

Research Paper

Examination of the Effect of Using Web 2.0 Tools in Environmental Education on Preschool Children's Attitudes Towards the Environment*

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ABSTRACT

In this study, it was aimed to examine the effects of using Web 2.0 tools in environmental education on the attitudes of preschool children towards the environment. The research used a combination of quantitative and qualitative data. Quantitative data were collected through the "Attitudes Toward the Environment Scale: Children's Attitudes Toward the Environment Scale-Preschool Version (CATES-PV)", and the qualitative data were collected through the "Interview Form" created by the researcher. A total of 38 children, 18 of them in the experimental group and 20 of them in the control group, aged between 60-72 month old attending a public day care center, participated in the study group of the research. One of the parents (mother or father) of the experimental group, which is the group where qualitative data were collected, participated in the research with 18 participants. Attitude towards the environment constitute dependent variable in the research. Independent variable is environments with and without Web 2.0 tools are used. In this research, two-factor ANOVA analysis for repeated measurements used for independent samples of the quantitative data obtained, descriptive analysis was applied to qualitative data. As a result of the research, a significant difference was determined between the average scores of children's attitudes towards the environment after the experimental procedure in the environment where Web 2.0 tools were used in environmental education. It was determined that the changes in the mean scores of attitudes towards the environment of the two groups before the experimental procedure were significantly higher in favor of the group in the environment where Web 2.0 tools were used in environmental education. In this study, it was concluded that the environment in which Web 2.0 tools are used in environmental education is effective in developing children's attitudes towards the environment. According to the qualitative findings, the parents in the experimental group stated that these tools made learning interesting, memorable and facilitating, provided continuity and permanence in learning, and were effective in developing correct attitudes.



INTRODUCTION

In the 21st century, Prensky (2001), who emphasizes the impact of social and communal differences created by technological development on people, talks about a generation born into digital technology and states that this generation differs from previous generations in this purport. Prensky defined this generation as "digital native". The current generation spends time with smart devices starting from early childhood or even infancy through educational or entertaining games chosen by their parents (Metek and Batıbay, 2019). The technologies used for educational purposes in the preschool period are digital painting, digital books, gamifications and mobile applications. In the past, educational activities with paper and pencil were considered sufficient in the education of preschool children, but today, multimedia software is also used to meet the needs of children (Konstantinidis, Theodosiadou, and Pappos, 2013). It has been stated that more research is needed to see the development of language and vocabulary, logic and mathematical understanding, problem solving skills, self-regulation and social skills in preschool children with the use of technology tools (Radich, 2013).

It has been determined that the efficient use of technological tools used for educational purposes in preschool period increases children's motivation towards activities. It is stated that the reason for this may be children's interest in technology (Kal, 2012; As cited in: Bulut, 2018). Preschool children can develop learning experiences with every tool in their environment. The rich experiences offered during this period positively affect children's development. It is an important need to see technological tools and computers as a learning tool that provides information communication in the classroom environment (Sayan, 2016). In order to use these technologies in the classroom environment, electronic content appropriate to the developmental levels of preschool children is needed.

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The freedom to develop content in Web 2.0 tools gives the opportunity to produce content suitable for the developmental levels of preschool children. Web 2.0 tools can be defined as online environments where users can interact and develop content and share these developed contents on different platforms (Grosseck, 2009; Yazıcı, Ocak and Bozkurt, 2021).

As a result of the pandemic that started in China and spread all over the world, face-to-face education was suspended. In order not to disrupt education, distance education was urgently introduced at all levels, from higher education to pre-school. Thus, the use of technology in education has become a necessity for teachers and students at all levels, and even for parents. Television and web-based technologies were used in the emergency distance education process. The importance of interaction in the distance education process during the pandemic period has emerged with the start of distance education activities at all levels from pre-school to higher education.

Significant research on the use of Web 2.0 tools in education has increased during the Covid-19 pandemic. Başaran and Kılınçarslan (2021) conducted a study in a quasi-experimental model with a pre-test, post-test control group using Web 2.0 tools in literacy education for children attending distance education during the pandemic process. The findings of the study showed that the experimental group, in which the games prepared using Web 2.0 tools were applied, improved the skills of teaching first reading and writing, distinguishing the letter, spelling, and reading the letter in the text compared to the control group. Türker and Dündar (2020) examined the views of students receiving distance education at the secondary education level and 565 secondary school students participated in the study. When the findings of the research are examined, it is seen that EBA (Educational Information Network) application alone is not sufficient and that they can receive feedback effectively in live lessons. In a study conducted by Türker and Dündar (2020) examining the opinions of high school teachers in distance education, it was stated that there were difficulties in technical issues in distance education, but it was also stated that EBA has some strengths, such as its rich content and the possibility of sharing questions and live lessons. In a study conducted by Keskin and Özer (2020) in higher education, it was stated that they did not see web-based learning as effective as face-to-face education, but it gave them the opportunity to learn at their own pace. Yürek (2021) examined the opinions of academicians in the field regarding the implementation of distance education in preschool period. It was stated that the participants expressed a common opinion that the cognitive development area of the child could be supported through distance education, but that the child may not be adequately supported in the field of social-emotional development and therefore would experience limitations.

