı bilimsel ürün tasarlama becerisi gibi bilimsel yaratıcılık boyutlarında daha etkili olduğu sonucuna ulaşılmıştır. Bununla birlikte, bilimsel okuryazarlık düzeyi yüksek olan annelerin çocuklarının bilimsel yaratıcılığın tüm alt boyutlarında kontrollerine nazaran daha yüksek başarı gösterdiği belirlenmiştir.

Anahtar Sözcükler: Anne eğitim programı, anne-çocuk etkileşimi, bilimsel okuryazarlık, ilkokulda bilimsel yaratıcılık.

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Introduction

In raising 21st-century citizens, the goals of education systems are quite different compared to those of the previous century. Creative thinking is at the top of the list of skills expected of individuals in this new century (Organisation for Economic Co-operation and Development [OECD], 2019; The World Economic Forum [WEF], 2020). Given the pace of change and the number and diversity of expectations placed on individuals, the importance of creativity has never been greater (Puccio et al., 2011). Moreover, the reflections of this importance attributed to creativity in education have rapidly emerged. So much so that OECD (2019) stated that Creative Thinking Skills will also be investigated in the 2022 session of the Programme for International Student Assessment (PISA) study, which is an international education indicator of science, mathematics, and reading comprehension. Also, the World Economic Forum (WEF) includes creative thinking as one of the top 15 skills for 2025 in its Future of Jobs research report published in 2020, which points to the importance of teaching creative thinking. On the other hand, research indicates that creativity is contextual (Runco, 2017) and that creativity has domain-specific components (Alexander, 1992; Amabile & Gryskiewicz, 1989). In this context, the term "scientific creativity" (Meyer & Lederman, 2013, p.400) is used in the field of science education. Because solving problems, generating hypotheses, experimental design and technical innovation all require a special form of creativity that is unique to science (Lin et al., 2003). Hu and Adey (2002) use the following argument to justify scientific creativity;

> *"Almost by definition, scientific research requires creativity in the sense of going beyond existing knowledge and techniques, of creating new understandings. But even at a more mundane level, solving problems in science requires a student to explore his or her repertoire, to imagine a variety of routes to a solution, and frequently to create novel combinations of knowledge or novel techniques for a solution." (p. 389).*

According to Lee and Park (2021), a student's scientific creativity is influenced by cognitive, affective, attitudinal, and environmental factors (p.67). Perhaps the most important of these is the child's first environment, the family, and especially the mother. In this study, we focused on mothers' scientific literacy as a factor in developing children's scientific creativity. The most important influence in determining this focus is the transfer of school activities to the home with the COVID-19 pandemic because the influence of mothers on their children has increased, especially during the distance education periods. This has led us to rethink the impact of mothers' attitudes in encouraging children's creativity. The majority of the research of the past years has referred to the quality of the child's environment in developing creativity (Csikszentmihalyi, 1996; Szarka, 2012; Sternberg & Ohara, 2000). However, results from the 2019 TIMSS survey show that students with more education and parents who provide resources and activities at home have greater average achievement in science in both 4th and 8th grade (Mullis et al., 2020). Studies conducted with adolescents state that the attitude of the family is an important factor in the acquisition of skills and habits that enable individuals to develop problem-solving skills (Arslan & Kabasakal, 2013). Datta and Parloff (1967) conducted research regarding the relationship between children and their parents in terms of scientific creativity and discovered that both highly creative young scientists and their comparably intelligent but less talented peers described their parents as tending to promote intellectual autonomy. However, Runco et al. (2017) found that despite science and technology education at school, students in the Turkish sample exhibited more creative skills outside of school. This reveals the importance of providing an atmosphere that is more supportive of children's scientific creativity in informal settings. This is because the experiences and knowledge that children acquire in the climate in which they live provide them with raw materials for further creative processes (Kwaśniewska, 2019). Saptano and Hidayah (2020) reviewed the literature on scientific creativity between 2001 and 2019 and found that the most studied topics related to scientific creativity were test development, teacher perceptions, scientific creativity level, the relationship between variables, and instructional strategies. It is noteworthy that Saptano and Hidayah's (2020) meta-analysis did not mention the "home-parent" dimension in scientific creativity studies. Examining the distinction between creativity within the classroom and outside the classroom is a chance to employ educational experiences to realize creative potential. Research shows that teachers and parents consider divergent thinking, independence, curiosity, experimenting to solve problems, questioning, and sharing ideas as crucial for scientific creativity (Liu & Lin, 2014; Lee & Park, 2021; Park & Jee, 2015). Park

and Jee (2015) stated that parents' perceptions and attitudes towards scientific creativity can also affect scientific creativity. Therefore, improving the scientific literacy of mothers, especially those from lower socio-cultural levels, and enriching the time the child spends with their mother with scientific activities can increase the potential for scientific creativity in children. In this respect, the idea of developing and supporting mothers' scientific literacy was a driving force in conducting this study, as it could improve children's scientific creativity.

Based on all these explanations, a child-mother interactive training program was designed for mothers with low socio-cultural/economic status to improve their science literacy. Thus, based on the findings that field-specific knowledge and skills are an important component of creativity (Hu & Adey, 2002) and that child-family interaction is effective in the development of creativity (Harrington et al., 1987; Miller et al., 2012; Runco & Albert, 2005), it was aimed at improving the scientific creativity of primary school children. The value attributed to science in the child's home and coming from a scientifically literate environment may be a factor in the improvement of scientific creativity, which has been the subject of curiosity for this research. In this context, the research questions are as follows.

1) Is there a statistical difference between the scientific literacy of the experimental and control groups of mothers?
2) Is there a statistical difference between the scientific creativity of the experimental and control groups of children?
3) What are the scientific creativity levels of the children in the experimental group according to the sub-dimensions before and after the implementation?
4) Is there a statistical difference between children's scientific creativity test scores and mothers' scientific literacy test scores after the implementation?

Method

Research Method

This is a quasi-experimental study with a pre-test post-test control group. In the pretest posttest control group design, two groups are formed by random assignment as experimental and control groups, and measurements are made in these groups before and after the experiment (Karasar, 2012). Creswel (2003) draws attention to the fact that in quasi-experimental designs with pre-test and post-test applied experimental and control groups, participants should be randomly assigned. In this direction, thirty-two of 76 mothers who applied to the mother-child science practices training program were randomly selected, which is the experimental-mother group. The experimental-child group was formed with the children of the randomly selected mothers. Among the mothers who were not selected for the training program, 32 were randomly assigned to the control-mother group and their children to the control-child group. After this distribution, two mothers in the control group withdrew due to health problems. The science practices education program was implemented with the mothers and children in the experimental group for six months in the 2021-2022 academic year.

Study Group

Primary school grade 4th students and their mothers from a public school at the research. The main criterion for selecting a public school was the selection of a school in a socio-economically and socio-culturally disadvantaged region. In this context, 62 mothers and their children (62) participated in the study. The number of mothers who graduated from middle and high schools was dominant. None of the mothers had any profession and were working. Most of the mothers and children participating in the study were receiving financial government support. Information about the experimental and control groups is presented in Table 1.

Table 1

Information on the Mothers and Children in the Study Group

Group	Number of Students		Group	Mothers' Education Status			Total
	Girl	Boy		Primary School	Middle School	High School	
Experimental-C	15	17	Experimental-M	5	16	11	32
Control-C	14	16	Control-M	6	14	10	30

* *Note:* In the table, C stands for Children, and M stands for Mothers.

Data Collection Tools

Scientific literacy test

In the study, the Scale for Determining the Scientific Literacy of Turkish Society (SLT) developed by Karataş et al. (2019) as part of a TUBITAK project was used to determine the scientific literacy of pre-service primary school teachers. The 36-item scale aims to develop a tool suitable for the definition of 21st-century scientific literacy in the light of the opinions of experts using the Delphi technique and to determine the scientific literacy levels of Turkish citizens aged 18-65 (Karataş et al., 2019). Participants receive one point for the correct answer and zero for all other possibilities. Cronbach's Alpha value of the original test was 0.80. In this study, Cronbach's Alpha value of the trial was 0.85 based on the pre-test conducted on 62 mothers.

Scientific creativity test

The version of the Scientific Creativity Test (SCT) developed by Hu and Adey (2002) and adapted into Turkish by Deniş-Çeliker and Balım (2012) was used to determine children's scientific creativity. Pilot implementations of the seven-item SCT were conducted with 389 middle school students, and Cronbach's Alpha coefficient of the scale was 0.86 (Deniş-Çeliker & Balım, 2012). The validity and reliability study of the Scientific Creativity Scale (Hu & Adey, 2002) for the fourth grade of primary school was carried out by Asal (2020), and the Cronbach alpha coefficient was found to be 0.74. Within the framework of this study, the Cronbach's alpha coefficient of the SCT was found to be 0.78. In addition, it is seen that the SCT was applied to primary school 4th-grade students in both national and international studies (Asal, 2020; Baysal et al., 2013; Gülay & Özsevgeç, 2017).The SCT consists of seven open-ended questions, and each item in the scale covers more than one sub-dimension: Item 1 - the use of objects for a scientific purpose; Item 2 - the degree of sensitivity to scientific problems; Item 3 - students' ability to design technical products; Item 4 - students' scientific imagination; Item 5 - students' creative scientific solving ability; Item 6 - creative experimental ability; and Item 7 - students' ability to design creative scientific products. Also, when the evaluation principles of the scale items are examined (Hu & Adey, 2002), there is no maximum scoring limit in the scale. Because the answers that the student can give to the relevant question are proportional to the skills specified in the sub-dimensions of the scale, and there is no limit.

Data Analysis

The Scientific Literacy Test (SLT) has multiple-choice items, and they are scored according to the answer key prepared by Karataş et al. (2019). In the analysis of the SCT, student statements were coded independently by the researcher and a teacher who is an expert in science education, their frequencies were specified, and they were scored in accordance with the scale (Hu & Adey, 2002). In the analysis of the data obtained from the study, mean, standard deviation, and t-test analyses were used to determine whether there was a difference in the SLT and SCT pre- and post-test scores according to the group (experimental/control) independent variable, and to compare the SCT results of the children in the experimental and control groups according to mothers' scientific literacy score after the implementation. In order to determine whether the method was effective in the difference between the groups, the Cohen-d effect size value was calculated in addition to statistical significance. For the interpretation of Cohen's

d, the effect size d value is stated as small for 0.2, medium for 0.5, large for 0.8, and very large for above 1 (Cohen, 1992). A p-value>0.05 was considered statistical. SPSS 25.00 was used for data analysis.

Implementation Process

Before starting the training, the training modules were shared by the school management through posters and school WhatsApp groups, and the modules were introduced. Consent for voluntary participation was obtained from all mothers and their children participating in the study. The Science Practices Education Program was implemented with the mothers of the experimental group for six months. The Science Practices Education Program consists of 2 stages. The first phase included theoretical and practical training with the mothers. The implementation process of this phase lasted one month. In this context, 3-hour trainings were held twice a week. The second phase included training activities that included experiments based on the interactions between mothers and children. The training was conducted outside of school hours in a classroom. In addition to the trainings at the school, a WhatsApp group was created for mother-child interactive experiments. Mothers and children videotaped and shared the experiments they conducted together. They also shared the questions they wanted to ask in this group. In designing the mother-child interactive science practices, the Ministry of National Education (MoNE) Science Curriculum (2018) was accepted as the framework, and care was taken to design the experiments according to the level of primary school students. Each experiment was designed within a daily life context. In the implementations based on mother-child interaction, the researcher guided mothers and children in the classroom. The WhatsApp group was also used to guide the experiments conducted at home. Worksheets were prepared by the researcher to conduct the experiments. The design of the worksheets was based on the scientific process skills steps. There were 11 theoretical courses in the first phase and 29 activities/experiments in the second phase of the 144-hour mother-child interactive Science Practices Training Program (Appendix).

Results

In this section, statistical analyses revealing the equivalence of the experimental and control groups participating in the study before the implementation are included. In addition, the findings and interpretations obtained from the analysis of the tests applied to determine the effects of science practices based on mother-child interaction on mothers' scientific literacy and children's scientific creativity are included.

Before the analyses, test scores were subjected to normality analysis. In this framework, the findings regarding the normality analysis of the data are presented in Table 2.

Table 2

Findings Related to Normality Analysis of Scores

	Shapiro-Wilks		
	Statistics	**df**	**Sig.**
Experiment-M SLT Pre-test Scores	.912	29	.221
Experiment-M SLT Post-test Scores	.927	29	.350
Control-M SLT Pre-test Scores	.923	27	.654
Control-M SLT Post-test Scores	.956	27	.478
Experiment-C SCT Pre-test Scores	.973	29	.139
Experiment-C SCT Post-test Scores	.962	29	.296
Control-C SCT Pre-test Scores	.945	27	.782
Control-C SCT Post-test Scores	.932	27	.403

Shapiro-Wilks test was used in the normality analysis since the group size was less than 50 (Büyüköztürk, 2014). Shapiro-Wilks coefficients were greater than 0.05 significance value (Table 2). According to the results, the data conform to normal distribution.

Findings Related to the Equivalence of Experimental and Control Groups Before the Implementation

First of all, the pre-test scores of all mothers in both groups on the SLT were analyzed. Whether there was a statistical difference between the pre-test mean scores of the experimental and control groups was analyzed with the Unpaired Samples t-Test due to the normal distribution of the scores. The findings related to the analysis are presented in Table 3.

Table 3

T-Test Results of Mothers' SLT Pre-Tests

Test	**Group**	***N***	***X̄***	***S***	***SD***	***t***	***p***
SLT	Experimental-M	32	9.74	2.14	60	.292	.223
	Control-M	30	9.38	1.98			

*$p>0.05$

There is no statistical difference between the SLT pre-test scores of the experimental and control groups (Table 3) [$t(60)=-2.29$, $p>.05$]. Accordingly, the experimental and control groups are equivalent in terms of SLT pre-test scores.

On the other hand, the pre-test scores of the children in the experimental and control groups on the SCT were analyzed before the implementation. In this direction, whether there was a statistical difference between the pre-test mean scores of the experimental and control groups was analyzed with the Unpaired Samples t-Test due to the normal distribution of the scores. The findings related to the analysis are presented in Table 4.

