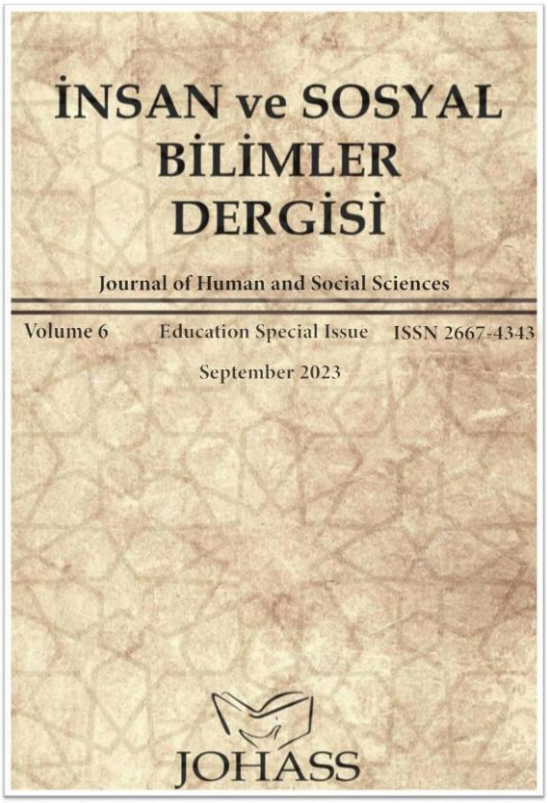
JOURNAL OF HUMAN AND SOCIAL SCIENCES (JOHASS)



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The Effect of Environmental Awareness Education Program on Children's Environmental Awareness

This study is supported by TUBITAK within the scope of 2209-A University Students Research Projects Support Program. It is also an extended version of the study presented as an oral presentation at the 1st International Symposium on Bitlis in the Context of History, Culture, Language and Art on May 3-5, 2023.

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Artichle Type: Research Article
Received: 6.08.2023
Revision received: 26.09.2023
Accepted: 26.09.2023
Published online: 28.09.2023

Citation: Uçar Çabuk, F., & İşal, S. (2023). The effect of environmental awareness education program on children's environmental awareness. *Journal of Human and Social Sciences*, *6*(Education Special Issue), 379-400.

The Effect of Environmental Awareness Education Program on Children's Environmental Awareness*

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Abstract

Education programs are learning experiences that take place with planned activities offered to the individual and contribute to the upbringing of people in society and the realization of goals related to them. The aim of this study is to examine the effect of the environmental awareness education program applied to preschool children on children's environmental awareness. The study group of the research consisted of a total of 41 children, 20 children in the control group and 21 children in the experimental group, who were studying in kindergarten classes affiliated to the Ministry of National Education and had not participated in any environmental education program before. This study has a pre-test post-test control group experimental design. According to this design, the application of the pre-test, the application of the environmental awareness education program and the application of the post-test are carried out respectively. "Personal information form" and "Environmental awareness scale for children" were used as data collection tools in the study. The data were analyzed with SPSS statistical package program. According to the findings of the study, it was found that the environmental awareness education program was effective on the environmental awareness of preschool children.

Keywords: Environment, environmental education program, environmental awareness, preschool

Research Article

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Introduction

The environment is the place where a person receives support to meet basic needs such as eating, drinking and shelter as well as psychological needs. With the increase in industrial waste and the advancement of technology, environmental problems have also increased (Dorninger et al., 2017; Saravanakumar, 2020).

There are many research and report results showing that environmental problems are increasing and this situation negatively affects living life (IPCC, 2022). According to the 2022 Global Risks Report, five different environmental problems are included in the list of the top ten risks expected in the next decade. For this reason, it has become imperative to take measures against environmental problems, and many concepts such as environmental awareness, environmental consciousness, and environmentally friendly behavior have emerged as a result of the studies carried out to develop environmental protection behaviors (Engin et al., 2020; Erol & Ogelman, 2021).

Since the second half of the 20th century, the sensitivity shown to environmental problems and the approaches to be taken to solve these problems have been gaining importance day by day (Kışoğlu et al., 2010). An effective solution to environmental problems is the existence of individuals with environmental awareness, which is indispensable in creating a livable and sustainable environment. It has become a necessity to raise individuals with environmental sensitivity and environmental awareness in order to ensure that future generations can live in a healthier, natural and safe environment (Şahin et al., 2004). It is only possible for people to have sufficient knowledge about the environment, to create sensitive and positive behavioral changes, to protect nature and to regain damaged areas only through education (Yazkan, 2012).