It was determined that the studies conducted with Web 2.0 tools in the preschool period were quite limited and the existing studies were conducted during the pandemic period. However, Web 2.0 tools offer easy access, the opportunity to produce and share content according to children's developmental level-interest-needs (Atıcı and Yıldırım, 2010). With the content produced through Web 2.0, it may be possible to acquire the knowledge and skills needed in daily life and transform these knowledge and skills into positive attitudes. Web 2.0 tools, which play a major role in raising individuals who will meet the requirements of the age with their potential contributions to attitude and learning and other aspects, are becoming one of the indispensable elements of 21. century education (Dere, Yücel and Yalçmalp, 2016; Gündoğdu, 2017).

The attitudes that individuals exhibit in daily life develop starting in the first years of life. Attitudes, which are enriched by learning and experiences and transform into the identity of individuals over the years, can be supported positively with appropriate training starting from early periods. The attitudes and behaviors acquired by the child in the preschool period form the permanent personality structure of the future adult (Gülşay-Ogelman and Güngör, 2015). In this study, the effect of using Web 2.0 tools in environmental education on preschool children's attitudes towards the environment was examined. In the preschool period, the formation of knowledge about the environment, the correct perception of the environment and its components, and the development of behavioral changes and positive attitudes in the desired direction are too important to be ignored. Because every child born today is born into the climate crisis and environmental problems. With an appropriate environmental education in the preschool period, it is possible to ensure that children become adults who are sensitive to the environment they live in and to contribute by supporting their developmental areas (Kınık, Okyay and Aydoğan, 2016).

In a study by Shin (2008), many environmental educators in Korea and other countries agreed that environmental education should begin at a young age and that environmental experiences at a young age are essential for developing children's attitudes, curiosity, sense of respect and responsibility to care for the environment. Similarly, Shepardson et al. (2007) stated that children may have deficiencies in defining the environment. In the study, it was emphasized that while children could define the environment as nature, forests, living and non-living things, they mostly did not mention the urban environment. In this case, introducing the environment to children through environmental education in the preschool period gains importance in terms of developing the right attitudes.

It is known that learning is intertwined with play in accordance with the developmental characteristics of preschool children and that audiovisual elements positively affect learning. Videos, audio studies, visual text reading studies, interactive presentations, concept games created using Web 2.0 tools prepared within the scope of environmental education for preschool children can make learning interesting and permanent. This can help children develop positive attitudes towards the environment.

When the literature is examined, there are a limited number of studies in which environmental education is provided with technological tools in preschool period; studies conducted specifically on Web 2.0 tools are even more limited. However, teachers working with preschool children also need examples of successful practices to improve their technology knowledge, skills and experience (Radich, 2013).

In today's conditions where we are faced with the environmental problems mentioned above and technology has become a part of life, the problem of this study is to what extent environmental activities developed with Web 2.0 tools and environmental activities prepared using traditional materials will be effective on children's attitudes towards the environment, taking into account the developmental characteristics of 60–72-month-old preschool children.

In this study, it is aimed to examine whether the use of Web 2.0 tools in environmental education has an effect on preschool children's attitudes towards the environment and to examine the views of parents on the use of technology at home. In line with this general objective, answers to the following questions were sought:

1. Is there a significant difference between repeated measures (pre-test-post-test) of preschool children regardless of which group they are in (as a single group)?
2. Is there a significant difference between the attitude towards the environment scores obtained from the repeated measurements of the groups of preschool children who received and did not receive environmental education prepared using Web 2.0 tools, regardless of the change between pre-test and post-test?
3. Does the change observed in the repeated measurements of preschool children's attitude towards the environment variable show a significant difference between the groups that received and did not receive environmental education prepared using Web 2.0 tools (experimental-control)?
4. For the parents of the experimental group, what are the technological tools used by children at home and for what purpose?
5. For the parents of the experimental group, were there/are there any changes in the children's home environment for the implementation process?
6. What are the views of the experimental group's parents on the use of Web 2.0 tools for educational purposes in early childhood?