Table 4

T-Test Results of Children's SCT Pre-Tests

Test	**Group**	***N***	***X̄***	***S***	***SD***	***t***	***p***
SCT	Experimental-C	32	47.07	14.39	60	.251	.864
	Control-C	30	46.73	15.88			

*$p>0.05$

There was no statistical difference between the pre-test scores of the experimental and control groups in terms of SCT [$t(60)=,332$, $p>.05$]. Accordingly, the experimental and control groups were similar in terms of SCT pre-test scores.

After determining that the experimental and control groups including mothers and children were equivalent groups in terms of pretests, the analyses related to the sub-problems of the study were started.

Findings of the First Sub-Problem

In the first sub-problem of the study, it was aimed to determine the effect of the practices on mothers' scientific literacy level. Whether there was a statistical difference between the mean SLT posttest scores of the experimental and control mother groups were examined. Findings are presented in Table 5.

Table 5

T-Test Results of SLT Post-Tests of Experimental-M and Control-M Groups

Test	**Group**	***N***	***X̄***	***S***	***SD***	***t***	***p***
SLT	Experimental-M	32	22.12	6.19	60	4.292	.001
	Control-M	30	10.27	3.12			

*$p>0.05$

There was a statistical difference between the mean SCT posttest scores of the experimental and control groups [$t(60)=5.409$, $p>.05$] (Table 4). The difference is in the experimental group's with mother favor.

Findings of the Second Sub-Problem

The second sub-problem of the study aimed to determine the effects of the practices on children's scientific creativity. Whether there was a statistical difference between the mean SCT posttest scores of the experimental and control groups was examined. The findings related to the unrelated samples t-test are presented in Table 6.

Table 6

T-Test Results for the SCT Post-Tests of the Experimental-C and Control-C Groups

Test	Group	*N*	$\bar{X}$	*S*	*SD*	*t*	*p*
SCT	Experimental-C	32	120.68	26.74	60	5.462	.001
	Control-C	30	49.19	15.99			

*$p>0.05$

There is a statistical difference between the SCT posttest mean scores of the experimental and control groups [$t(60)=5,409$, $p>.05$] (Table 6). The difference is in the experimental group's with children favor.

Findings of the Third Sub-Problem

In the third sub-problem of the study, the SCT scores of the children in the experimental group according to its sub-dimensions before and after the practices were examined. In this context, the descriptive statistics of the items in the pre-posttest of the scientific creativity scale in terms of the skills it aims to measure are presented in Table 7.

Table 7

Descriptive Statistics of the Scores of the Children in the Experimental Group on the Pre- and Post-Test Sub-scales of the SCT

Test	Sub-dimensions	*N*	$\bar{X}$	*SD*	Min	Max	$\bar{X}_2$- $\bar{X}_1$
SCT Pre-test	Using Objects for a Scientific Purpose	32	6.34	3.22	1	14	
	Sensitivity to the Scientific Problem	32	8.08	3.47	1	21	
	Ability to Design Technical Products	32	7.67	4.53	2	16	
	Scientific Imagination	32	6.44	4.21	1	18	
	Creative Scientific Problem-Solving Ability	32	7.52	3.12	2	20	
	Creative Experimental Ability	32	5.23	3.67	2	17	
	Ability to Design Creative Scientific Products	32	5.79	4.19	1	16	
	Total	32	47.07	14.39	20	81	
SCT Post-test	Using Objects for a Scientific Purpose	32	12.88	9.27	5	34	6.54
	Sensitivity to the Scientific Problem	32	14.73	12.65	6	38	6.65
	Ability to Design Technical Products	32	16.20	10.97	6	31	8.33
	Scientific Imagination	32	18.89	11.21	8	34	12.45
	Creative Scientific Problem-Solving Ability	32	16.66	10.69	7	25	9.14
	Creative Experimental Ability	32	19.57	11.91	6	46	14.34
	Ability to Design Creative Scientific Products	32	21.75	9.87	7	35	15.96
	Total	32	120.6	26.74	58	186	73.61

** $\bar{X}_1$ and $\bar{X}_2$ represent the mean of the items in the pre-test and the mean of the items in the post-test, respectively.*

The minimum and maximum SCT scores were 20 and 81. The average SCT pre-test score was 47.07 (Table 7). The minimum and maximum SCT posttest scores were 58 and 186. When the mean scores of the children in the experimental group from the pre-test of the SCT were analyzed according to the sub-dimensions of the scale, all mean scores had close values. When the post-tests are analyzed, it is seen that the sub-dimensions with the highest increase in the mean scores of the students are

Scientific Imagination ($\bar{X}2$- $\bar{X}1$=12.45), Creative Experimental Ability ($\bar{X}2$- $\bar{X}1$ =14.34), and Creative Scientific Product Design Skill ($\bar{X}2$- $\bar{X}1$ =15.96). In addition, it is seen that the increase in the SCT post-test mean score compared to the pre-test mean score was 73.61.

Findings of the Fourth Sub-Problem

In the fourth sub-problem of the study, whether there was a statistical difference between the SCT sub-dimension scores of the children in the experimental and control groups and their mothers' scientific literacy was examined. The finding related to the first sub-problem was taken as a reference in the classification of mothers' scientific literacy. The scientific literacy levels of the mothers of the experimental group were high, while the scientific literacy levels of the mothers of the control group were low. It was examined how children's scientific creativity levels changed according to whether their mothers were in the experimental or control group. The t-test results of children's scientific creativity according to their mothers' scientific literacy levels are presented in Table 8.

Table 8

T-Test Analyses of Children's Scientific Creativity Scale Subscale Scores According to Mothers' Scientific Literacy Level

Test	Sub-dimensions	Mothers' Scientific Literacy Level	*N*	$\bar{X}$	*SD*	*t*	*p*	Cohen's d
Scientific Creativity	Using Objects for a Scientific Purpose	Experimental-M Control-M	32 30	12.88 6.01	9.27	4.788	.000	.81
	Sensitivity to the Scientific Problem	Experimental-M Control-M	32 30	14.73 7.08	12.65	5.109	.000	1.11
	Ability to Design Technical Products	Experimental-M Control-M	32 30	16.20 6.88	10.97	4.390	.000	.72
	Scientific Imagination	Experimental-M Control-M	32 30	18.89 7.66	11.21	4.652	.000	.98
	Creative Scientific Problem-Solving Ability	Experimental-M Control-M	32 30	16.66 7.52	10.69	5.344	.000	.92
	Creative Experimental Ability	Experimental-M Control-M	32 30	19.57 8.25	11.91	5.087	.000	1.01
	Ability to Design Creative Scientific Products	Experimental-M Control-M	32 30	21.75 5.79	9.87	4.304	.000	.94

*p>0.05

There was a statistical difference between all sub-dimensions of SCT and mothers' scientific literacy ($p<0.05$) (Table 8). The mean SCT posttest scores of the children were in favor of the children of the mothers in the experimental group in all sub-dimensions. Cohen's d values of the effect size showed that mothers' scientific literacy level had a high-level effect on the child's Use of Objects for a Scientific Purpose (.81), Sensitivity to Scientific Problems (1.11), Scientific Imagination (.98), Creative Scientific Problem Solving Ability (.92), Creative Experimental Ability (1.01), and Creative Scientific Product Designing Ability (.94), while it had a medium level effect (.72) on Technical Product Designing Ability.

Discussion, Conclusion and Recommendations

In this study, a mother-child education program was designed to improve the scientific literacy level of mothers and thus to develop children's scientific creativity. In this context, the results obtained from the study are discussed in terms of the scientific literacy levels of mothers, children's scientific creativity levels, and the results of the change process of children's scientific creativity levels according to mothers' scientific literacy.

The first result of the study is that the program increased mothers' scientific literacy levels. There are various family education programs in the literature (Barlow et al., 2012; Tavil & Karasu, 2013; Tönbül, 2019; Manav et al., 2021). However, there exist no structured training programs specifically aimed at improving the scientific literacy of mothers. In this respect, the implementation process of the study and the result of the development of mothers' scientific literacy at the end of this process are unique in the field. According to OECD data, the rate of women aged 25-34 with secondary education is 37% in Türkiye, whereas the global OECD average is 12% indicating the education level of today's young adult mothers in Turkey (tedmem, 2022), Considering that the education level of the mothers who participated in the study is at the secondary education level and below, it is important to support the scientific literacy of mothers to create a society promoting to science. National Science Teachers Association (NSTA, 2014) states that adults play a central role in children's learning of science and that parents' scientific literacy levels and attitudes toward science education have a decisive influence on children's early science experiences. As Brossard and Shanahan (2006) state, a scientifically literate population is needed for the proper realization of democratic processes in an increasingly technologically demanding society. Therefore, providing mothers with a scientific perspective is an important investment for children. Moreover, today's denial of scientific knowledge, such as the coronavirus pandemic, and the unreliable sources of information about the techno-scientific risks we are exposed to every day, are a warning to revitalize the global commitment to scientific literacy (Valladares, 2021).

Another result obtained in the study was that the education program improved children's scientific creativity. In this study, an enriched science education program was presented to the child at home. Thus, in the process, the child embarked on a qualified science learning journey with their mother. In the literature, in addition to studies examining the relationship between scientific creativity according to variables such as gender, grade level, science achievement, parental education level, etc. (Baysal et al., 2013; Kılıç & Tezel, 2012; Liang, 2002; Matud et al., 2007), there are also studies examining the positive effects of various teaching practices on children's scientific creativity levels (Hu et al., 2013; Lin et al., 2003). Runco et al. (2017) found that students in a Turkish sample demonstrated more creative skills outside of school. This research followed a process that nurtured the child's informal environment in developing scientific creativity. Therefore, a novel result is that mother-child interactive activities have a positive effect on developing scientific creativity. This effect was higher in the Scientific Imagination, Creative Experimental Ability, and Creative Scientific Product Design Skill dimensions of scientific creativity. In this result, it is thought that the content of science practices education based on mother-child interaction is effective. As a matter of fact, when the educational practices of this study are examined, design-oriented experiments that prioritize the child's sense of curiosity, where scientific process skills are used effectively, and design-oriented experiments are included.

One of the important results of the study was that there was a statistical difference between mothers' scientific literacy and all sub-dimensions of scientific creativity. Children of mothers with high levels of scientific literacy showed higher success in all sub-dimensions compared to controls. Furthermore, the impact value of maternal science literacy on this achievement is also quite high. Tennent and Berthelsen (1997) highlighted that creative people grow up in families encouraging innovation and diversity. Quality science education that young children receive at an early age can accompany their already innate sense of curiosity and desire to explore, creating opportunities for them to understand the world and test their own predictions and theories about the world, and can create an interest in science at an early age and a positive attitude later in life (Broström, 2015). Studies advocating the positive effects of family climate in developing children's creativity emphasize spending quality time with the child, encouraging the child to develop new interests, accepting the child's incompatibilities, providing an environment for the child's independent experimentation, and supporting

the child's imagination (Bloom & Sosniak, 1981; Gardner, 1993; Gute et al., 2008). In this study, it was seen that scientific creativity, which is a domain-specific component of creativity, can be improved through interactive scientific activities that support mothers' scientific literacy. From this point of view, it can be suggested that activities, projects, and programs that bring science into the home, introduce parents to the applicable and fun aspects of science, and support parent-child interaction should be expanded in raising creative children.

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Appendix

Science Practices Training Program

Phase	Training/Experiments Implemented	Duration
First Phase/Theoretical	• Scientific literacy: Science for the People • How Can I Improve My Scientific literacy? • Awareness Raising Resources in Science and Scientific literacy: Web, Books, Magazines, Applications • Children, Science, and Scientific Attitude • Parents' Roles in Giving Children a Scientific Perspective • Science in Primary School - How to Guide Little Scientists? • The Role of the Family in Raising Inquisitive Children • How Can I Make My Child Aware of Nature and the Environment? • What is STEM? How Can I Support My Child's STEM Skills? • Chemicals in Daily Life - What Parents Should Pay Attention to! • Label Reading for a Healthy Generation (Chemicals, Food and Drinks)	24 hours
Second Phase/Application	• Journey to the Micro World: Why Should We Wash Our Hands? • Where Are These Germs? Cool Mushroom Experiment • Global Epidemics: Vaccine, Immunization, Immunity • Which one travels farther? Friction Force • Forces we cannot see with our eyes: Water Resistance • Weather Observation: Wind Rose - Rain Gauge - Air Pressure Measurement • The Ball in the Balloon? An acid and base reaction • Family and Family Ties: Can We See DNA? • Dancing Peppercorns: Sound Vibrations - Measuring Sound Level • Treble and Pes Sounds: Let's Make a Guitar • In the Name of the Power of Sound: How Did the Glasses Tip Over? • Can We See Sound? • Plant Life Cycle - Let's Collect Data! • Let's Observe the Effect of Light on Photosynthesis • Let's Observe Air Pressure with the Egg in a Bottle Experiment • A Diver Under Pressure! • Paper that Doesn't Get Wet • The Balloon that Moves the Ship: Static Electricity • Let's Make a Model of the Solar System • Lunar and Solar Eclipse • How Does the Kidney Work? Kidney Dissection • How Does Our Eye See? Eye Dissection • The Structure of Bone: How Do We Move? • Let's Observe Global Warming with Experiments • Let's Observe Air Pollution • Let's Make Environmentally Friendly Detergent • Earthquake Experiment at Different Intensities • Light Pollution: Monitor Your City • Sound Pollution: Let's Listen to Our Environment	120 hours

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Exploring of Parental Attitudes in the Context of the Digitalized Family

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Abstract

The present descriptive survey research attempted to explore parents' digital parenting attitudes by certain variables related to children's use of technological tools. A total of 388 parents, 273 mothers and 115 fathers, with children aged 6-15 years were recruited for the study. The data were collected via Google forms using a demographic information form and the "Digital Parenting Attitude Scale" developed by İnan Kaya et al. and analyzed utilizing Mann-Whitney U and Kruskal-Wallis H tests. The findings revealed that the parents with children aged 11-15 years, with children using technological devices for 8 hours or more, and not supervising or restricting their children in the use of technological tools had a significantly stronger approval attitude toward the effective use of digital media. It was also found that parents with children watching TV the most, thinking that their children excessively use technological tools, and always supervising and restricting their children had a significantly stronger protective attitude against the risks of digital media. Overall, based on the findings, the paper concluded with some recommendations for parents, experts, and researchers.