Education programs contribute to the upbringing of people in society and the realization of goals related to them. In other words, education programs are the learning experiences that take place with planned activities offered to the individual (Demirel, 2011).

Environmental education, which provides environmental awareness, is a learning process that aims to gain knowledge, skills and experience to solve environmental problems (Balkan Kıyıcı, 2009). Environmental education is a lifelong interdisciplinary approach that deals with the environment and environmental problems through education and tries to give individuals environmental sensitivity, knowledge, skills, motivation, personal and social responsibility (Moseley, 2010). Environmental education offers solutions to problems that

may arise as well as problems related to the environment. In addition, environmental education programs form the basis for environmentally friendly behaviors by developing environmental attitudes (Kaiser et al., 1999). The main purpose of a successful environmental education is to develop environmental awareness by increasing children's environmental knowledge, to protect social and cultural values, to gain positive permanent behavioral change, and to provide solutions by ensuring active participation at every stage of the environmental problem (Arık, 2017; Kışoğlu et al, 2010; Şimşekli, 2004). According to Gülay and Önder (2011), a qualified environmental education should include science-related, problem-solving-based and experiential learning, critical thinking, family involvement, values education and the presence of effective social role models. According to Pearce 1977, environmental education is critical for a child's developing brain and intelligence.

The most effective time in providing permanent behaviors and forming habits is the preschool period. The quality of the program implemented in the preschool period increases the impact on the child and creates a basis for the following years (Gürkan, 1992; Kaga, 2008). Environment-themed activities in early childhood make it more possible for children to have a positive attitude towards the environment in their later years (Yoleri, 2012: 102). It is known that children who interact with the environment and spend time in open spaces are positively affected by their relationship with the environment (Dunlap et al., 2000; Frantz et al., 2005). In order to find solutions to environmental problems, individuals need to re-establish their connection with the environment (Braun & Dierkes, 2017).

In general, environmental education in the preschool period is important in terms of nurturing the child's personality and mind, developing solutions to ecological problems, and raising conscious individuals who respect their environment (Başal, 2005; Büyüktaşkapu, Koçyiğit, Öztürk-Samur, & Özenoğlu-Kiremit, 2011; Gülay Ogelman & Güngör, 2015).

There are many studies on environmental education in the literature (Akdağ & Erdiler, 2006; Ahi & Alisinanoğlu, 2016; Büyüktaşkapu Soydan & Öztürk Samur, 2017; Aydın & Aykaç, 2016; Aysu, 2019; Caner, 2019; Demirdirek, 2019; Çabuk & Uçar Çabuk, 2017; Dinçel, 2019; Dilli & Bapoğlu Dümenci, 2015; Durkan et al., 2015; Gülay Ogelman & Durkan, 2014; Erdoğan, 2016; Çabuk & Haktanır, 2010; Kahyaoğlu, 2016; Kesicioğlu & Alisinanoğlu, 2009; Küçük, 2017; Taşkın & Şahin, 2008; Tırpancı, 2019; Toprak, 2017; Yıldırım, 2015; Şallı, Dağal et al., 2013; Olgan & Kahraman-Öztürk, 2011; Özdemir & Uzun, 2006; Yaşar et al., 2012; Yılmaz & Olgan, 2017). In the related studies, the short or long-term effects of environmental education on children are mentioned and its importance in early

childhood is emphasized. It is also frequently emphasized in different studies that environmental education should be given in early childhood (Clayton, 2003; Dresner & Blatner, 2006; Russo, 2001; Vadala et al., 2007; Yılmaz et al., 2020).

When the literature is examined, it is stated that experimental studies on environmental education are mainly conducted at primary and secondary education levels (Yılmaz et al., 2020). It is thought that the reason underlying the environmental problems that are increasing day by day is that individuals do not have environmental awareness and this will only be possible with a long-term environmental education experience starting from early childhood (Genç & Karabal, 2010). In addition, the limited number of experimental studies on environmental awareness education with preschool children and the rarity of studies investigating the environmental program in out-of-school educational environments reveal the originality of the study. In this direction, it is thought that the study is important in terms of preschool children's environmental awareness, ensuring permanent learning in children, transferring it to the later periods of children's lives and will contribute to the literature at these points. In this context, the aim of the study is to examine the effect of the environmental education program applied to preschool children on children's environmental awareness. In line with this purpose, the research seeks to answer the question "Does the environmental awareness education program applied to preschool children affect children's environmental awareness?".