METHOD

Research Design

In this study, both quantitative and qualitative methods were used together. The combination of different methods is important in determining the validity and reliability of the data collected. Both research methods have advantages for the field of education. Of course, qualitative methods cannot be used as a substitute for quantitative methods, but both forms of research can be used together to support each other. For this reason, it is becoming increasingly important for researchers in the field of education to acquire the necessary knowledge and skills in quantitative and qualitative methods (Yıldırım, 1999).

The research was planned in two phases. In the first stage, a quasi-experimental design with pre-test-post-test control group was used to examine the effect of using Web 2.0 tools in environmental education on preschool children's attitudes towards the environment. The aim of research using experimental design is to discover the cause and effect relationship between variables. In the study, the research design was determined as a quasi-experimental design since two groups were randomly selected from the groups that were ready to be used in determining the experimental groups and experimental and control groups were formed accordingly (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz and Demirel, 2017).

Independent variable is environments with and without Web 2.0 tools are used. While one of the independent variables is the randomization of the groups, i.e. being in the experimental and control groups, another variable is the measurements of the dependent variable made at different times (pre-test, post-test measurements) (Büyüköztürk, 2011). The dependent variable is attitude towards the environment.

In the second stage of the study, parents' views on the use of technology at home were collected through an interview form.

Working Group

The research was carried out in a pre-school institution located in the Çankaya district of Ankara province in the 2021-2022 academic year. The experimental group consisted of 18 children, the control group consisted of 20 children, and a total of 38 children between the ages of 60-72 months. Qualitative data were collected from 18 participants who were either mothers or fathers.

Data Collection Tools

In the study, the Attitude Towards Environment Scale was used to collect quantitative data: The Children's Environmental Attitude Scale Preschool Version (CATES-PV) was used. An interview form prepared by the researcher was used to collect qualitative data.

Environmental Attitude Scale: Children's Environmental Attitude Scale Preschool Version (CATES-PV)

The CATES-PV scale was developed by Musser and Diamond (1999) to measure preschool children's attitudes towards the environment (As cited in: Erol, 2016). Gülay (2011) conducted a study on the adaptation of CATES-PV into Turkish. There are 15 items in the scale. Each article has an image that points to a specific environmental issue. Children should choose their favorite picture from the pictures. Then point to the big and small circles and ask whether there is more or less and mark the answer. Each item in the scale is scored between 1-4. In this measurement tool, which has no subscales, total scores are calculated. The highest and lowest score that can be obtained from the scale is 60 and 15. Scores close to full points in the scale are interpreted as high

levels of environmental behaviors (Gülay, 2011). In the study, the Cronbach's alpha value of the scale was determined as .826; highly reliable.

Semi-structured Interview Form for Families on Process Evaluation and Learning Children's Transfers

It was prepared by the researcher in order to obtain the evaluations of the parents regarding the process experienced at school, the transfers of the experimental group children in the home environment regarding the implementation of the activities prepared using Web 2.0 tools, the technological tools used by the children at home, and the evaluations of the parents regarding the family involvement activities. The form was reviewed and finalized by two academicians working in the field of educational technology and a master's graduate preschool teacher with 5 years of teaching experience who worked with the researcher. The semi-structured interview form was sent to the families of the children included in the experimental group.

Preparations Before Experimental Application

Material Development Suitable for Preschool Period Development within the Scope of Experimental Application with Powtoon Tool

In the study, the activities applied to the experimental and control groups were prepared by the researcher. Instructional materials prepared with Powtoon and Wordwall tools, which are Web 2.0 tools, were applied to the experimental group. Expert opinion was obtained from pre-school teachers before the implementation of the activities prepared for the experimental group. Necessary arrangements were made in line with expert opinions. The fact that children heard the voices of people they recognized in the video was a facilitating factor for them to pay attention to the video or presentation in Powtoon. The duration of the videos produced on Powtoon did not exceed 3 minutes. In the preschool period, play is seen as an integral part of learning. For this reason, even if a Web 2.0 tool is used in part of the activity, it is important to establish a relationship between this tool and a game or a post-video activity and to maintain the context. For this reason, the end of each video prepared with Powtoon in the context of environmental education included in the activities in this study usually ends by explaining the work to be done after the video and giving the necessary guidance.

In the theoretical framework, it is stated that the important element that distinguishes Web 2.0 tools from others is interaction. In this study, in the fiction included in the videos prepared with Powtoon, children were addressed by their names in the voiceover made by the researcher and asked questions, received ideas, asked to complete the story, etc. The children directly followed the instructions given in the Powtoon video without the intervention of the teachers in the classroom or the researcher. In this way, the children in the experimental group were able to interact with Powtoon.

Development of Developmentally Appropriate Materials in Preschool Period within the Scope of Experimental Application with Wordwall

Before starting the experimental implementation process, the researcher prepared various games with Wordwall to be used in family participation or in the learning process to be applied to the experimental group.