Keywords: Digital parenting, digital parenting attitudes, effective use, risk protection, technological tools.

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Dijitalleşen Aile Bağlamında Ebeveynlerin Tutumlarının İncelenmesi

Makale Türü	Başvuru Tarihi	Kabul Tarihi
Araştırma	31.01.2023	27.09.2023

Enver Durualp[*] **Lügen Ceren Güneş**[**] **Ender Durualp**[***]

Öz

Dijital ebeveynlik tutumlarının çocukların teknolojik araç kullanımına ilişkin birtakım değişkenlere göre tetkik edilmesini amaçlayan araştırma, nicel boyutta betimsel tarama modelinde tasarlanmıştır. Araştırma, 6-15 yaş arasında çocuğa sahip 273 anne ve 115 baba olmak üzere toplam 388 ebeveynin katılımıyla yapılmıştır. Verilerin derlenmesinde "Bilgi Formu"nun yanı sıra İnan Kaya ve arkadaşlarınca geliştirilen "Dijital Ebeveynlik Tutum Ölçeği" nden yararlanılmıştır. Google form aracılığı ile derlenen verilerin analizinde Kolmogorov-Smirnov, Mann Whitney U ve Kruskal Wallis H testleri kullanılmıştır. Yapılan analizler neticesinde 11-15 yaşları arasında çocuğu olan, çocuğu 8 saat ve üzerinde teknolojik araç kullanan, teknolojik araç kullanımında çocuğunu denetlemeyen ve kısıtlamayan ebeveynlerin dijital medyanın etkili kullanımını onaylama tutumlarının; çocuğu en fazla televizyon izleyen, çocuğunun aşırı teknolojik araç kullandığını düşünen, çocuğunu her zaman denetleyen ve kısıtlayan ebeveynlerin dijital medya risklerinden koruma tutumlarının anlamlı olarak yüksek olduğu görülmüştür. Araştırmadan elde edilen sonuçlar doğrultusunda ebeveynlere ve araştırmacılara öneriler sunulmuştur.

Anahtar Sözcükler: Dijital ebeveynlik, dijital ebeveynlik tutumları, etkili kullanım, risklerden koruma, teknolojik araç.

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Introduction

Unprecedented developments in information and communication technologies (ICT) bring substantial impacts on daily life, becoming a focus for political, economic, and global relations. Thus, they disrupt the perceptions of time and space and manifest a decentralized network of relations. Such transformation in ICT then enables individuals to communicate easily with anyone from anywhere. Not surprisingly, this mediated form of communication, thanks to novel ICT, has led to radical changes in the socialization forms of individuals (Aşkın, 2020; Karagülle & Çaycı, 2014). However, these radical changes are even becoming more and more commonplace since individuals now have a chance to maintain their relations and social activities initiated in digital media in the real world or vice versa. Digital media shine out as a complementary space for the socialization of people who have internalized socio-cultural codes of their social structures. These technological and social changes inevitably bring about the transformation of family and parenthood and pave the way for the emergence of a new parenting model in the digitalized family (Yurdigül & Deveci, 2021).

The digital world has been tailoring families around digital tools and transforming social relations between family members. The traditional perception often relies on the idea that family members need to share the same place/house; yet such a perception has evolved into a reality that highlights emotional belonging between family members through digital communication technologies. This understanding of family now allows family members to rally together in digital settings, regardless of their physical locations, to maintain their family relationships. It should be noted that although digitalization has diminished the significance of physical space for contemporary families and offers a technological infrastructure for their relations, the feeling of belonging and emotional commitment still need to be considered in such relations (Aşkın, 2020). On the other hand, the prominent actors of such an emerging family form may be "digital" parents. A parent in the digitalized family can be defined as one who bears sufficient technology literacy, follows cutting-edge developments, can be a role model in the use of technological devices, knows how to protect their child(ren) against online threats and risks, and organizes and monitors their interactions with digital media (Huang et al., 2018). Therefore, digital parenting refers to parents' conscious effort to understand, support, and regulate their children's use of digital media (Benedetto & Ingrassia, 2020). In this regard, digital parents are able to discuss the pros and cons of digital media with their children and prepare a guideline on the use of digital media for them. In addition, these parents can restrict their engagement in technology (e.g., setting restricted places where digital devices are prohibited at home) and can protect them from the harmful effects of digital media (e.g., frequent visits to outdoor spaces and playgrounds with their children; Kavitha & Sikandar, 2021).

Indeed, information and communication services offered by mobile media and cloud technologies are becoming more and more common in many urban communities. These services infiltrate all layers of society, shape families' communication practices and media consumption habits, and alter the form of the parent-child relationship, as well as parental guidance for children's use of digital media (Lim, 2018). The digital family (Global Kids Online, 2016), emerging drastically with the increasing internet access in Western urban communities and consisting of digitally connected members, is deeply connected through multimedia and communication platforms. It is now considered ordinary for such families to own and acquire televisions and desktop computers, as well as customized game consoles, music players, tablet computers, and smartphones. Media use in these media-rich households may become children's primary activity of daily living (Lim, 2018). Since a multimedia task allows two or more digital devices to be utilized simultaneously (Imren, 2019), children can listen to music while conversing with their friends via social media, or they can watch a YouTube video on their smartphones while playing games and send a Snapchat message to their friends on their laptops at the same time.

The literature on digitalized families and parents previously suggested noteworthy findings. Özkan and Hira (2017) reported that parents have difficulty controlling children engaged in digital media more than themselves. It was also documented that parents often use television or computer to entertain their children (He et al., 2010) and attribute a babysitter role to digital media (Nikken, 2019; Özkan & Hira, 2017). Since almost all parents are now social media users (Ulusoy & Bostancı, 2014), they allow their children to use digital media for their interests to manage their children's behavior and avoid arguments (Geurts et al., 2021). Most parents with children aged 0-5 years provide digital devices to their children

from their very first year (Gjelaj et al., 2020); even four-month-olds use digital devices (Reid Chassiakos et al., 2016). Therefore, family communication has recently become digital (Utma, 2020). It was also uttered in the literature that four-year-olds spend an average of 20 minutes a day using digital technology, and most of them prefer to be entertained by mobile applications on tablet computers (Neumann, 2015). It is now well-known that computers and computer games enter the lives of children from the age of four, and almost all play at least one digital game (Üstündağ, 2019). Screen-based media is now a ubiquitous feature of early childhood, even for children under five (Duch et al., 2013; Lenhart et al., 2015). Children start to use social media from the age of 7-9 (Güney, 2020; Ulusoy & Bostancı, 2014), and the age at which children start using digital technology affects their future technological competence (Juhanak et al., 2019). Undoubtedly, the previous findings promote the idea that the digitalized family with all its members is now surrounded by digital technologies. To this end, it seems important to explore the variables that may bring differences in the attitudes of digital parents.

Children within digitalized families are highly exposed to digital devices at an early age. Despite the learning-facilitating nature of digital media, it bears potential threats and risks that may adversely affect children's safety and future (Reid Chassiakos et al., 2016). In this sense, it seems critical to raise awareness of potential threats and risks of digital media among digital parents who are capable of instantly searching, reading, watching, or sharing any information needed. Contemporarily, it is highly needed to identify parental attitudes toward digital parenting approaches, list children's needs for digital technology to generate relevant technology-oriented activities, and make robust evaluations to evoke awareness of technology and digital services among people. Accordingly, the present study aimed to explore the digital parenting attitudes of parents with children aged 6-15 years by certain variables (children's age, children's gender, children's favorite technological tool, time spent with technological tools, frequency of technology use, use of safety software, parental supervision, restriction to children) related to children's use of technological tools. The findings are thought to be instrumental for parents, educators, experts, and future research.

Method

This section includes research design, sample, data collection tools, data collection method and data analysis.

Research Design

Employing a descriptive survey design, the present research explored parents' digital parenting attitudes by their children's use of technological tools. A descriptive survey design comprises research carried out with large groups to gather their opinions, observe their attitudes concerning a fact/phenomenon, and describe that fact/phenomenon (Karakaya, 2012).

Research Sample

The sample was conveniently selected among parents with children aged 6-15 years. Since no information about the population was handy, a power analysis was performed to ensure maximum volume for the sample. Upon the assumption that the population proportion is 0.50 and the difference between the population and sample proportions is at most 0.07 (0.50-0.43), the power analysis yielded a sample size of 388 parents. Then, the research was carried out with 388 parents, 273 mothers and 115 fathers. Initial statistics revealed that the majority of the parents were 36-45 years old (48.2%), had an undergraduate or higher education (64.5%), were employed (61.3%), and had 6-10-year-old (57.7%) and male (52.8%) children.

Data Collection Tools

The data were collected using a demographic information form (also including children's characteristics of technology use) and the "Digital Parenting Attitude Scale" (DPAS).

The DPAS is a 12-item scale developed by Inan Kaya et al. (2018) and administered to parents with children 6-18 years to evaluate their attitudes toward their children's use of technology. The items are rated on a 5-point Likert-type scale ranging from 5 (strongly agree to 1 (strongly disagree). The scale is structured on two dimentions: Approving Effective Use of Digital Media and Protecting Against

the Risks of Digital Media. A high score on an item consisting of a positive or negative judgment shows the strength of the respondent's attitude in that direction. In the original study, exploratory factor analysis yielded a two-factor structure explaining 46.109% of the total variance. While internal consistency coefficients on the scale ranged from .724 to .776, the two-half-test reliability coefficients became between .631 and .764. The results of a paired samples t-test, performed in this study for reliability concerns, showed no significant differences between the pre- and post-test scores of the samples in both subscales. Hence, it can be asserted that the scale is a valid and reliable measurement tool (İnan Kaya et al., 2018).

For reliability concerns, Cronbach's alpha coefficients were calculated to be .78 for Part A and .74 for Part B. A rule of thumb in the literature suggests that a coefficient of 0.70 or higher is evidence of sufficient reliability of test scores (Büyüköztürk et al., 2019).

Procedure

The scholars developing the DPAS were first requested relevant permissions for the use of the scale, and then the Bartın University Social and Human Sciences Ethics Committee granted ethical approval to this study (15.04.2022/2022-SBB-0148). Next, the purpose of the research was explained to conveniently selected parents, and informed consent was obtained from those accepting voluntary participation in the study. Finally, the parents were asked to fill out the questionnaire booklet provided via Google Forms. The data were gathered between April 15 and June 10, 2022, and the procedure took approximately 15-20 minutes for each parent. Ultimately, the research findings are limited to the responses of conveniently selected parents, living in different regions of Turkey and having children aged 6-15 years, between April 15 and June 10, 2022.

Data Analysis

Kolmogorov-Smirnov test was utilized to check whether the data showed a normal distribution. Accordingly, the scores on the Approving Effective Use of Digital Media (Part A) (KS: .136; $p < .05$) and the Protecting Against the Risks of Digital Media (Part B) (KS: .096; $p < .05$) components showed a non-normal distribution. Therefore, the groups were compared using Mann-Whitney U and Kruskal-Wallis H tests. The significant differences between the groups were sought using the Mann-Whitney U test. The analyses were performed on the SPSS program, and a p-value < .05 was accepted as statistically significant.

Results

The findings of the research, which aims to examine digital parenting attitudes according to some variables related to children's use of technological devices, are reported in the following tables.

Table 1

The Parents' Views on Their Children's Use of Technological Tools

Feature		**n**	**%**
Technological Tool	Tablet	72	18,6
	Computer	59	15,2
	TV	46	11,9
	Mobil phone	211	**54,4**
Usage Time/day	0-1 hour	38	9,8
	2-4 hour	207	**53,4**
	5-7 hour	109	28,1
	8 hour and above	34	8,8
Frequency of use	Very little	42	10,8
	Very much	196	**50,5**
	Overuse	70	18,0
	Balanced	80	20,6
Purpose of usage*	Playing game	261	67,3
	Researching	154	39,7
	Listen to music	162	41,8
	Watching movie	178	45,9
	Watching videos	259	**66,8**
	Studying	205	52,8
	Do homework	198	51
	Social communication	141	36,3
Most visited websites*	Game	252	**64,9**
	Music	132	34
	Education	165	42,5
	Movie	149	38,4
	Chat	46	11,9
	Sports	33	8,5
	Science and technology	61	15,7
	Newspaper	3	0,8
	Social media	112	28,9

* More than one option has been ticked.

The findings revealed that 54.4% of the children used smartphones the most, 53.4% spent 2-4 hours a day with technological tools, and 50.5% spent "excessive time" with digital devices. The parents reported that their children used technological tools mostly for watching videos, playing games, and studying and mostly visited gaming, instructional, and movie streaming websites (Table 1).

About half of the parents (44.3) usually supervised their children while using technological tools, 50.5% did not use a filter program in technological tools, and 58.5% partially restricted their children from using digital devices. Besides, 30.2% reported that their children appreciated restrictions. The parents also noted that their children were most affected by technological tools regarding socialization, physical activity, and academic achievement and stated that the use of technological tools might pose risks of technology addiction, health problems, and communication with strangers (Table 2).

Table 2

The parents' views on their children's use of technological tools

Feature		n	%
Parental supervison	None	7	1,8
	Rarely	62	6,7
	Occasionally	111	28,6
	Ususally	172	**44,3**
	Always	72	18,6
Use of protection program	I use	151	38,9
	I don't use	196	**50,5**
	I don't know	41	10,6
Restriction status	I restrict	114	29,4
	I partially restrict	227	**58,5**
	I don't restrict	47	12,1
Child's response to restriction	S/He welcomes	117	**30,2**
	S/He resists	102	26,3
	S/He shows anger	111	28,6
	S/He acts reckless	18	4,6
	Other	40	10,3
Being affected by technological tools*	Physical	162	41,8
	Social	175	**45,1**
	Emotional	102	26,3
	Academic success	125	32,2
	Other	72	18,6
	Does not affect	19	4,9
Problems/Risks caused by technological tools*	Technology addiction	298	**92,8**
	cyberbullying	118	36,8
	Communication with strangers	150	46,7
	Violation of privacy of personal information	146	45,5
	Health problems	202	62,9
	Virus and malware	135	42,1
	Fraud	127	39,6

* More than one option has been ticked.