Method

Model

This study has an experimental design with pretest-posttest control group. Experimental research is research conducted using a systematic methodology to determine to what extent a particular intervention will be effective in solving a certain problem under controlled conditions (Özmen, 2015). Studies using experimental design with pretest-posttest control group are frequently encountered in education and psychology (Büyüköztürk et al., 2012). In this study, the experimental design was preferred since it was aimed to determine to what extent the environmental awareness education program was effective in helping preschool children gain environmental awareness.

Research and publication ethics were complied with in the study. Ethical approval was obtained from Osmaniye Korkut Ata University Social Sciences Scientific Research and Publication Ethics Commission for this research (Date: 09.05.2023, Number: 2023/5/6).

Study Group

The study group was determined by criterion sampling, one of the purposeful sampling methods. The study group of the research consisted of a total of 41 children, 20 in the control group and 21 in the sample group, who were studying in two different kindergartens of a primary school and had not participated in any environmental awareness education program before. Eighteen of the children were girls and 23 were boys. The average age of the children was 71 months.

In the sample group, 13 of the children were girls and 8 were boys. 7 of them are 48-71 months old and 14 of them are 72-84 months old. The mothers of 16 children were working, the mothers of 5 children were not working, the fathers of 17 children were working and the fathers of 4 children were not working. The mother of 6 children is a high school graduate, the mother of 13 children is a bachelor's degree graduate and the mother of 2 children is a postgraduate degree graduate. The father of 5 children graduated from high school, the father of 14 children graduated from undergraduate school, and the father of 2 children graduated from graduate school.

In the control group, 11 of the children were girls and 9 were boys, 11 were 48-71 months old and 9 were 72-84 months old. The mothers of 13 children were working, the mothers of 7 children were not working, the fathers of 14 children were working and the fathers of 6 children were not working. The mother of 5 children is a high school graduate, the mother of 10 children is a bachelor's degree graduate and the mother of 5 children is a postgraduate degree graduate. The fathers of 4 children are high school graduates, the fathers of 8 children are undergraduate graduates and the fathers of 8 children are graduate graduates.

Data Collection Tools

In this study, "Personal information form" and "Environmental awareness scale for children" were used as data collection tools.

Personal Information Form

In the personal information form, there are questions to determine children's age, gender, parents' employment status and educational status.

Environmental awareness scale for children: It was developed by Gezgin Vural and Kılıç Mocan (2022) to determine the level of environmental awareness for preschool children. The scale consists of 24 questions and each question has three visual elements for the child to

answer. The lowest score that can be obtained from the environmental awareness scale for children is 0 and the highest score is 24. The answers given to the test were evaluated as 1 if they were correct and 0 if they were incorrect or unanswered. The Cronbach's alpha value of the test was 0.75. When necessary, questions and options were repeated with vocalization. The cards containing the visuals on which the answer options were presented were prepared in a size and content appropriate for the age group of the children. A sample item from the scale form is given below:

"Which of the following does not occur in autumn?"

Leaves Fall Rain falls Trees Turn Green

Environmental Awareness Education Program and Data Collection Process

Before the data were collected, the literature on the environmental awareness education program was reviewed in detail and the program was prepared.

While preparing the environmental awareness education program, Wilson's (1996) principles that should be considered in environmental awareness education practices were taken into consideration. These are:

The program should start with simple practices in which children can feel safe and active participation of children should be ensured.

Children should have fun and interesting experiences. The pleasure to be derived from environmental education is as important as the content.

Experiences should be prioritized in environmental education and all emotions of children should be involved.

Educational practices should be carried out by utilizing different methods and techniques.

Children should be made to understand that all components of the natural world are together and in interaction.

In order to create children's interest in the natural world, they should be modeled and a warm and friendly environment should be created.

Environmental education practices should be carried out outdoors as much as possible.

The beauty of the environment should be emphasized and children should be given the opportunity to interact with nature.

Learning should be based on understanding concepts and analysis rather than rote learning and learning based on patterns.