In this study, Wordwall was mostly used in the learning process for gamification or assessment purposes or in family engagement activities as a support. The games prepared with Wordwall facilitated the diversification of learning strategies in the activities. Brainstorming technique was used through question-and-answer activities that included suggestions for solutions to environmental problems, and learning by discovery strategy was used through gamification of visuals related to environmental problems.

In order for the games prepared in Wordwall to be suitable for the development of preschool children, the questions included were reduced and the duration was extended. It is made up entirely of visuals. We tried to increase children's readiness for the games by ensuring that the visuals included in the family involvement activities were selected from those that were also used at school that day.

Implementation and Data Collection

Experimental Implementation Process

Within the scope of the research, activities related to environmental education for both the experimental and control groups are included in the Preschool Education Program (MEB, 2013). It was prepared to include the outcomes and indicators, vocabulary and concepts, specific days and weeks, family participation and learning process in the Monthly Education Plan for the month of implementation. In both the experimental and control groups, an 8-week experimental application consisting of environmental education activities was conducted 3 times a week. The activity prepared for the experimental and control groups included the same outcomes and indicators. Outdoor activities were included in both the experimental and control groups. The main difference between the groups was that the experimental group interacted with Web 2.0 tools in some parts of the activity plan, while the control group interacted with traditional materials.

In the planning phase of the activities, some themes related to the environment were identified by the researcher. These can be listed as climate change, water resources and the reason/importance of saving, life in soil, life in water, energy resources and the reason/importance of energy conservation, air-water-soil pollution, recycling and upcycling, paper consumption, respect for wildlife. Whichever theme was studied in the experimental group, the same theme was studied in the control group. Before the application, the themes that could be applied for the next day's application were shared with the children and the activity they chose from the options given was applied. It was observed that this situation positively affected children's participation in the activity.

Data Analysis

The quantitative data collected within the scope of the research were found to be normally distributed. Two-factor ANOVA test for repeated measures was applied to analyze the quantitative data. Two-factor ANOVA is used to test whether there are significant main effects for each of the independent variables and whether the interaction between two variables is significant. It is used in studies where both between-group design and within-group repeated measures design are used together (Pallant, 2016). The distribution of the qualitative data of the study, the views of the families' data, was also evaluated with descriptive analysis.

The significance level was taken as 0.05 in analyzing all the data obtained through the research. SPSS 23.0 package program was used for data analysis

FINDINGS

Findings Related to Quantitative Data

Environmental Attitude Scale: Findings and Comments Regarding the Children's Environmental Attitude Scale Preschool Version (CATES-PV)

Environmental Attitude Scale for Students: Children's Environmental Attitude Scale for Children Preschool Version (CATES-PV) was given to both groups as pre-test and post-test. Analyses were made by taking the total score from the data obtained. The descriptive statistics of the CATES-PV scores of the students in the experimental and control groups in the pre-test and post-test are shown in Table 1.

Table 1. Cates-PV Scale Scores of the Experimental and Control Groups Participating in the Study

Group	Cates-PV Pre-Test			Cates-PV Post-Test		
	n	\bar{X}	Sd.	n	\bar{X}	Sd.
Experimental Group	18	40,72	6,07	18	57,83	3,90
Control Group	20	41,60	7,35	20	47,75	4,39
Total	38	41.16	6,71	38	52,79	4,15

According to the results given in Table 1, the mean score of the experimental group students on the pre-test Cates-PV scale was 40.72, while the mean score of the control group students on the pre-test Cates-PV scale was 41.60. The mean score of the experimental group students on the Cates-PV scale in the post-test was 57.83, while the mean score of the control group students on the Cates-PV scale in the post-test was 47.75. The reason for this difference in the post-test scores of the experimental and control groups may be that the children in the experimental group were more interested in the activities carried out using Web 2.0 tools compared to the activities carried out with other materials in the control group.

Two-factor ANOVA results for repeated measures are given in Table 2.

Table 2. Repeated Measures ANOVA Results for Cates-PV Scale Test Scores in Experimental and Control Groups

Source of Variance	Sum of Squares	Sd	Mean Squares	F	p*
Between Subjects	2814,55	18			
Group (Experimental/Control)	1138,23	1	1138,23	24,44	,000
Error	1676,33	17	46,57		
Within Subjects	84545,34	18			
Measurement (Pre-test- Post-test)	83625,39	1	83625,39	4185,64	,000
Group*Measurement	200,71	1	200,71	10,05	,003
Error	719,25	16	19,98		
Total	87359,90	38			

According to the data in Table 2, there was a significant difference between the repeated measurements (pre-test and post-test scores) of 38 students as a single group, regardless of which group the students were in [$F(1,16) = 4185.64, p < .05$].