Table 3

Comparison of digital parenting attitudes by children's age

Sub-dimensions	Child's age	n	Mean Rank	Sum of Ranks	U	p
Approving Effective Use of Digital Media	6-10	224	183,76	41162,00	15962,000	**0,026**
	11-15	164	209,17	34304,00		
Protecting Against Digital Media Risks	6-10	224	202,93	45455,50	16480,500	0,082
	11-15	164	182,99	30010,50		

The analysis resulted in a significant difference between the parents' approval attitudes toward the effective use of digital media by children's age ($U = 15962.000$; $p < 0.05$). Considering the mean ranks, the parents with children aged 11-15 years had a more decisive attitude toward the effective use of digital media (Table 3).

Table 4

Comparison of digital parenting attitudes by children's gender

Sub-dimensions	Gender of child	n	Mean Rank	Sum of Ranks	U	p
Approving Effective Use of Digital Media	Female	183	186,64	34155,50	17319,500	0,187
	Male	205	201,51	41310,50		
Protecting Against Digital Media Risks	Female	183	190,48	34857,50	18021,500	0,502
	Male	205	198,09	40608,50		

As presented in Table 4, there was no significant difference between the parents' digital parenting attitudes by children's gender ($p > 0.05$).

Table 5

Comparison of digital parenting attitudes by children's favorite technological tool

Sub-dimensions	Technological tool	n	Mean rank	sd	χ^2	p	Meaningful difference
Approving Effective Use of Digital Media	Tablet	72	187,58	3	0,377	0,945	
	Computer	59	193,96				
	TV	46	197,68				
	Mobil phone	211	196,32				
Protecting Against Digital Media Risks	Tablet[1]	72	194,12	3	10,140	**0,017**	3-1
	Computer[2]	59	180,97				3-2
	TV[3]	46	242,55				3-4
	Mobil phone[4]	211	187,94				

The parents' protective attitudes against the risks of digital media differed significantly by children's favorite technological tool ($\chi^2_{(sd=3,\ n=388)} = 10.140$, $p < 0.05$). The Mann-Whitney U test yielded that the parents with children watching television the most had a stronger protective attitude against the risks of digital media than those with children using tablets, computers, and smartphones the most ($p < 0.05$).

Table 6

Comparison of digital parenting attitudes by time spent with technological tools

Sub-dimensions	Usage time/day	n	Mean rank	sd	χ^2	p	Meaningful difference
Approving Effective Use of Digital Media	0-1 hour[1]	38	150,78	3	15,448	**0,001**	2-1
	2-4 hour[2]	207	203,89				2-3
	5-7 hour[3]	109	177,88				4-1
	8 hour and above[4]	34	239,47				4-3
Protecting Against Digital Media Risks	0-1 hour	38	236,83	3	7,615	0,055	
	2-4 hour	207	191,79				
	5-7 hour	109	181,01				
	8 hour and above	34	206,96				

The findings showed a significant difference between the parents' approval attitudes toward the effective use of digital media by time children spend with technological tools ($\chi^2_{(sd=3,\ n=388)} = 15.448$, $p < 0.05$). Accordingly, it was found that the parents with children spending 8 hours or more with technological tools in a day had a stronger approval attitude toward the effective use of digital media.

Considering the results of the Mann-Whitney U test, the parents with children using technological tools 2-4 hours a day had a stronger approval attitude toward the effective use of digital media than those with children spending 0-1 hours and 5-7 hours with digital devices. Moreover, it was the case between parents with children spending 8 hours or more with technological tools in a day compared to children using technological tools 0-1 hours and 5-7 hours a day, respectively ($p < 0.05$) (Table 6).

The findings showed that parents' protective attitudes against the risks of digital media differed significantly by frequency of children's use of technological tools ($\chi2(sd=3, n=388) = 9.198$, $p < 0.05$). Considering the mean ranks of the groups, it was discovered that the parents with children using technological tools excessively had a stronger protective attitude than those reporting that their children have a balanced use of technological tools ($p < 0.05$) (Table 7).

Table 7

Comparison of digital parenting attitudes by frequency of technology use

Sub-dimensions	Frequency of use	n	Mean rank	sd	χ^2	p	Meaningful difference
Approving Effective Use of Digital Media	Very little	42	167,67	3	3,352	0,340	
	Very much	196	201,52				
	Overuse	70	190,25				
	Balanced	80	195,11				
Protecting Against Digital Media Risks	Very little[1]	42	203,17	3	9,198	**0,027**	2-4
	Very much[2]	196	195,54				3-4
	Overuse[3]	70	219,52				
	Balanced[4]	80	165,51				

Table 8

Comparison of digital parenting attitudes by use of safety software

Sub-dimensions	Use of protection program	n	Mean rank	sd	χ^2	p
Approving Effective Use of Digital Media	I use	151	187,21	2	1,167	0,558
	I don't use	196	200,17			
	I don't know	41	194,26			
Protecting Against Digital Media Risks	I use	151	209,08	2	4,285	0,117
	I don't use	196	186,01			
	I don't know	41	181,37			

It was determined that the parents' approval attitudes toward the effective use of digital media and protective attitudes against the risk of digital media did not differ by their use of safety software in technological tools ($p > 0.05$) (Table 8).

Table 9

Comparison of digital parenting attitudes by parental supervision

Sub-dimensions	Supervise status	n	Mean rank	sd	χ^2	p	Meaningful difference
Approving Effective Use of Digital Media	None[1]	7	293,21	4	11,466	**0,022**	1-2
	Rarely[2]	26	195,46				1-3
	Occasionally[3]	111	177,57				1-4
	Ususally[4]	172	207,05				1-5
	Always[5]	72	180,69				4-3
Protecting Against Digital Media Risks	None[1]	7	158,64	4	11,930	**0,018**	
	Rarely[2]	26	174,75				5-2
	Occasionally[3]	111	181,14				5-3
	Ususally[4]	172	191,37				5-4
	Always[5]	72	233,19				

The parents' approval attitudes toward the effective use of digital media ($\chi^2_{(sd=4,\ n=388)} = 11.466$, $p < 0.05$) and protective attitudes against the risks of digital media ($\chi^2_{(sd=4,\ n=388)} = 11.930$, $p < 0.05$) showed significant differences by supervision of children. Accordingly, while those never supervising their children had a stronger approval attitude toward the effective use of technological tools, the parents always supervising their children had a stronger protective attitude against the risks of digital media.

The test performed to reveal differences between the groups yielded that the parents never supervising their children had higher scores on Part A than those rarely, occasionally, usually, and always supervising their children, respectively. It was also the case between those usually supervising their children and occasional supervisors. On the other hand, the parents always supervising their children while using technological tools had higher scores on Part B than those rarely, occasionally, and usually supervising their children, respectively ($p < 0.05$) (Table 9).

Table 10
Comparison of digital parenting attitudes by restriction to children

Sub-dimensions	Restriction status	n	Mean rank	sd	χ^2	p	Meaningful difference
Approving Effective Use of Digital Media	I restrict[1]	114	174,57	2	8,169	**0,017**	3-1
	I partially restrict[2]	227	197,56				
	I don't restrict[3]	47	228,07				
Protecting Against Digital Media Risks	I restrict[1]	114	237,89	2	38,830	**0,000**	1-2
	I partially restrict[2]	227	188,08				1-3
	I don't restrict[3]	47	120,27				2-3

Finally, there were significant differences between parents' approval attitudes toward the effective use of digital media ($\chi^2_{(sd=2,\ n\ =\ 388)} = 8.169$, $p < 0.05$) and protective attitudes against the risks of digital media ($\chi^2_{(sd=2,\ n=388)} = 38.830$, $p < 0.05$) by restriction to children. Accordingly, the parents who did not restrict their children regarding technological tools had a stronger approval attitude than those who did not. Moreover, it was found that the parents restricting their children had a stronger protective attitude than those partially and not restricting children regarding technological tools ($p < 0.05$) (Table 10).

Discussion, Conclusion and Recommendations

The COVID-19 pandemic, ongoing for about two years, has unequivocally boosted the use of screen-based digital technology. Educational institutions worldwide have then switched to distance education as a form of crisis management; therefore, teachers, children, and parents have been the principal actors of distance education in everyday practice. Additionally, children now spend more time on various digital platforms as a way of staying in touch with their friends and other family members. The digital transformation in the 21st century has utterly forced families to change. These changes, resulting in digitalized families, have altered the definition and scope of parenting and laid the groundwork for the emergence of digital parenting. Since parents are the first to come to mind when it comes to keeping children safe, digitalized parents are expected to keep up with, adapt to state-of-art technology, and be aware of the risks, as well as the advantages, of digital media to raise physically and psychologically healthy children.

The research findings uncovered a significant difference between the parents' approval attitudes toward the effective use of digital media by children's age. It was found that the parents tended to approve of their 11-16-year old children's effective use of media more than those with children aged 6-10 years. It was previously documented that the vast majority of children under 13 years post their full names, nearly half share their mobile phone numbers, while less than half flag their home addresses in digital environments (Santisarun & Boonkrong, 2015). Then, such visibility of children with their personal information in digital environments at an early age inevitably makes them vulnerable to abusers (Bostancı, 2019), which also leads parents, the ultimate protectors of children's digital identities (Madden, 2012), to worry about their online experiences (Livingstone et al., 2017). Not surprisingly, many parents are now concerned about their children's exposure to violent images, digital identity theft, inappropriate content and advertisements, and cyberbullying while using the internet and digital media. In addition, it is another reason for concern that long-term use of digital media is likely to lead to addiction, replacing socialization and play activities and affecting children's emotional relationships with their parents and social environment (Livingstone&Byrne, 2018; Mertala, 2019; Zabatiero vd., 2018). Moreover, there is a plethora of evidence that the use of digital media deteriorates children's health (Page et al., 2010) through sleep loss (Lam et al., 2003). Considering increasing screen time with age (Cadoret vd., 2018; Hesketh vd., 2015; Przybyiski&Weinstein, 2019), children are already exposed to the risks of digital media from an early age. Therefore, it can be asserted that the participating parents adopted a protective attitude toward the adverse effects of digital media on their children from an early age.

The participating parents did not significantly differ in their digital parenting attitudes by their children's gender. Nevertheless, the literature hosts research concluding that high school girls are mostly restricted in the use of digital media by their mothers (Çetinkaya & Sütçü, 2016). It seems more appropriate that parents' approval and protective attitudes toward the use of digital media apply to all children.

On the other hand, there was a significant difference between the parents' protective attitudes against the risks of digital media by their children's favorite technological tools. Accordingly, those with children watching television the most had a stronger protective attitude than the parents with children using tablets, computers, and smartphones the most, respectively. The adverse impacts of excessive television viewing on human health are not a secret in the contemporary world (Lowry et al., 2002; Vessey et al., 1998). After the 2000s, television-oriented technology has immensely diversified with the introduction of screen-based digital devices such as computers, tablets, game consoles, and smartphones. Moreover, the introduction of these internet-enabled devices to the use of children has also led to an increase in the time they spend in front of the screen from an early age (Yücelyiğit & Aral, 2020). Expectedly, parents become worried when their children are connected to the internet or various digital platforms via computers or smartphones (Echeburua, Labrador, & Becoña, 2009). Nowadays, approximately 85% of children access social media via mobile devices (Anderson, 2016; Okumuş & Parlar, 2018). In this study, about 73% of the parents reported that their children use mobile devices to access digital media. Within social learning theory, children are highly affected by the media behaviors of their family members from an early age; thus, this finding may imply why children prefer mobile devices to access digital media like other family members (Lev et al., 2018). In addition, as mobile devices become more prominent in children's lives, many parents get worried about their children's frequent use of smartphones (Yaman et al., 2021) and face the challenge of how to effectively surveil their children's actions in online spaces. Considering the difficulty of parenting in the digital age, it seems critical that parents adopt a clear strategy for their children's use of technological tools.

The parents with children using digital devices between 2-4 hours a day had a more approval attitude toward the effective use of digital media compared to those with children using technological tools between 0-1 hours and 5-7 hours a day, respectively. It was also the case between the parents with children using technological tools for 8 hours or more a day and those with children using digital devices between 0-1 hour and 5-7 hours a day, respectively. These findings may prove that children of those who appreciate the effective use of digital media spend more time with technological tools, while children of the parents with a protective attitude spare less time on technological devices. The widespread use of digital media, tools, and software in daily life has made the use of technology commonplace for children. Considering that even children have their own devices from birth to the age of seven (Nikken & Schols, 2015) and that many parents utter positive remarks about their children's use of technology (Gjelaj et al., 2019), it can confidently be proposed that media consumption has become an inextricable component of daily life.

Media consumption among children through screen-based technological tools varies depending on family use of digital media. While media consumption appears to be limited to one hour a day in families with minimal media access, it extends up to three hours in families with maximum media access (Nikken, 2017). Nonetheless, it was discovered that 36.9% of the parents reported that their children used technological tools between 5 and 8 hours a day. Children's intensive engagement in digital media suggests that the influence of traditional socializing institutions on children is gradually decreasing. The time spent with technological tools may cause "rapid socialization" among children aged 6-12 years, which affects their language, mental, and social development, as well as causing screen addiction (Aral & Doğan Keskin, 2020; Özkan & Hira, 2017).

On the other hand, it was concluded that the parents thinking that their children used technological tools a lot and excessively had a more protective attitude than those reporting that their children had a balanced use of technology. It is not surprising that parents are concerned about and restrict their children's use of digital tools given the online risks (e.g., illegal content, pedophiles, strangers, harassment, sexual violence, hate speech activities, cyberbullying, gambling, self-harm, and violation of privacy) (Zeybekoğlu-Akbaş & Dursun, 2020).