Activities that enable children to interact with natural elements such as different plants, animals, water and soil should be carried out.

Activities should promote social interaction, cooperation and collaboration among children.

Based on the principles above, the environmental awareness education program is composed of different methods and techniques that are play-based, aimed at supporting children's development and ensuring the active participation of children. In addition, the program was prepared to attract children's interest and to be carried out in an open area as much as possible. The prepared program was presented to 5 faculty members who are experts in their fields and the final version of the program was created in line with the recommendations of the experts. In this study, research and publication ethics were followed. Ethical approval was obtained from Osmaniye Korkut Ata University Social Sciences Scientific Research and Publication Ethics Commission (Date: 09.05.2023, Number: 2023/5/6). In addition, the parents of the children participating in the study were asked to fill out an informed consent form. The children of the parents who gave consent were asked whether they wanted to participate in the study. The research was conducted with the children who wanted to participate in the study. After the environmental awareness program was prepared, "General information form" and "Environmental awareness for children" form were applied to the sample and control group children as pre-test.

The environmental awareness education program, which was prepared to support preschool children's environmental awareness, was applied to the children in the sample group a total of 8 times, twice a week, with a meeting and a closing meeting. During the program, children were given a brief reminder about the previous week's topic, followed by the week's implementation and the implementation ended with the evaluation of the activity. The program was carried out in different places such as school garden, forest area, picnic area. Within the scope of the environmental awareness education program, topics such as the

environment, the importance of environmental awareness, water, air, soil, recycling, beautification and protection of the environment were discussed and practices were carried out by ensuring children's interaction with nature. After the environmental awareness education program practices were completed, "Environmental awareness scale for children" was applied to the children in the sample and control groups as a post-test at the closing meeting.

Figure 1

Pictures from The Activity

SPSS statistical package program was used to evaluate the data. In the analysis of the scale variables, it was determined that the skewness and kurtosis values of the data took values between -1 and +1. According to these results, it was determined that the scale variables showed normal distribution (Hair et al., 2013). In the evaluation of the data, descriptive statistics, Continuity Correction and Pearson Chi-Square tests were used to determine the differences between the sample and control groups according to socio-demographic groups. The dependent t-test was used to determine whether there was a significant difference between the sample and control groups, and the independent sample t-test was used to compare the sample and control groups. Statistical significance level was taken as $p<0.05$.

Compliance with Ethical Standard

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Findings

The findings obtained within the scope of the research are presented below. Socio-demographic information of the children is shown in Table 1.

Table 1

Socio-demographic Characteristics of Children.

Socio-demographic variables		Sample (N=21)	Control (N=20)	p
		N (%)	N (%)	
Gender*	Female	13 (54,2)	11 (45,8)	0,895
	Male	8 (47,1)	9 (52,9)	
Age*	48-71 mounts	7 (38,9)	11 (61,1)	0,279
	72-84 mounts	14 (60,9)	9 (39,1)	
Mother Occupation*	Government	10 (47,6)	11 (52,4)	0,873
	Private	11 (55)	9 (45)	
Father Occupation*	Government	4 (36,4)	7 (63,6)	0,424
	Private	17 (56,7)	13 (43,3)	
Mother's Employment Status*	Working	16 (55,2)	13 (44,8)	0,657
	Not working	5 (41,7)	7 (58,3)	
**Father's Employment Status ** **	Working	17 (54,8)	14 (45,2)	0,484
	Not working	4 (40)	6 (60)	
Mother's Education**	High school	6 (54,5)	5 (45,5)	0,482
	Undergraduate	13 (56,5)	10 (43,5)	
	Post graduate	2 (28,6)	5 (71,4)	
**Father's Education ** **	High school	5 (55,6)	4 (44,4)	0,073
	Undergraduate	14 (63,6)	8 (36,8)	
	Post graduate	2 (20)	8 (80)	

***** Continuity Correction ** Pearson Chi-Square *** Row percentage is taken.

It was determined that there was no significant difference between the socio-demographic characteristics of the children and the sample and control groups.

The results of the independent samples t test applied to the pre-test scores of the children in the control and sample groups are shown in Table 2.