According to the data in Table 2, when the "measurement" value for the groups taken into consideration, it is seen that the children in two different groups, the experimental and control groups, have a significant change from the pre-test to the post-test [$F(1,16) = 4185.64, p < .05$].

Regardless of the inter-measurement variation in Table 2, a significant difference was found between the CATES-PV scores obtained from repeated measurements of the two groups using and not using Web 2.0 tools in environmental education [$F(1, 17) = 24.44, p < .05$]. That is, the increase in the CATES-PV attitude scores of the two groups shows a significant difference.

The change observed in repeated measurements regarding the CATES-PV attitudes scores of the students in Table 2 shows a significant difference between the groups using and not using Web 2.0 tools in environmental education [$F(1,17) = 10.05, p < .05$]. In other words, it was seen that the common effects of the experimental conditions applied with repeated measurements of the students in two different groups were significant.

The joint effects of being in different treatment groups (experimental and control groups) and repeated measures (pre-test-post-test) factors on children's attitudes towards the environment were statistically significant [$F(1-16) = 4185.638; p < .05$]. The significant difference in the joint effect of the common interaction factor of Measurement and Group shows that the difference between the pre-test and post-test mean scores also differed significantly. In the experimental group, the Cates-PV post-test mean score of 57.83 ± 6.06 was significantly higher than the pre-test mean score of 40.72 ± 3.89 . In the control group, the Cates-PV post-test mean score of 47.75 ± 4.38 was significantly higher than the pre-test mean score of 41.60 ± 7.35 . That is, the post-test environmental attitude scores of the two groups increased. Accordingly, as a result of the experimental procedure, children's attitudes towards the environment improved. It can be said that the environmental education activities conducted in the experimental group using Web 2.0 tools were more effective than the environmental education activities conducted in the control group using traditional materials. It can be said that the activities implemented in the experimental and control groups positively affected the attitudes towards the environment in both groups. This finding shows that using Web 2.0 tools in environmental education is effective in increasing children's attitude scores towards the environment.

Findings and Comments on Qualitative Data

Table 3. "Which technological tools does your child use at home?" Distribution of Responses to the Question

	n	%	
Which technological tools does your child use at home?	Television	11	20,8%
	Tablet	14	26,4%
	Telephone	16	30,2%
	Computer	10	18,9%
	Smart Watch	1	1,9%
	Playstation	1	1,9%

When the distribution of the answers given by the families participating in the study to the question "Which technological tools does your child use at home?" was evaluated, it was determined that 30.2% used phones, 26.4% used tablets, 20.8% used televisions, 18.9% used computers, 1.9% used smart watches, and 1.9% used playstations. The reason for the high rate of use of the telephone among other technological tools may be that it is accessible and available to every parent. Therefore, it can be said that the use of Web 2.0 tools in this study was an appropriate decision in terms of children's technological tool preferences. From another perspective, it can be said that Web 2.0 tools, whose interface can be experienced on tablets and phones, can enable children of this period to meet the right tools on the internet and to have the right learning experience with these tools. In the meeting held with the parents of the experimental group before the start of the experimental implementation process, it was requested to carry out family involvement activities through the computer as much as possible, but this process did not seem to prevent children from preferring the phone in the first place. Based on this finding, it can be said that the phone or tablet is one of the tools that can be used in technology studies in preschool period.

Table 4. "For what purpose does your child use these technological tools?" Distribution of Responses to the Question

	n	%	
For what purpose does your child use these technological tools?	Watch movie video	17	39,5%
	Educational application	9	20,9%
	research	10	23,3%
	Recreational play	3	7,0%
	Music	2	4,7%
	Painting and Coloring	2	4,7%
	Other	2	4,7%

When the distribution of the answers given by the families participating in the study to the question "For what purpose does your child use these technological tools?" was evaluated, it was found that 39.5% of the families used them for watching movies and videos, 23.3% for entertainment, 20.9% for educational application research, 7% for music, 4.7% for painting, and 4.7% for other purposes.

When Table 4 is examined, it is seen that children mostly use technological tools for entertainment activities such as watching movies and videos and playing games for entertainment purposes. From this point of view, it can be said that children perceive technological tools as entertainment tools rather than learning tools. According to the findings, while examining children's early use of technological tools, it can be said that video design and gamification tools can be emphasized. These tools can overlap with children's interests reflected in the findings and allow for more efficient use of technology in the learning environment. From another perspective, this finding supports the fact that during the experimental implementation process, Powtoon was mostly used for monitoring and question-answer (interaction) and Wordwall was used for gamification.