Despite no significant difference between the parenting attitudes of those using internet safety software and not, while the parents not using such software had a more favorable attitude toward the effective use of digital media, the others had a stronger protective attitude. This finding may indicate the parents adopted the "restrictive mediation" strategy and have an attitude toward regulating their children's use of digital media through implicit and explicit rules for the child-digital media relationship

(Nathanson, 1999; Shin & Huh, 2011). However, it should be noted that although restrictive mediation ensures less exposure to the risks of digital media, restrictions may bring a "forbidden fruit" effect (Nathanson, 2002).

The parents never supervising or restricting their children while using technological tools had a higher level of approval for the effective use of digital media, while those always following and restricting their children had a higher level of protective attitude toward the risks of digital media. This finding may be because of the parenting styles of the participating parents. Namely, the first finding may be associated with neglectful parenting where parents are fully involved in their children's activities and set no rules and punishments and permissive parenting where parents largely allow their children to do what they want to do (Santrock, 2004; Yusuf et al., 2020). The equivalence of neglectful and permissive parenting in the digital world is hyper-permissive parenting in which children are allowed to use the internet and technology as they wish, and parents are sensitive but not very demanding (Milovidov, 2020). The second finding, on the other hand, may be more related to democratic and authoritarian parenting. Such traditional printing styles may correspond to authoritarian, authoritative, helicopter, and lawnmower/snow-plow parenting in the digital world (Milovidov, 2020). The participating parents also uttered that digital life affected their children's socialization, physical activities, and academic achievement and might pose risks of technology addiction, health problems, and communication with strangers. Accordingly, digitalized parents need to adopt good parenting behaviors to satisfy their children's technological needs.

Overall, the present findings may steer the following recommendations. Parents are better to improve their competency in digital media at a digital-native level to enhance their digital media plans, engage their children in these plans, impose time restrictions on and guide their children's use of digital media, and protect them against the possible threats and risks of the digital environment. They may need to have conversations with their children regarding threats and risks of digital media as well as its positive aspects, use filter programs for harmful content, and raise their awareness that they are digital role models for their children in the use of mobile devices. Furthermore, parents may be recruited for digital media education in school-family collaboration. Finally, further research may focus on the qualitative nature of the subject to enable parents and children to develop strategies for technology use.

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The Effect of English Education with Digital Stories on Self-Efficacy, Achievement, and Opinions of Foreign National Teacher Candidates*

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Abstract

This study aims to determine the effects of English as a foreign language education (EFL) designed using digital stories on the self-efficacy and achievement of foreign national teacher candidates and to reveal the educational experiences of prospective teachers with digital stories. To realize this purpose, a mixed pattern approach has been adopted. The research was conducted with 30 foreign national teacher candidates in the 2021-2022 academic year. Digital stories have been developed for education faculties by the teaching of EFL. Digital story training was applied online for ten weeks as a two-hour lesson. The research data were collected through a Self-Efficacy Scale, an Achievement Test, and Interview Questions for Teaching English with Digital Stories. It was determined that English education with digital stories increased the self-efficacy and achievement of the participants after the training compared to the pre-training. In addition, participants' awareness of digital stories increased; they described education as fun, economical, and instructive and thought positively in general. Accordingly, it is recommended to prefer English education with digital stories when it is desired to develop self-efficacy, achievement, and digital story experiences.

Keywords: Foreign language education, Teacher training, Educational technology, Self-efficacy, Achievement, Digital Storytelling.

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Dijital Hikayelerle İngilizce Eğitiminin Yabancı Uyruklu Öğretmen Adaylarının Öz-yeterlik, Başarı ve Görüşlerine Etkisi*

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Öz

Bu çalışma, dijital hikâyeler kullanılarak tasarlanan yabancı dil olarak İngilizce eğitiminin yabancı uyruklu öğretmen adaylarının öz-yeterlikleri ve başarıları üzerindeki etkilerini belirlemeyi ve öğretmen adaylarının dijital hikâyelerle eğitim deneyimlerini ortaya çıkarmayı amaçlamaktadır. Bu amacı gerçekleştirmek için karma desen anlayışı benimsenmiştir. Araştırma 2021-2022 eğitim öğretim yılında 30 yabancı uyruklu öğretmen adayı ile gerçekleştirilmiştir. Dijital hikayeler, eğitim fakülteleri için yabancı dil olarak İngilizce eğitimine uygun olarak geliştirilmiştir. Dijital hikâye eğitimi iki saatlik ders şeklinde on hafta boyunca çevrimiçi olarak uygulanmıştır. Araştırmanın verileri bir Öz-yeterlik Ölçeği, bir Başarı Testi ve Dijital Hikayelerle İngilizce Öğretimi Mülakat Soruları aracılığıyla toplanmıştır. Dijital hikayelerle İngilizce eğitiminin eğitim öncesine göre eğitim sonrasında katılımcıların öz-yeterliklerini ve başarılarını artırdığı tespit edilmiştir. Ayrıca katılımcıların dijital hikayelere yönelik farkındalıklarının arttığı; eğitimi eğlenceli, ekonomik ve öğretici olarak nitelendirdiği ve genel olarak olumlu düşündüklerini belirtmişlerdir. Buna göre, öz-yeterlik, başarı ve dijital hikâye deneyimleri geliştirilmek istendiğinde dijital hikayelerle İngilizce eğitiminin tercih edilmesi önerilmektedir.

Anahtar Sözcükler: Yabancı dil eğitimi, Öğretmen eğitimi, Eğitim teknolojisi, Öz yeterlilik, Başarı, Dijital hikâye anlatımı.

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Introduction

Students who go to a different country as exchange students for all or part of their education period are defined as "foreign national students" (OECD, 2013). In other words, foreign national students aim to be successful by leaving their mother country where they were born or raised to benefit from the host country's education system. Foreign national students who want success must adapt to the host country's education system (Ak, 2020). However, in the adaptation process, obstacles are encountered, such as language, income, gender, communication, mutual relations, and related concerns. Language stands out as a decisive factor in overcoming these difficulties and gaining achievement in education. Several factors are influential in the learning of a language by students. Among these factors, achievement and self-efficacy are considered necessary, as well as the methods adopted in the learning process (Sungur et al., 2016).

Self-efficacy can be explained as the belief in one's potential to bring learning and behavior to a sufficient level (Azar, 2010). Individuals can obtain information about their self-efficacy from their experiences, physical and emotional states, observations, and verbal persuasion studies. Experiences are the situations in which the success or failure of the individual while performing a specific job or task in the past affects the expectations of success in similar problems in the future. For example, an individual who achieved easy achievements in the past may lose courage when he fails (Aydede, 2009). Studies indicate a positive relationship between individuals' self-efficacy and achievement and that achievement also increases as self-efficacy increases. From this point of view, self-efficacy becomes an essential factor in predicting student achievement in EFL (Azar, 2010).

Achievement is one of the significant indicators of whether the objectives targeted by a learning process have been realized and, if so, to what extent they have been achieved. Like any other factor in educational sciences, achievement is among the variables that cannot be fully controlled. Although many researchers have studied achievement for years, making a complete list of the factors affecting it is impossible. This ambiguity, which seems complicated at first, is also helpful because it allows the prediction of many active sub-factors in the learning processes (Aljaraıdeh, 2020). Achievement has always been essential in educational research, considering the education system primarily focuses on achievement. The achievement has also been significant for EFL, and many educators have attempted to increase student achievement by implementing various learning practices (Altay et al., 2022).

Learning methods that are thought to be effective on both achievement and self-efficacy have been used in many learning processes, including EFL processes. Technology has also been used to a great extent in improving education. One of the most popular educational technology applications in recent years is using digital stories in learning processes. In general, a digital story is defined as a product used in the transfer of historical events and personal stories, primarily fictionalized in a computer environment, consisting of many elements such as voiceover, graphics, text, music, and, in this context, created mainly by using multimedia tools, but in which creativity, aesthetics, and art are used (Sawyer & Wills, 2011). Digital storytelling came into being due to combining traditional storytelling with technology, with the increasing use of digital media tools in education and training to make learning effective and permanent, depending on the rapidly developing technology (Robin, 2006).

According to related literature, language is an essential tool that enables communication between people, and the mother tongue is insufficient for people's professional, cultural, and social development (Sungur et al., 2016). However, limiting factors such as cultural differences, adaptation problems, and anxiety negatively affect language learning (Ak, 2020). Foreign national students are more affected by these limiting factors that hinder language learning (Hava, 2021). On the other hand, learning tools developed using educational technologies reduce the barriers to language learning. One of the learning tools developed using educational technology is digital storytelling. However, there are a limited number of studies investigating the effects of digital story applications in language teaching of foreign national students on self-efficacy and achievement (Tanrıkulu, 2022). This study aimed to investigate the digital storytelling experiences and the effect of digital story-based EFL education on foreign national teacher candidates' self-efficacy and academic achievement.

Method

Research Design

The study adopted a mixed design. The quantitative dimension of the study was carried out in a pre-experimental one-group pretest-posttest research style, and the effects of digital storytelling practices on English language self-efficacy and academic achievement were revealed. The qualitative dimension of the study was carried out in a case study style and tried to determine the pre-service teachers' opinions about the developed digital story applications. (McMillan & Schumacher, 2001).

Participants

The participants were recruited for a project supported under a 2209A University Students Research Projects Support Program. Since the project aims to provide digital storytelling-based EFL education for foreign national teacher candidates studying at the Western Black Sea Region universities, they were allowed to apply by filling out the online application form. A total of 117 applications were received from foreign national teacher candidates studying at the education faculties in Bartın, Bolu, Ereğli, Kastamonu, and Düzce for participation. While recruiting the participants, it was considered that equal numbers of all faculties and equal distribution of gender were ensured. Accordingly, six teacher candidates (three female and three males) were determined from each faculty, and 30 teacher candidates were identified as participants. Participants study science, primary school mathematics, psychological counseling and guidance, special education, social studies, and classroom teaching programs. They were voluntarily included in the study and filled out the Participant Consent Form before the data collection process. It has been assumed that teacher candidates have the necessary competence to participate in the digital story education that will be developed since they continue their courses through distance education during the pandemic process.

Digital Story Development Process

Digital story applications were developed for the participants to learn EFL during the study process. While determining the scope of digital stories, the contents of EFL I and II courses in the lesson plans defined by the Council of Higher Education (CoHE) Education and Training Department were considered (CoHE, 2018). CoHE stated that a teaching process should be designed based on the events encountered in situations, such as introducing a place, event, or person, making directions, or cooking recipes based on the grammatical patterns of EFL courses. For this reason, the prepared digital stories are designed to cover the specified topics.

Ten digital story modules were developed considering EFL I and II course definitions. While developing the modules, Audacity was used for creating the audio files, Photoshop for the image editing, Easy Video for the video editing, and Pixton for the digital story creation. Developed modules and their contents are summarized in Table 1.

Table 1

Module topics and scopes

Module	Topic	Context
1. Getting to know you	Present continuous tense	Introduce yourself
2. Describing people		Introducing a celebrity
3. Asking for and giving direction	Simple present tense	Giving directions
4. Making a recipe		Making a recipe
5. Using vehicles to transport	Past tense	Using transportation
6. Shopping		Shopping at the market
7. Poster making	Future tense	Preparing a poster
8. Talking about the weather		Weather forecast
9. Short writing	Modals	Short writing
10. Filling a form		To fill out a form

Each module includes questions for understanding the story and exercises related to the subject and the digital story. The designed modules were examined by three instructors who are experts in the field of EFL. Experts were asked to evaluate the subject and scope of the modules and their suitability for the level. After the arrangements were made in line with the expert opinions, the modules were piloted with three teacher candidates who were not participants. In line with the exposed experiences during the pilot implementation, the modules were finalized and usable in the study. Some images from digital stories are shown in Figure 1.

Talking about weather Shopping Filing a form

Figure 1 *Scenes from digital stories of different modules*

Data Collection Tools

The study data were collected using the Self-Efficacy Scale for the English Language, the English Language Achievement Test for Teacher Candidates, and the English Language Teaching Interview Questions with Digital Stories.

Self-Efficacy Scale for the English Language

The scale developed by Hancı Yanar (2008) was used to determine the self-efficacy of the participants (Appendix 1). The scale was prepared as a five-point Likert type. Participants answered the propositions on the scale by stating their level of agreement. There are 34 propositions on the scale, eight in the sub-dimensions of reading, writing, and listening, and six of which are speaking. The Cronbach alpha reliability value calculated within the scope of the scale study was found to be 0.987. It was filled by the participants in an average of 25 minutes before and after the English education with digital stories.

English Language Achievement Test for Teacher Candidates

The test was used to determine the effect of digital stories on teacher candidates` English Language achievement. There are 20 multiple-choice questions in the test. The questions were prepared in a multiple-choice style with five options. The test content included present continuous, present simple, past, and future tenses and modal verbs based on the scope of EFL I and II courses determined by CoHE. While preparing the test questions, 25 draft questions were first designed. These questions were examined by three faculty members who are experts in teaching EFL regarding subject coverage and suitability for education level. In line with the examination, some corrections were made regarding word selection and grammatical structure in some questions. Then, the pilot application of the draft test, prepared with the participation of 100 teacher candidates who were not included in the participants, was conducted. The distinctiveness and strength values calculated for the items remaining in the test as a result of the item analysis applied to the data obtained from the pilot application are presented in Table 2.

Table 2

Item analysis results of achievement test items

Question	Difficulty	Discrimination	Question	Difficulty	Discrimination
1	062	0.44	**11**	0.50	0.92
2	0.56	0.48	**12**	0.60	0.80
3	0.48	0.96	**13**	0.54	0.76
4	0.60	0.72	**14**	0.22	0.36
5	0.56	0.32	**15**	0.62	0.60
6	0.52	0.80	**16**	0.62	0.60
7	0.76	0.48	**17**	0.24	0.32
8	0.74	0.44	**18**	0.32	0.32
9	0.68	0.48	**19**	0.28	0.40
10	0.60	0.72	**20**	0.56	0.64

In addition, the calculated Cronbach alpha reliability value was found to be 0.752. Thus, an achievement test was developed for teacher candidates with sufficient validity and reliability for the study (Appendix 2). The participants completed the test in an average of 25 minutes before and after the English language education with digital stories.