Table 2

Independent Samples t Test Results for The Comparison of Pre-Test Scores in The Control And Sample Groups

Groups-pre-test	**N**	$\bar{X}$	**sd**	**t**	**p**
Control group	20	0,75	0,12	1,604	0,117
Sample group	21	0,81	0,14		

*p<0,05

When the results of the independent samples t-test are analyzed in Table 1, the mean pre-test score of the control group was found to be 0.75 and the mean pre-test score of the sample group was found to be 0.81. The calculated p value (0.117) was found to be statistically significant at a level greater than 0.05. Accordingly, it is seen that there is no significant difference between the pre-test mean scores of the children in the control and sample groups. This result shows that the groups' prior knowledge on the subject is at a similar level. In other words, it can be said that the experimental application was carried out with two homogeneous groups in terms of environmental awareness.

The results of the dependent groups t test for the control group are given in Table 3.

Table 3

Dependent Groups t Test Results for The Comparison of Pre-Test and Post-Test Scores in The Control Group

	N	$\bar{X}$	**sd**	**t**	**p**
Pre-Test	20	0,75	0,12	3,216	0,005*
Post-Test	20	0,82	0,12		

*p<0,05

When the t-test results of the dependent groups in Table 3 were analyzed, the mean pretest score of the control group was 0.75 and the mean posttest score was 0.82. The p value (0.005) showed a statistically significant difference between the pretest and posttest scores of the children in the control group.

In order to determine whether the pre-test and post-test mean scores of the children in the sample group were statistically different from each other, the data were analyzed with the t-test in dependent groups and the results of the analysis are shown in Table 4.

Table 4

Dependent Groups t Test Results for The Comparison of Pre-Test and Post-Test Scores in The Sample Group

	N	$\bar{X}$	sd	t	p
Pre-Test	20	0,810	0,14	3,179	0,005*
Post-Test	20	0,921	0,07		

*p<0,05

When the results obtained in Table 4 are analyzed, the mean pretest score of the sample group was 0.81 and the mean posttest score was 0.92. The difference between the mean scores was statistically significant (p: 0.005).

An independent samples t-test was conducted to determine whether the post-test mean scores of the groups were statistically different from each other. The results of the independent samples t test applied to the post-test data are shown in Table 5.

Table 5

Independent Samples t Test Results for The Comparison of Post-Test Scores in The Control and Sample Groups

Groups	N	$\bar{X}$	sd	t	p
Control groups	20	0,820	0,127	3,107	0,004*
Sample groups	21	0,921	0,07		

*p<0,05

When the independent samples t-test results in Table 5 are analyzed, the mean posttest score of the children in the control group was 0.82, while the mean post-test score of the children in the sample group was 0.92. The difference between the posttest mean scores of the groups was statistically significant (p:0,004).

Discussion and Results

In this study, which was conducted to determine the effect of the environmental awareness education program on the environmental awareness of preschool children, it was

determined that the posttest mean scores of the children in the sample group were significantly higher than the pretest mean scores. It is thought that the environmental awareness education program had an effect on the increase in the posttest scores of the children in the sample group. In other words, this situation can be explained by the positive effect of the environmental awareness education program on children's environmental awareness. In a similar study conducted by Emsal Aydın (2018), it was concluded that the "Tiny Tema Education Program" prepared by the Tema Foundation was effective on the attitudes of 60-72-month-old children towards the environment. In another similar study, Heras et al. (2020) evaluated the change in the perceptions of 22 students after a nature trip. As a result of the study, it was found that outdoor and nature-based education supported children's physical, cognitive, emotional and social development as well as their acquisition of environmentally friendly behaviors. In another similar study, Karimzadegan (2015) found that an environmental education program increased preschool children's environmental knowledge and positive attitudes towards the environment. As a result of the research, there is a significant difference between the post-test scores of the control and sample groups in which the environmental awareness education program was implemented. It was determined that the posttest scores of the children in the sample group were higher than the posttest scores of the control group children. Similar to this study, in the experimental study conducted by Gezgin Vural and Kılıç Mocan (2022) to determine the effect of science activities on the environmental awareness of preschool children, science activities were applied to the children in the sample group, while the activities in the preschool education program continued to be applied to the children in the control group. As a result of the study, it was determined that science activities gave successful results in raising environmental awareness in preschool children in the sample group. In the study conducted by Lisman (2010), the changes in the environmental awareness of the 3rd and 5th grade participants of the program prepared to examine the effects of the urban environmental education program on children's awareness of their local biophysical environment were examined. As a result of the study, it was found that the program had a significant and positive effect on students' awareness of the local environment and their knowledge of the concept of environment.