Table 5. The Families Participating in the Study were asked, "Did your child tell you about his/her experiences at school during the education program? How did it happen?" Distribution of Responses to the Question

	n	%	
Did your child tell you about his/her experiences at school during the education program? How did it happen?	Learning Act.	10	33,3%
	Enjoyment Act.	2	6,7%
	Play Act.	2	6,7%
	Environmental Edu. Act.	6	20,0%
	Better utilization Act.	1	3,3%
	Other	9	30,0%

When the distribution of the answers given by the families participating in the study to the question "Did your child transfer any information to you about his/her experiences at school during the education program?" is examined; 33.3% transferred learning, 30% transferred other, 20% transferred environmental education, 6.7% transferred having fun, 6.7% transferred playing, and 3.3% transferred better use. In particular, family involvement activities prepared using Web 2.0 tools and sent to families after the implementation of the activities at school may have been effective in helping parents to have an idea about the activities and to interpret children's transmissions at home. These activities provided families with the opportunity to support their children's learning experiences in environmental education.

P8, one of the experimental group parents, answered the question as follows: "Yes, she taught every lesson of the education program at home. He explained the importance of water, the importance of recycling, not harming the environment and carbon footprint at home. She herself responded to the family participation activities prepared with Web 2.0 tools. He explained the importance of not harming nature and not consuming too much.

He explained which materials do not dissolve in nature. We were able to observe the benefits of the education my daughter received, especially with the sensitivity she showed when garbage was thrown on the ground. I think he started to become environmentally literate."

P14 said, "As a result of the experiments and explanations at school, we think they made great contributions to environmental education. We pay attention to our excessive use of paper, water consumption, napkin use, and our children warn us if they observe that we are being careless."

P17 "We realized that environmental awareness has improved, he talks about recycling, tries to throw plastic and glass bottles in separate boxes, etc."

The above-mentioned experimental group parents stated that their children exhibited better behaviors about the environment after the environmental education activities. It is found in the literature that family participation activities support children's skills. Supporting what is learned at school with family involvement activities at home is important in terms of ensuring integrity in education. In this direction, family involvement activities prepared with Web 2.0 tools can be effective in reinforcing what children learn during the experiment process and returning to parents as various transfers by supporting them in the home environment, ensuring continuity and permanence in learning and developing correct attitudes.

The finding on better use of Web 2.0 tools (3.3%), which was obtained in the qualitative data although it was included at a low rate, is one of the important results considering the age group of the children.

P12, in relation to the question "It surprises me that he can clearly access what he is looking for on the internet." It expressed his opinion as follows.

As a result of this study, although not all parents have observed it at the moment, the readiness levels of the experimental group in the use of Web 2.0 tools in their later educational life will not be the same as the children who have not experienced this learning experience.

Table 6. "What are your views on the use of Web 2.0 tools in early childhood?" Distribution of Responses to the Question

		n	%
What are your views of the use of educational web 2.0 tools in early childhood education?	True and Positive	13	34,2%
	Should be Limited	4	10,5%
	Not Effective	3	7,9%
	The Child Must Explore	1	2,6%
	Enduring engaging		
	facilitative play	5	13,2%
	Primary School		
	Preparation	1	2,6%
	Technology Age	6	15,8%
Other	5	13,2%	

"Education in early childhood Web 2.0 are you positive?" components of answers to questions when evaluated; 34.2% of them are correct and positive, 15.8% are of their age, 13.2% are other, 13.2% old attractive, simplifying, 10.5% should be, 7% effective 2.6% of them had children, 2.6% of them were interviewed in pre-primary school preparation. kept it. When Table 6 is examined, it is seen that parents mostly believe that the use of Web 2.0 tools in preschool period is correct and positive.

P4, one of the parents of the experimental group, said, "As a teacher myself, I believe that the education and training of children of the digital age should also be digital. Within certain limitations, the sooner the better." Opinions were expressed as follows.

P6 said, "In order to keep up with the age, I find it right to utilize technology and such educational tools in accordance with the age of children." It expressed his opinion as follows.

One of the factors causing this may be the belief that distance education trials were conducted during the pandemic process in the preschool period and that children should get used to this process.

In their responses, families stated that these tools make learning interesting, memorable and facilitate learning.

Regarding the question, P13 of the parents said, "It allows children to learn while having fun. The efficient use of Web 2.0 tools can bring children into learning and offer them a different understanding of education and training." It stated.

P9 said, "With Web 2.0 tools, the educational environment becomes more fun and permanent"; P10 said for the related question, "Having the visuals of the information learned at school in these tools and supporting it with games that my daughter likes was useful. I think it also contributed to their responsibilities in the future, such as homework. Thank you."