English Language Teaching Interview Questions with Digital Stories

In the study, the opinions of participant teacher candidates about digital story education were determined with semi-structured interview questions. During the study, semi-structured interviews were conducted with ten randomly selected participants to assess their opinions based on their experiences with digital stories and English language education. During the interviews, the participants were asked questions about their English learning experiences, the benefits of English education with digital stories, the features they liked, the difficulties or limitations they experienced during the education, and the features they wanted to be changed (Appendix 3). The prepared questions were tested by making a pilot application with three teacher candidates who were not included in the participant group. In addition to the data and experiences obtained during the pilot application, the questions were finalized by taking the opinions of the three expert lecturers in EFL education. Thus, the interview questions were made ready for implementation. The interviews, which were held after the English training with digital stories, lasted an average of 30 minutes.

Implementation

Before the implementation, permission was obtained from the Bartın University Social and Human Sciences Ethics Committee. The study was implemented in three main stages during the 2021-2022 academic year. In the first stage, the participants were given a Self-Efficacy Scale and an Achievement Test before the English education with digital stories. The scale and the test were made available to the participants online. Thus, the self-efficacy and achievements of the participants were determined two weeks before the application.

In the second stage, the digital stories were made available to the participants on the website www.gelecekegitim.org. Digital stories have always been accessible to participants. Participants could access the website with digital stories on their PC, laptop, tablet, or smartphone whenever they wished, regardless of the place. They could listen to the stories, watch them, and do related studies. Moreover, each module includes worksheets with questions to increase intelligibility and practice. In addition to the participants' lessons, an online lesson was held over the Zoom program, consisting of at least 40 minutes one day a week. The lessons the project team conducted gave information about the story, subject, and scope. Then, the story in the relevant module of that week was watched with audio and video. Participant feedback on the story was received. Then, questions about the intelligibility of the story were tried to be answered by the participants. Finally, the practice questions about the module's subject were responded to. Thus, one module per week and ten modules in ten weeks were completed.

The third stage was carried out two weeks after the end of the English education with digital stories. Before the training, the participants filled out the Self-Efficacy Scale and the Achievement Tests at this stage. In addition, semi-structured interviews were conducted with 10 participants by asking the interview questions.

Data Analysis

Content analysis was conducted on the qualitative data obtained through the English Language Teaching Interview Questions with Digital Stories. Coding was done around the themes and categories. The pre-themes and categories created were reviewed in line with the data obtained and organized by following the inductive analytical processes defined by Frankel and Wallen (2000). The successive categorization and validation studies continued until the data were sufficiently reduced and organized with the help of English education experts experienced in assessment and evaluation. The qualitative findings obtained were supported by participant statements and presented under the subject headings.

The data obtained through the self-efficacy scale and the achievement test for teacher candidates were analyzed with a statistical package program. The change in the participants' achievement was determined after analyzing the test items and after the application compared to the pre-application. Then, in addition to descriptive statistical studies based on the level of participation of the participants in each statement in the scale, comparative statistical analysis studies were conducted to determine the sub-dimensions of the scale and the change after the application compared to the pre-implementation. Quantitative findings are summarized in tables in the findings (McMillan & Schumacher, 2001).

Findings

The findings obtained by analyzing the data collected using the data collection tools of the study are presented under the headings.

Findings Obtained Through the Self-Efficacy Scale for the English Language

Determining the self-efficacy of the participants before the application, determining the self-efficacy they had after the application, and the change in their self-efficacy after the application compared to the pre-application were examined through the Self-Efficacy Scale for the English Language. The findings that emerged from examining the change in self-efficacy and the administration of the scale before and after the application are presented in Table 3.

Table 3

Comparison of self-efficacy before and after the implementation

Dimensions	Test	N	Mean	S.D.	t	df	p
Reading	Pre	30	20,133	4,995	-6,486	58	0,000
	Post	30	29,233	5,841			
Writing	Pre	30	22,133	6,601	-7,137	58	0,000
	Post	30	35,200	7,549			
Listening	Pre	30	21,967	6,557	-7,252	53,513	0,000
	Post	30	36,533	8,835			
Speaking	Pre	30	13,233	4,321	-6,427	58	0,000
	Post	30	21,333	5,384			
Total	Pre	30	77,467	21,203	-7,431	58	0,000
	Post	30	122,433	25,477			

It is seen that there is a statistically significant difference in each sub-dimension and total after the application compared to the pre-application. In addition, when the average values are considered, it is seen that the self-efficacy in the reading sub-dimension was 20.133 before and 29.233 after the application. Similarly, while the self-efficacy in the writing sub-dimension was 22.133 before the application, it was determined to be 35.200 after the application. While the self-efficacy in the listening sub-dimension was 21,967 before the application, it was determined that it was 36,533 after the application. While the self-efficacy in the speaking sub-dimension was 13,233 before the application, it was seen to be 21,333 after the application. Finally, while the total self-efficacy was 77,467 before the

application, it was found to be 122,433 after the application. As a result, it was determined that the statistically significant difference among four sub-dimensions and self-efficacy in total favored the post-application. In other words, English language education with digital stories caused an increase in the self-efficacy of the participants after the application compared to before the application.

Findings Obtained Through the English Language Achievement Test for Teacher Candidates

Determining the achievement of the participants before the application and after the application to identify any possible change in the achievement after the application compared to the pre-application were examined through the English Language Achievement Test for Teacher Candidates. The findings that emerged as a result of examining the change in achievement, as well as the application of the test before and after the application, are presented in Table 4.

Table 4

Comparison of achievement before and after implementation

Dimensions	Test	N	Mean	S.D.	t	df	p
Total	Pre	29	8,552	3,007	-7,227	58	0,000
	Post	31	14,387	3,232			

It is seen that there is a statistically significant difference after the implementation compared to the pre-implementation when the data obtained from the test is taken into consideration. In addition, when the average values are considered, it is seen that while the total achievement was 8.552 before the implementation, it was 14,387 after the implementation. As a result, it was determined that the statistically significant difference in real achievement favored the post-implementation. In other words, English language education with digital stories caused an increase in the achievement of the participants after the implementation compared to before the implementation.

Findings Obtained Through the English Language Teaching Interview Questions with Digital Stories

The findings obtained from the interviews with ten teacher candidates determined among the participants were presented in tables by the question titles. First of all, the participants in the interview were asked, "What is digital storytelling? Can you describe it in your own words?" question was posed. The codes created by examining the answers to the question are shown in Table 5.

Table 5

Views on the definition of digital storytelling

Code	N
The use of computers in storytelling	9
Adding audio and video to stories	4
It is a form of teaching	3

It is seen that the interviewees define digital storytelling at the highest rate as "Using computers in storytelling". Secondly, it was determined that the interviewees defined "Adding sound and image to stories". Finally, it is understood that the interviewees define digital stories as "a form of teaching".

"What comes to your mind when you say English education with digital stories?" question was posed to participants. The codes created are shown in Table 6.

Table 6

Views on English education with digital stories

Code	N
The use of digital stories in English language teaching	7
It is a method used in distance education.	2
Teaching the English language with real-life events	1

It is seen that the interviewees define English language education with digital stories as the "Use of digital stories in English education" at the highest rate. Secondly, it was determined that the interviewees defined "a method used in distance education". Finally, it is understood that the interviewees describe English language education with digital stories as “Teaching English with real-life events”.

The participants were asked, “Do you think English education with digital stories is beneficial?” question. The codes created are shown in Table 7.

Table 7

Views on the benefits of learning the English language with digital stories

Code	**N**
I learned with fun	8
I had the opportunity to practice English	7
Improved my English knowledge	5
I met new friends	1

The most beneficial aspect of English language education with digital stories among the interviewees is “I learned with fun”. Secondly, it was determined that the interviewees expressed the phrase “I had the opportunity to practice English”. Third, it was determined that the interviewees expressed their opinion as "I have increased my English knowledge". Finally, it is understood that the interviewees included the expression "I met new friends" among the benefits of English education with digital stories.

To the participants, “Did you have any difficulties in English education with digital stories?” question was posed. The codes created are shown in Table 8.

Table 8

Views on the difficulties experienced in English education with digital stories

Code	**N**
Yes, I did	**7**
Internet connection	6
Some subjects were difficult	2
I had a hard time doing the exercises	3
Weekend hours	1
No, I did not	**3**

Over half of the interviewees mentioned a problem experienced in English language education with digital stories. Still, some interviewees stated that they did not experience any difficulties. It is seen that the most common problem experienced by the interviewees in English language education with digital stories is "Internet connection". Secondly, it was determined that the interviewees said, “Some of the subjects were difficult”. Third, it was determined that the interviewees expressed their opinion as "I had difficulty doing the exercises". Finally, it is understood that the interviewees included the expression "Class hours are on weekends" among the limitations of English education with digital stories.

“Would you like to apply digital stories in other lessons?” question is asked to the participants. The codes created are shown in Table 9.

Table 9

Views on the implementation of digital stories in other lessons

Code	N
Yes, I would	**8**
I believe it will be useful	5
I believe it will be fun	3
Appeals to multiple senses	1
No, I do not want to	**2**
Internet problem	1
Not suitable for all courses	1

Over half of the interviewees had favorable opinions about implementing digital stories in other lessons. Still, some had negative opinions. It is seen that the interviewees said their positive views on the application of digital stories in other lessons as "I believe it will be useful" at the highest rate. Secondly, it was determined that the interviewees expressed the phrase “I believe it will be fun”. Third, it was determined that the interviewees expressed a favorable opinion as "It appeals to more than one sense organ". On the other hand, it was determined that one of the interviewees had negative views about the application of digital stories in other lessons, stating that "Internet problem" and "It is not suitable for every lesson".

“Will you use digital stories in your future lessons? Why?" question was posed to participants. The codes created are shown in Table 10.

Table 10

Views on the use of digital stories in future lessons

Code	N
Yes, I use	**8**
Increases motivation	5
It has an educational effect	4
It can be used in distance education	2
It is economical	1
It provides a different environment	1
No, I do not use	**2**
Difficult to prepare	1
Difficult to apply in the classroom	1

Over half of the interviewees stated they had positive views on using digital stories in future lessons. Still, some had negative opinions. It is seen that the interviewees said their positive views on the use of digital stories in future lessons "Increases motivation" at the highest rate. Secondly, it was determined that the interviewees expressed the phrase “It has an educational effect”. Third, it was determined that the interviewees gave a positive opinion: “It can be used in distance education". Finally, it was found that one of the interviewees expressed positive views such as "It is economical" and "It provides a different environment". On the other hand, it was determined that one of the interviewees expressed opposing views on applying digital stories in future lessons, stating that "It is difficult to prepare" and "It is difficult to apply in the classroom".

Discussion, Conclusion, and Recommendations

The study aimed to provide English language education with digital stories with the participation of foreign national teacher candidates and to reveal the reflections of the education on the participants' self-efficacy, achievement and views about education. The findings reveal increased participants' self-efficacy after using English language education with digital stories compared to before the application. The increase draws attention to the increase in the sub-dimensions of reading, listening, writing, and speaking, as well as the overall scale. Studies investigating the effects of educational activities on self-efficacy reported that the participants' self-efficacy increased (Belda-Medina, 2022). English language education with digital stories was prepared easily and understandably; being an additional training to existing EFL courses and accessible online at any time positively affected the participants' self-efficacy. In addition, the fact that the teacher candidates who participated in the training were selected from among the teacher candidates studying at five different universities within the scope of a project positively affected their belief that they could improve their English (Goetze & Driver, 2022). In addition, English language education with digital stories is designed to allow students to improve their listening, reading, writing, and speaking skills. Considering all these, there has been improvement in the participants' general self-efficacy and skill areas.

In the study, the change in the achievement of the participants who received English language education with digital stories was determined after the implementation compared to the pre-implementation. The researchers developed the English Language Achievement Test for Teacher Candidates and revealed that the participants' achievement increased after the implementation compared to the pre-implementation. In studies investigating the effects of educational activities on achievement, it has been reported that an increase in the achievement of the participants was observed (Moiseenko, 2022). In digital story education, firstly, the pre-learning was activated, then listening to and watching the digital stories, even being readable as a comic book, short information about the subject, exercises, and homework were influential in the achievement of the participants.

The views of the participants who received English language education with digital stories were also revealed through interviews conducted within the scope of the study. The interviews revealed that the participants' awareness of digital stories caused them to define digital stories as a teaching method that can be used in English language education and other courses. Participants found the digital stories entertaining, practical, informative, and helpful in making friends. However, the participants stated that they had problems with an internet connection, subject difficulty, practice difficulty, and lesson hours during the training with digital stories. Most participants said they would use digital stories in their future lessons to increase motivation, be compatible with distance education, and be economical. However, very few participants stated that they would not use digital stories in their future lessons due to the difficulty of preparing and applying them in the classroom. In studies conducted to determine the effects of training given with digital stories on the opinions of the participants, it was found that the awareness of the participants increased, the participants began to see digital stories as a teaching tool, and they led to positive thoughts such as motivating, entertaining and instructive about digital stories (Okumus, 2020; Tanrıkulu, 2022). It is seen that the participant views that emerged in this study are due to the features such as the participant level of the distance education given using digital stories, its ability to help the lessons, and the fact that the participants talk about the events that they may encounter in real life.

As a result, it was determined that English language education with digital stories increased the participants' self-efficacy and achievement and caused them to develop opinions by providing educational experiences with digital stories. Because the participants are foreign nationals, the digital stories are prepared according to the content determined by CoHE, they are made with distance education, and the participant's views increase the study's originality. Future studies need to determine the effects of digital stories if English language education is adapted to EFL programs or harmonized with courses at primary, secondary, and high school levels. In addition, it is thought that determining the effects of English language education with digital stories on different variables such as attitude towards the lesson, vocabulary, and word patterns, besides self-efficacy, achievement, and participant views, will make significant contributions to the field.