As a result of the research, a statistically significant difference was found between the control group pre-test and post-test scores. It was determined that the post-test scores of the control group were higher than the pre-test scores. Within the scope of this study, the children in the control group continued the MEB 2013 Preschool Education Program in their

classrooms and implemented environmental activities in line with the education program. It can be thought that the continuation of preschool education and the implementation of environmental activities in their classrooms were effective in increasing the post-test scores of the children. According to Gülay (2011), environmental education programs can be effective on children's attitudes and behaviors in the short or long term and can cause changes. In order for the studies on environmental education to be effective, it has been suggested that the subjects and teaching methods should be diversified and presented to children (Gülay, 2011). The implementation of the environmental awareness education program by using different methods and techniques such as excursion, observation, art, drama can be considered to increase the effectiveness of the program on children. In addition to having a positive effect on children, environmental education programs are thought to positively affect the attitudes of the teachers of the class in which the program is implemented. In their study, Temiz et al. (2018) organized an applied training program for preschool teachers to prepare nature-based science, mathematics and art activities (using nature and natural materials). At the end of the program, it was concluded that teachers prepared various activities using nature and natural materials. In Şimşekli's (2004) study, the environmental knowledge levels of primary school students who participated in environmental education activities to develop environmental awareness were increased. In the study conducted by Robertson (2008) with children, an environmental education program was applied to children and it was found that children's environmental attitudes were positively affected after the environmental education program. In another similar study conducted by Tanrıverdi (2012), it was determined that the education given with creative drama had an effect on environmental awareness.

In the effective implementation of environmental education programs, it is important to prepare the learning environment in accordance with the purpose (Ergazaki et al., 2012). In the implemented environmental awareness education program, the researchers made the necessary preparations before each application and made the place where the application would be carried out ready before the children arrived. This can be considered to increase the effectiveness of the environmental education program. Yalçın (2013) included environmental education practices in his study aiming to determine the effect of an environmental education program including activities to protect the natural environment on preschool children's attitudes towards the environment and concluded that the program to protect the natural environment had a positive effect on children's attitudes towards the natural environment. In another similar study, Özdemir and Uzun (2006) conducted science and nature activities

based on the Green Classroom Model to determine preschool children's perceptions of the environment and found that activities based on the Green Classroom Model, which provides direct interaction with natural materials, had a significant effect on children's perceptions of the environment.

Children begin to recognize the environment and develop attitudes towards the environment from an early age (Basile, 2000). According to Wilson (1993), if children do not develop positive attitudes towards environmental problems at an early age, it becomes difficult for them to develop such attitudes in their later years. As seen in the literature, it can be quite difficult to change negative environmental attitudes formed in the early years of childhood (Davis, 2009; Samuelsson & Kaga, 2008; Siraj-Blatchford, 2009). It is extremely important to emphasize the importance of environmental education in the preschool period and for children to spend time with the environment at an early age. According to Louv (2019), the physical and spiritual senses of children who spend less time in nature atrophy. With the information provided in environmental education, it is thought that the child's development is positively affected and new behaviors and abilities develop (Erten, 2004). Again, according to Ull et al. (2014), early childhood education is thought to be effective on children in acquiring values, attitudes, behaviors and knowledge. Köşker (2013) also states that educational experiences in nature in preschool and primary school will facilitate individuals to gain awareness at an early age, to establish an effective and meaningful connection with nature and to maintain this throughout their lives. Similar studies (Cevher Kalburan, 2009; Erten, 2005; Kurt Gökçeli, 2015; Yoleri, 2012) also emphasize the importance of environmental education in preschool period. In line with the findings obtained within the scope of the study, the following suggestions can be made:

- Environmental education programs can be prepared with different environmental activities.
- Longer-term environmental education programs can be prepared with environmental activities with family participation.
- The effect of environmental education program on different variables such as environmental awareness and environmental attitude can be investigated.
- The effect of the environmental education program prepared for different age groups can be investigated.

Compliance with Ethical Standard

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Acknowledgments

We would like to thank all the teachers and children who participated in the study and Çiğdem Demir, Ebru Bedi, Özlem Karakuzu associate degree students of Child Development for the contributions to the study. We would also like to thank TUBITAK for supporting this study.

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