This finding may have been influenced by the family involvement activities prepared with Wordwall sent to the experimental group parents during the research process. It is seen that 7.9% of the responses indicate that the use of Web 2.0 tools in early childhood is not effective. Regarding question P2, "I think that technological tools in early childhood lead to conditions such as attention deficit and hyperactivity in children." P7 said, "I do not think that the web tools applied in this period have much effect on children. In my opinion, there is not yet a tool that can replace face-to-face training activities."

This may be because the implementation process was not implemented efficiently at home, in the school environment, or family involvement activities were not implemented at home or the child did not provide information.

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

This study was carried out to examine whether the use of Web 2.0 tools in environmental education has an effect on attitudes towards the environment compared to traditional materials and to examine the views of parents on the use of technology at home. In this context, during the 8-week implementation process, activities were created for the experimental group using Wordwall and Powtoon, which are Web 2.0 tools, while activities were created for the control group using materials that can be provided in the classroom environment, cut from magazines, newspapers or made by teachers. The activities of both groups were prepared in accordance with the MEB Preschool Education Program. Based on the findings of the study, the conclusions are as follows:

- 1- Regardless of which group the students were in, a significant difference was found between the repeated measurements (pre-test and post-test scores) of 38 students as a single group. It was concluded that the increase in attitude scores was significant regardless of the groups.

- 2- When the "measurement" value for the groups is taken into consideration, it is seen that the children in two different groups, the experimental and the control group, had a significant change from the pre-test to the post-test. There was a significant effect on the post-test scores of the group receiving training with Web 2.0 tools.
- 3- A significant difference was found between the CATES-PV scores obtained from repeated measures of the two groups using and not using Web 2.0 tools in environmental education, regardless of the change between measurements. That is, the increase in the CATES-PV attitude scores of the two groups had a significant difference. The change observed in repeated measures of students' CATES-PV attitude scores showed a significant difference between the groups that used Web 2.0 tools in environmental education and those that did not.
- 4- When asked which tools their children use the most at home, parents stated that they used phones or tablets; when asked for what purpose, they stated that they used them for entertainment purposes.
- 5- In response to the question of whether there were any transfers from the home environment regarding the implementation process, it was stated that 33.3% of the parents provided learning, 30% other, 20% environmental education, 6.7% having fun, 6.7% playing, and 3.3% technology use experience.
- 6- Regarding the use of Web 2.0 tools for educational purposes in early childhood, it was determined that 34.2% of the parents found it correct and positive, 15.8% were technology age, 13.2% were other, 13.2% were permanent, interesting and facilitating, 10.5% were limited, 7.9% were not effective, 2.6% were children should discover, and 2.6% were preparation for primary school.

Based on the increase in the post-test scores of both groups, it can be said that there was an improvement in the attitudes of the experimental and control groups towards the environment. However, when the difference between the recovery scores of the experimental group and the control group was examined, it was observed that there was an increase in favor of the experimental group. Accordingly, it can be said that the use of Web 2.0 tools within the scope of environmental education has a positive effect on preschool children's attitudes towards the environment. It is also similar to the research findings conducted by Kahrman-Öztürk, Olgan and Güler (2012), Erol (2016) and Akkaya Alici (2022). It can be stated that the environmental education conducted in both groups positively affected children's attitudes towards the environment. When the findings of the study conducted by Kahrman and other (2012) were analyzed, it was found that the children participating in the study respected animals, plants, nature and people. In addition, children talked about reducing water, paper and electricity consumption to protect the environment. When the findings of the experimental study conducted by Erol (2016), in which Cates-PV was one of the data collection tools, statistically significant differences were found between the children in experimental group 1, experimental group 2, experimental group 3 and control group, and it was stated that all of the education programs applied to the experimental groups had positive effects on children's attitudes and awareness towards the environment. Akkaya Alici (2022) implemented a sustainability education program with digital books using one of the quasi-experimental models with pre-test-post-test unequalized control group.

Regardless of which group the preschool children were in, a significant difference was found between the repeated measures (pre-test and post-test scores) of 38 children as a single group [$F(1,17) = 4185,63,71, p < .05$]. The use and non-use of Web 2.0 tools in environmental education shows a significant change from pre-test to post-test within two different groups. This change has been in favor of using Web 2.0 tools in environmental education. A study conducted with science teachers was worked out by Elgün (2021). The study investigates the sustainability of online environmental education. When the findings of the study are analyzed, the majority of the teachers stated that they needed in-service training on online education and the use of Web 2.0 tools. It is thought that the use of Web 2.0 tools has become more visible especially during the pandemic process and that some, if not all, of the teachers may have had difficulties in the use and integration of Web 2.0 tools that they met with the distance education process. Similarly, Akın and Aslan (2021) conducted a study on the distance education process of preschool children in the Covid-19 Pandemic. When the findings of the study were examined, it was stated that they liked the activities such as coding with Web 2.0 tools in the live lesson, examining different objects (motorcycle helmet, etc.), finding a material from home (lemon, orange, etc.), dancing, and that they liked the coding done with Web 2.0 tools very much and wanted coding game tasks and kept their attention span longer in these studies. The findings obtained from the above-mentioned studies are consistent with the findings obtained from this study.