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Appendixes

Appendix 1: Sample Items of the Self-Efficacy Scale for the English Language

I can understand when I read a text written in English.

I need help doing the given activities related to writing in English

I can extract the main idea of the English speakers I listen to.

I can meet my daily needs by using English.

Appendix 2: Sample Items of the English Language Achievement Test for Teacher Candidates

17. Which of the following is the sentence in a paragraph in which the main idea is reworded?

Concluding sentence

Supporting sentences

Topic sentence.

Detailed sentences

Discussion sentence

20. Tim is an education researcher and plans to do research with middle school students. Since he is planning to search with students, he needs to ask for the permission of parents and students.

Which of the below forms does Tim need to prepare to get permission from parents and students?

Information form

Contact form

Consent form

Registration form

Application form

Appendix 3: The English Language Teaching Interview Questions with Digital Stories

1. What is digital storytelling? Can you describe it in your own words?
2. What comes to mind when you think of English education with digital stories?
3. Do you think English education with digital stories is practical?
4. Did you have any difficulties in learning English with digital stories?
5. Would the digital stories be applied in other lessons?
6. Will you use digital stories in your future lessons? Why?

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The Effect of Traditional Child Games on Fifth-Grade Students' Attitudes Related to Geometry

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Abstract

This study aims to define whether geometry teaching was carried out with the help of traditional children's games for middle school 5th-grade students. In other words, it was tried to understand if it affected students' attitudes towards geometry while keeping traditional children's games alive and their importance in general education and teaching activities. This study was quantitative, and *"a pretest-posttest quasi-experimental design with paired control group"* was used. The results were handed with the *"Attitude Scale Towards Geometry"* in the 2021 and 2022 education year. The scale was developed by Ozmen (2019), and while operating this scale, Ozmen benefited from Bindak's (2004) "examination of students' attitudes and behaviors towards geometry." The study group of the research was composed of 42 5th-grade students in total in two classes, including 21 students each. They had education at a state secondary school in the Nusaybin district of Mardin. One of these classes was defined as the experimental group, and the other one as the control group. In the experimental group of the research, the geometry subject of measuring area and length was handled with 5 traditional children's games, and the same subject was taught by using traditional/old methods in the control group. Dependent and independent t-test was used to reveal if the application to the experimental group significantly affected students' attitudes toward geometry. According to the t-tests' result, it may be said that the use of traditional and cultural children's games used in the experimental group developed academic success more than the control group in which the traditional/old methods were used. So, it can be thought that using traditional and cultural child games in geometry lessons developed students' academic success.

***Keywords*:** Traditional child games, Attitude, Game, Geometry.

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Geleneksel Çocuk Oyunlarıyla Yapılan Öğretimin 5. Sınıf Öğrencilerinin Geometri Tutumlarına Etkisi

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Öz

Bu çalışmanın amacı ortaokul 5. sınıf öğrencilerine yönelik geleneksel çocuk oyunları yardımıyla geometri öğretiminin yapılıp yapılmadığını belirlemektir. Başka bir deyişle geleneksel çocuk oyunlarının yaşatılmasında öğrencilerin geometriye yönelik tutumlarına ve genel eğitim-öğretim etkinliklerindeki önemine etkisinin olup olmadığı incelenmiştir. Bu çalışma nicel bir çalışma olup "eşleştirilmiş kontrol gruplu ön test-son test yarı deneysel tasarım" kullanılmıştır. Veriler 2021 ve 2022 eğitim-öğretim yılında "Geometriye İlişkin Tutum Ölçeği" ile toplanmmıştır. Ölçek Özmen (2019) tarafından geliştirilmiş olup, Özmen bu ölçeği uygularken Bindak'ın (2004) "öğrencilerin geometriye yönelik tutum ve davranışlarının incelenmesi" adlı çalışmasından yararlanmıştır. Araştırmanın çalışma grubunu, Mardin'in Nusaybin ilçesindeki bir devlet ortaokulunda öğrenim gören 21'er kişilik iki farklı 5. sınıftaki toplam 42 öğrenci oluşturmuştur. Bu sınıflardan biri deney grubu, diğeri ise kontrol grubu olarak tanımlanmıştır. Araştırmanın deney grubunda alan ve uzunluk ölçümü geometri konusu 5 geleneksel çocuk oyunuyla işlenirken, kontrol grubunda aynı konu geleneksel/eski yöntemlerle işlenmiştir. Deney grubuna yapılan uygulamanın öğrencilerin geometriye yönelik tutumları üzerinde anlamlı bir etkisinin olup olmadığını ortaya koymak için bağımlı ve bağımsız t testi kullanılmıştır. T testi sonucuna göre deney grubunda kullanılan geleneksel ve kültürel çocuk oyunlarının kullanımının, geleneksel/eski yöntemlerin kullanıldığı kontrol grubuna göre akademik başarıyı daha fazla geliştirdiği söylenebilir. Dolayısıyla geleneksel ve kültürel çocuk oyunlarının geometri derslerinde kullanılmasının öğrencilerin akademik başarısını arttırdığı düşünülebilir.

Anahtar Sözcükler: Geleneksel Çocuk Oyunları, Tutum, Oyun, Geometri.

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Introduction

"Educational game method is thought to be a teaching method. So it is primarily used for making lessons enjoyable. It is applied in the consolidation phase after knowledge acquisition" (Songur, 2006, p. 8). If it is tried to understand a culture, it is necessary to examine the traditional games played by the children of this society. The relationship between child games and culture is also significant. Because traditional child games are the production of culture, on the other hand, it is known that children's habit of imaginary games may have taken them away from their warm nature of families, true social stakeholders, and local and learned culture and directs them to be members of an artificial and virtual world. It is known that culture is sometimes used in return for education (Toker, S., & Baturay, M. H., 2016). Because of the rapid development of technology, today's children, known as "Generation Z," generally known as "zoomers," is the demographic group "succeeding millennials," and preceding "Generation Alpha",”" often shortened to "Gen Z" may be unable to play the games that their elder brothers and sisters and ancestors played when they were children and young. In this way, they may move away from natural games and become estranged from their local cultural values. This situation obstructs children from the developmental gains of play. Childrens' social, psychological, and cultural developments, as well as physical and biological growth, depend on these activities. Today, traditional child games have been replaced by tabletop virtual and violence, and dangerous games that do not require movement and physical activities and hinders the child's development (Sakamoto, 1994, pp. 21-42).

The education given to individuals to meet their learning necessities is also changing, and these changes in return for developments have also been observed in this area clearly. Instead of presenting all the new information ready-made, it aims to ensure the improvement of youth in terms of cognitive, affective, and psycho-motor skills (Güneş, 2010). These science, technology, and education developments bring new understandings and teaching methods. Recently, student-centered approaches and methods have also been emphasized and tried to be used in teaching and learning. All dimensions and areas of social life are affected by innovations in education. It has also affected mathematics teaching and especially mathematical knowledge. Children worldwide have been playing traditional games from the past to the present.

Childhood means play from beginning to end. Because play is one of the basic needs of the child. They spend most of their time playing games. In other words, life is a kind of play for them. Playing especially traditional games allows children to acquire preliminary information about the real world. This preliminary knowledge can lighten the way for all sciences, such as those related to language, art, mathematics, and science, that they will learn over time. It can also help children find solutions to many problems that they may encounter in real life or in the positive or negative classroom environment. While games resemble activities done for, having fun and good times, mathematics is understood as a serious completing lesson (Uğurel, 2003). However, games are not only the activities that keep children busy in childhood and a set of concepts that can be taught through textbooks, but also a lively and alive process (Demir, 2016). If human behaviors and manners are deeply analyzed, they may be understood as all geometry and mathematical productions. It means real or non-real life consists of mathematical strategies that are derived from games. Generally, it can be said that the mathematical operations used by children in daily life excite and make them wonder. As it can be seen and understood, mathematics has an important place in the children's daily life, school life, and every environment in which they play and have fun.

It has become necessary to use different methods and strategies in learning. Geometry course/science is an essential subbranch of mathematics that makes students comprehend, represent the world,, and analyze the problems to solve and visually understand the world. The world is only an example of advanced calculations (Struchens, Harris, & Martin, 2001, pp. 41-44). Geometry is one of the main branches of mathematics, including shapes, space, spatial shapes, points, lines, planes, and their relations, as well as the structure of geometric shapes, including volume, area, length, angle, and area. Attitude refers to the manner explained in Turkish (TDK [Turkish Language Institution], 2022). Attitude related to geometry is a kind of manner and behavior about understanding the world. In fact, it directs and controls the student's feelings, thoughts, and behaviors for the geometry activities, the geometry subject, the teacher, and the messages derived from geometry. In other words, geometry is

accepted to be good or bad, as well as the beliefs about the benefits of any subject. Because it may be possible to analyze the environment with the geometrical calculating structure (Kaba, Boazlyan, and Daymaz, 2016, p. 336). Personal and individual attitudes influence the students' learning style and success (Bindak, 2004, pp. 8-14). Affective examination of geometry topics is crucial and important for learning and instruction (Ünlü & Ertekin, 2018, p.20). It is a kind of result derived from measurement and interpretation. In order to achieve the desired goals in geometry, it is crucial in this context to determine students' attitudes about geometry. There are many international quantification and consideration studies. According to international examinations such as PISA and TIMMS, as well as national examinations such as LGS and YKS, Türkiye does not achieve the desired level of mathematics success. It is believed that a lot of students in LGS and YKS do not succeed in finding correct answers for any questions in the mathematics course.

Traditional and national child games have significant effects on all aspects of a child's development and growth. A child's language development is controlled and directed by nursery rhymes and lullabies. So, the child's physical development is directly affected by the game's jumping and running movements. Thesese social and cultural achievements are affected by greeting at the beginning of the game, such as congratulating the winner, combating together, and saying farewell in the conclusion. A child who internalizes his or her problems in daily life reflects on the outside in the game, allowing the child's family and teachers to learn more about him or her. A child's personality develops through these kinds of plays. In all games, a child's constant thinking and cognition develop when he or she plans to solve problems. In fact, developing the abilities of problem-solving is an important gain (Altunay, 2004, pp. 17-26). So, it may be thought that all mathematics teachers must teach by using more children's games along with the process.

In geometry and mathematics education, it is understandable that behavior-change is necessary and constant. Teaching without modern methods and techniques is the leg behind contemporary teaching approaches. Lessons related to game-based activities may be viewed as an alternative technique and method. It is impossible to understand the reason and results of natural events in the world without geometry (Aydın, 2021, p.3). These courses, which play a critical role in daily life, evolve and change with humanity. The importance of mathematics education has grown due to rapid life changes, technological advancements, and current needs. In that case, mathematics is a clear technology language everybody uses (Gelişen, 2017, p.17).

When the literature is analyzed, it was understood that the plurality of studies have focused on the pleasure and benefits of games supporting learning in mathematics education. Dündar (2022) wanted to determine the combining area and length measurements. Affective topics play a very important role in mathematics education. So, it is accepted that students' beliefs influence their behaviors. For that reason, identifying their beliefs may be possible. Because traditional games in cultural format show and shape their manner and behaviors (Duatepe & Paksu, 2013, p. 215). According to Turul & Kavici, (2002) the usage of child games during mathematics education has also increased students' interest in the subject. However, a lot of studies were organized on the effects of traditional and cultural child games on achievement and attitudes. There is insufficient research on the effects of traditional child games on attitudes. Therefore, there is a need for research to understand the effect of traditional child games on students' attitudes toward geometry. When traditional games were examined, it was understood that they were generally played in open areas. There are many group games, and the social relations are close. But when modern games are examined/played, it is seen and known that they are generally played in closed areas ,there are mostly individual games, and social relations are weak (Sormaz and Yüksel, 2012

Problem and Sub-Problems in the Research

This experimental research is necessary to determine whether teaching traditional child games affects the attitudes toward learning geometry of secondary school 5th-grade students. Soon after having the data of this research, it may be said that one of the basing aims is to effect the abstract subjects of mathematics with traditional child games, to visualize the subject, to learn with pleasure through doing and preserve the forgotten traditional child games. As a result, it is also necessary to answer the problem question; *"Does teaching with traditional children's games affect fifth-grade students' attitudes toward*

geometry?" In the process of answering this problem, the question above and subquestions below were formulated and tried to answer.

1) Is there a statistically significant difference between the results of the attitude scale
2) administered to the experimental and control groups of students prior to the research?
3) What about the difference between the pre-study attitude scale and the post-study attitude scale for the experimental group of students who were taught traditional children's games and their attitudes towards geometry?
4) What can be said about the difference between the pre-test and post-test attitudes administered to the students in the control group before and after the research?
5) At the conclusion of the research, is there a statistically significant difference between experimental and control group students' attitudes on the geometry attitude scale post-test?

Method

This study included a *"pre-test-post-test, quasi-experimental design with paired control groups"* to find out if teaching geometry subjects with the help of traditional child games had a meaningful influence on students' behaviors and manners. Due to the structure and location of the research and various problems, such as weather, it was extremely challenging to form identical or comparable participant groups. The researchers randomly assigned the first student groups as the experimental group and the second as the control group. This formatted research is called experimental research (Büyükoztürk, Çakmak, Akgün, Karadeniz, and Demirel, 2008). The pre-test is applied simultaneously to both groups. The control group maintains the standard curriculum, i.e., lessons are taught by using the conventional approach. This model's pre-test helps to find out the similarities between the chosen participant groups prior to the experiment and to interpret the results of the post-test administered after the experiment. This model is successful in finding out the differences between these two control and experimental participant groups (Ozmen & Karamustaolu, 2019, p. 209).

Research Design

This study is quasi-experimental in nature because it investigated whether traditional children's games had an effect on students' attitudes and academic success in mathematics and geometry. ***"The pre-test and post-test method"*** was utilized to determine the difference between using traditional child games and traditional teaching methods. Like a true experiment, "quasi-experimental research" attempts to show that there is "a cause-effect relationship" between the dependent and independent variables. On the other hand, a quasi-experiment does not rely on random assignment, unlike a true experiment. The subjects are divided into groups according to non-random variables.

Research Sample / Study Group

In this research, the 5-D class was chosen as the experimental and 5-C class was the control group and each class consisted of 21 5th-grade students attending a state secondary school in the Nusaybin district of Mardin during the 2021-2022 academic year, which were randomly defined as the study group. So, these selected groups' primary school achievement averages were also comparable according to definite variables such as their success points in the previous academic years. At the beginning of this study, both groups named experimental and control groups were given and applied the geometry attitude scale. ***"Geometry Attitude Scale"*** was applied to these groups as a post-test to determine the difference between the groups in the and of the study.

Research Instruments and Process

The data of this study were collected with the written consent of the students' families during the second half of the 2021-2022 academic year in 5 weeks and 22 hours. The ***"Attitudes Towards Geometry Scale"*** was used to notice the attitudes of students towards geometry. One of the researchers must be an expert on children's games. In this study one of the researchers is an expert on this area because of having some published studies.

In this study, the *"Attitude Scale Towards Geometry"* scale was answered by the participants. The scale was developed by Ozmen (2019). While developing this scale, Ozmen benefited from Bindak's (2004) "examination of students' attitudes and behaviors towards geometry". The *"Attitudes to Geometry Scale (GTS)"* developed by Bindak (2004) having 25 items and is a *"5-point Likert scale (1 = I strongly disagree, 5 = I strongly agree)."* With the addition of geometry to the fifth-grade curriculum, students' attitudes towards geometry were assessed. And also, there are 9 positive and 16 negative items in the scale, which was used to collect the research data. Bindak (2004) calculated/studied the scale's validity and reliability analysis using Cronbach alpha data, such as internal consistency, using the item-remaining-total correlation techniques. The calculation revealed the "Cronbach Alpha coefficient to be 0.94 and the test half reliability to be 0.88. FAO includes "interest" sub-dimension (M6, M18, M21, M22), "avoidance" sub-dimension (M1, M9, M14, M17, M20, M24, M25), "anxiety" sub-dimension (M2, M5, M11, 12-13, 16), and "pleasure-enjoyment" sub-dimension (M2, M5, M11, 12-13, 16). (M3, M4, M7, M8, M10, M15, M19, M23)." *"The Cronbach Alpha Internal Consistency Coefficients"* were 0.88 for the entire scale, 0.91 for the "pleasure-enjoyment" sub-dimension, 0.86 for the "anxiety" sub-dimension, 0.81 for the "avoidance" sub-dimension and 0.81 for the "interest" sub-dimension in the analyses. Bindak (2004) conducted the study for the FAO. It was also determined to be 0.66. In the study conducted by Ozmen (2019), the first 16 of the 20-item scales were designed to detect positive attitudes, while the last 4 were designed to detect negatives. A high score on the inventory indicates a positive attitude about geometry. On the other hand, the low score indicates that the students have negative attitudes toward geometry. At the beginning and end of the study, the experimental procedure was applied, such as a pre-test and post-test, to define experimental and control groups. *"The pre-test Cronbach Alpha"* values according to the Experiment I, Experiment II, Experiment III, and control groups *"Geometry Attitude Scale"* were 0.84, 0.90, 0.88, and 0.86, while the post-test *"Cronbach Alpha"* values were 0.87, 0.82, 0.85, and 0.90. Examining these values (>.70) demonstrated that the measurements provided by the scale were also accurate.

Data Analysis

In the second academic year of 2021-2022 the ***"Attitude Scale Towards Geometry"*** was carried out on the control and experimental groups. Then, in the experimental group, the lesson was taught with traditional children's games. In the control group, the lesson was taught with teaching methods within the framework of the current program, such as presentation, invention, research, and analysis strategies and the methods and techniques of these strategies. At the end of the process, the attitude scale was applied to the students in both groups. The obtained results were entered into the computer system with the help of the SPSS 23.0 program and analyzed within this framework. *"Shapiro-Wilk Test"* was used when evaluating the collected data because each participant group was less than 30. Parametric tests were used because the data were distributed normally depending on the data of the *"Shapiro-Wilk Test."* In analyzing the results handed and according to the research questions, the analyses were made using independent and dependent samples t-test of parametric tests. In interpreting the analysis results, the significance threshold was set as 0.05.

Ethical Procedures

The ethics committee permissions were obtained with the letter dated 18.05.2022 and numbered E-88179374-302.08.01-2200148507 of the "Social and Human Sciences Scientific Research and Publication Ethics Committee of Atatürk University Institute of Educational Sciences."

Results

In this part of the research, the related data collected and the reasons derived from their analysis were tried to be discussed. The results and answers of this study's main and four subproblems were evaluated after being presented in tables and graphs in a definite order.

According to the answer to the first subproblem/question, *"Is there a significant difference between the pre-study results of the geometry attitude scale administered to the experimental and control groups?"* The data were analyzed by using the t-test for independent participants/samples. Because it was planned to find out whether the data had a meaningful difference between the average attitude points of the two groups prior to this study. The results are presented in Table 1.

Table 1.

Results of the Attitude Scale Given to Students in the Experimental and Control Groups Prior to the Research

Test	Groups	N	$\bar{x}$	S	t	sd	p
Pre-test	Experimental Group	21	48.14	4.96	1.262	40	.214
	Control Group	21	45.71	7.28			

The difference between the pretest-related attitude score points in the experimental participant group's students (x=48.14) and the control group's pre-test mean scores (x=45.71) was not statistically significant according to the results handed [t(40)=1.262 p>.05]. In line with the findings, the two groups' pre-experiment readiness and attitude levels were equal. In other words, the distributions were homogeneous and normal.

The following sub-problem question was ***"Is there a significant difference between the pre-test and post-test attitudes of the experimental group students who were taught traditional children's games?"*** In order to reach the targeted data of this sub-problem question and to discover if there was a statistically meaningful difference between the used pre-test and post-test mean scores of the experimental group's students, dependent samples were tried to be calculated using the *"t-test."* The test results applied are shown in Table 2.

Table 2.

Results of the Geometry Attitude Scale Pre-Test and Post-Test Administered to Students in the Experimental Group Before the Study

Group	Test	N	$\bar{x}$	S	t	sd	P
Experimental Group	Pre Test	21	48.14	4.96	6.179	20	.000
	Post Test	21	53.95	3.72			

When looking at the dependent sample t-test, the difference between the mean score of t-test (x=48,142857) and the post-test's average score (x=53,952381) of the experimental participant students was statistically meaningful through the direction of the post-test. [t(20)].)=6.179 p.05].

As well as understanding from the results of teaching with traditional children's games were positively influencing students' behaviors and manners related to geometry. In other words, student attitudes changed at the end of the course in which traditional children's games were used. Teaching with children's games affects students' mathematical attitudes and behaviors.

The next sub-problem was, *"Is there a significant difference between the attitudes towards geometry measured in the pre-test applied to the students in the control group and the attitudes towards geometry measured in the post-test applied after the research?"* When the answers were examined, it was understood that a meaningful difference occurred between the pre-tests and post-tests' results. The results are shown in "Table 3." In accordance with the dependent samples' t-test, the difference between the average pre-test score of the experimental group's students (x=48.142857) and the post-test score's averages (x=53.952381) was statistically significant in the post-test direction [t(20)].)=6.179 p.05].

Table 3.

Findings Concerning the Attitudes of the Control Group Students on the Pre-Test Administered before the Research and the Post-Test Administered Following the Research

Group	Test	N	$\bar{x}$	S	t	sd	P
Control Group	Pre-Test	21	45.71	7.28	4.106	20	.001
	Post -Test	21	50.19	5.47			

When the dependent sample t-test data for Table 3 were evaluated, it could be thought that there was a statistically meaningful difference between the pre-test attitude score average (x=85.66) and the post-test attitude score average implemented to the control group participants at the beginning of the research (x =45.71) [t(20)=4.106 p>.05]. According to these results, it can be claimed that the attitudes of the experimental group's students who were taught using the traditional method also changed.

When the answers to the third sub-question, "*Is there a significant difference between the geometry attitude scale post-test attitudes of the participant students in the experimental and control groups?"* were evaluated, it was understood that there was a very important difference. In order to define whether there was an important and meaningful difference between the post-test attitude scores of the experimental group students trained with traditional children's games and the post-test attitude points of the control group's students trained with the traditional method, the t-test was applied to independent samples, and the results were given in Table 4.

Table 4.

Research Results Comparing the Post-Test Attitude Scores of Students in the Experimental Group and the Control Group

Grup	Test	N	$\bar{x}$	S	t	sd	p
Experimental Group	Post Test	21	53.95	3.72	2.605	40	.013
Control Group	Post Test	21	50.19	5.47			

In accordance with the independent sample t-test results in "Table 4," there was a statistically meaningful and important difference between the post-test's attitude mean scores of the participant experimental group (x=53.95) and the post-test's attitude score averages of the students in the control group (x=50.19). [t(40)=2.605 p>.05]. While looking at the results, there was an important difference between the attitude scores of the students in the experimental group, whose mathematics and geometry teaching was carried out with traditional children's games, and the students in the control group who were taught the same geometry subjects with traditional and classical methods. The difference found out was also in favor of the experimental group. In other words, attitudes changed in both groups. Still, the attitudes of the participant experimental group students towards geometry carried out with traditional children's games changed at a higher rate and in a positive way.

Discussion, Conclusion, and Recommendations

In this study, it was planned whether the use of traditional children's games in geometry teaching to fifth-grade students in secondary school affects their geometry learning attitudes or not. The results were summarized, and various suggestions were made so that they could make evaluations with the answers given to the sub-problems structured for this purpose and the collected data.

In this context and in accordance with the dependent t-test's results, there was a very important difference between the pre-test and post-test scores of the experimental group taught geometry using traditional child games. So, it may be said that teaching geometry with traditional children's games affected their attitudes/manners toward geometry subjects. It was sighted that this difference was against the pre-test. Based on the difference here, it was revealed that the inclusion of cultural child games in

the learning process and classroom environment in their teaching and learning experiences positively affected students' attitudes towards geometry. Therefore, it can be said that when a geometry lesson was given to the experimental group with traditional children's games, the attitudes of the participant students towards geometry developed positively.

On the other hand, when the dependent t-test results were examined, a meaningful difference emerged between the geometry attitude scale's pre-test implemented to the control group students at the beginning of the research and the post-test applied at the end of the research. At the same time, a critical difference between pre-test and post-test data occurred in the control group.

Due to the results of this research, a statistically meaningful difference found in the independent sample t-test performed on the post-test data of the experimental and control groups. In other experimental studies, apart from this study, it can be claimed that traditional and educational children's games positively affect students' learning/success/achievement. In almost all of the studies, the attitude scores of the experimental group increased significantly after the application process compared to the pre-experiment. In other words, teaching with traditional children's games had a more positive effect on students' attitudes than using traditional methods. More improvement was achieved in the teaching activities using traditional children's games used for the experimental group and then compared to the control group.

Aksoy (2010), Takcak (2012), Arslan (2012), and Kandil (2016) were similarly involved with this kind of study, and they were trying to find out the effect of video games on attitudes. According to the research data achieved by Arslan, it was ineffective in changing student attitudes. The studies of Kandil, Takcak, and Akçay revealed similar results to this study. It was determined that games changed the attitudes of 6th graders in Aksoy's study, 8th graders in Takcak's study, and 7th graders' in Kandil's study. In his research, Uğurel (2003) examined the opinions of teachers and pre-service teachers regarding teaching mathematics through games. In this research, it was observed that teachers and pre-service teachers stated that teaching with games increased students' interest in the lesson, improved their problem-solving skills, that they were active in lessons, established healthy communication, increased motivation, and that games enabled the students to learn information permanently and quickly. Similar studies were conducted by Hoşgör (2010), Güneş (2010) and Usta et al. (2016). In these studies, teachers and pre-service teachers stated that using traditional child games in mathematics teaching provides a better understanding of the subjects, provides permanent learning, motivates students positively, enables them to socialize, and contributes to their mental development. At the same time, it was observed that students developed positive attitudes toward mathematics, focused on the lesson, and actively participated in it thanks to the games. In the study conducted by Tural (2005), the effect of teaching subjects such as mathematics with the help of games and activities in primary school was examined on students' achievements and attitudes. According to the results obtained, it was observed that teaching with games and activities affected students' attitudes towards the lesson positively. Games increased interest in the lesson and the subject, made students active, and increased sharing among students. In his research, Demir (2016) examined the influence/effect of teaching mathematics through child games on the achievement and retention of first-grade students. Therefore, it was concluded that the game teaching method significantly affected the students' total achievements and learning retention in the mathematics course. In the study conducted by Galiç (2020), it was observed that teaching enriched with games positively affected students' attitudes and motivation toward mathematics lessons. In the research conducted by Kılıç (2010), "the effect of teaching with games on the success of the acquisition of operation skills in the first grades of primary school" was investigated. In the research, there was an increase in the success level of the group to which game teaching was applied and observed. In some other studies on teaching mathematics through games (Kebritchi and DG, 2008; Ashirbayev and DG, 2015; Boz, 2018; Galiç, 2020; Denli, 2021), it was observed that the game teaching method had a significant effect on the academic success of students. Therefore, all these studies support the research results.

As in many studies conducted in this area, the effect of cultural and traditional children's games on the geometry attitudes of fifth-grade primary school students was investigated. Experimental design, one of the quantitative research approaches, was used. Based on the data obtained in the study, some suggestions were made for future studies.

Suggestions for Researchers

- In this study, 5 activities representing traditional children's games were used. Teaching activities related to various subject areas can be enriched using more effective traditional children's games.
- The sampling group of this study is 5th-grade primary school students. More research can be designed and conducted at different grade levels of students on different subjects.
- This study, which was conducted in the Nusaybin district of Mardin province, was conducted in a public high school. The findings and results of the study are limited to the participant study group students and the data handed from them with the data collection tool. Researchers who will determine the effect of teaching conducted using traditional children's games on attitudes can be encouraged to conduct studies in more schools and with larger sample sizes.
- Longer-term comparative studies can be conducted with larger and more different age groups.
- As stated this study examined and evaluated the effect of teaching with traditional child games about students' attitudes and manners towards geometry.

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