When the distribution of the answers given by the families participating in the study to the question "Which technological tools does your child use at home?" was evaluated, it was determined that the most common technological tools used by the families participating in the study were telephone, tablet, television, computer, smart watch and playstation. Jafari (2021) examined the relationship between children's intelligence levels and social skills and digital parenting attitudes in early childhood and asked parents about the technological tools used by their children. Smartphones, televisions and tablets were the most frequently mentioned. Similarly, in the study conducted by Ergüney (2017), the internet access device of the 16 preschool children constituting the sample was asked. Tablet, phone, computer or phone belonging to parents were most frequently mentioned. The reason for this, which may also be noted in other studies, may be that the phone and the tablet, which have similar features, are easier for children to learn, are less complex than the computer, require less hand-eye coordination and less cognitive processing. Another approach may be that since one of the technological devices that parents frequently use is the telephone, children are first curious about these devices from infancy and are motivated to use them. Accordingly, Web 2.0 tools are suitable tools to be selected among technological tools for preschool children because they can be easily applied via phones and tablets.

When the distribution of the answers given by the families participating in the study to the question "For what purpose does your child use these technological tools?" was evaluated, it was found that they mostly used them for watching movies and videos, playing games for entertainment, researching educational applications, listening to music, and painting pictures. Supporting these

findings, Ergüney (2017) also emphasized that children prefer cartoons, games and video content. All of the children participating in the study watch cartoons online. 4 children use it for playing games in addition to cartoons. It was stated that 8 of the children watched videos prepared by Youtubers, usually toy promotions or videos with content featuring children. 3 children preferred both cartoons, games and video content. The children in the sample of this study use technological tools mostly for entertainment purposes. In a study conducted by Kayış (2022), children intensively use technological tools for watching videos, movies or playing games alone or with one of their parents. At this point, the findings obtained in this study are similar to the literature. The reason why technological devices are preferred for entertainment purposes may be related to the fact that children are not aware of the different Web 2.0 tools that they can do with these devices and learn while having fun. At this point, teachers can use such sites with children in the school environment and prepare games to be played at home and deliver them to parents. The preschool period is a time when developmental support is prioritized over academic concerns. From this point of view, it can be said that the learning experiences of children who start primary school as graduates have an important place and shed light on primary school life.

When the distribution of the responses of the families participating in the study to the question "Did your child transfer any information to you about his/her experiences at school during the implemented education program?" was evaluated, the most common responses were learning transfer, other, environmental education transfer, having fun transfer, playing transfer, and better use transfer. The fact that children make various transfers in the home environment may be a result of family involvement activities. These efforts have also made families a part of the process. In general, the transfers on learning and environmental education serve the aims of this study.

When the distribution of the answers given by the families participating in the study to the question "What are your opinions on the use of Web 2.0 tools in early childhood education?" was evaluated, it was determined that the most common opinions were correct and positive, technology age, other, permanent interesting facilitating game, should be limited, not effective, child should discover, preparation for primary school. It is observed that families have a generally positive approach to the use of Web 2.0 tools in this period and focus on their benefits. According to the findings of the study conducted by Kılınç (2015), it was concluded that parents were united in the view that the use of technology by preschool children would not benefit them much and that parents did not use technological tools in teaching sounds and words, shapes, numbers and numbers with their preschool children.

For researchers who want to conduct research on similar topics or methods, and for parents who want to provide more qualified guidance to their children about technology, the following suggestions are given.

For researchers,

- Web 2.0 tools are being updated and new tools are being developed every day. Studies on the use of Web 2.0 tools in education can be conducted as they will benefit the literature and especially preschool educators.
- Based on the findings of this study, not only environmental education, but also different educational programs can be prepared by planning different activities that develop self-care skills, social skills, motor skills in preschool period with Web 2.0 tools. It would be useful to test these and share the results.
- Since the majority of Web 2.0 tools are paid applications, researchers may have difficulty in conducting their research. For this reason, before starting the research, it should be planned in advance whether the tools can be charged or whether access to the user account, which is not charged, can be accessed and whether enough content can be produced for the research.

For parents;

- The fact that children's use of technology is focused on watching and playing is observed both in this study and in different studies in the literature. It is recommended that they get to know Web 2.0 tools closely as one of the grounds on which children perform their watching and playing activities and encourage them to use them correctly.

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