



## AN INVESTIGATION OF THE ECOLOGICAL FOOTPRINT AWARENESS LEVELS OF 60-72-MONTH-OLD CHILDREN

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### Abstract

Like many other development areas, awareness and attitudes towards environmental issues take shape in early childhood and have an important place in forming positive attitudes and behavior towards the environment in later life. For this reason, sustainability education in early childhood plays an essential role in society's transition to sustainable lifestyles. This study examines the ecological footprint awareness levels of 60-72-month-old children attending preschool. A total of 266 children (127 girls and 139 boys) enrolled in six schools (one private school, one primary school, and four preschools) in a city in the Aegean region of Turkey. One of the novelties of the study is the use of a game-based survey model, Ecological Footprint Awareness Scale for 60-72-Month-Old Children (EKAY-O), developed by the researchers of this study. Non-parametric tests were applied in the analysis of the data using SPSS 22. Results show that children's awareness of the concept of an ecological footprint was mostly at the medium level (51.5%). Some key findings indicate that their awareness varied significantly depending on the type of school they attended. The students in private schools demonstrated higher performance. Their parents' education levels also had a significant effect on awareness. This study contributes to studies and practices aimed at raising awareness of ecological footprints in preschools, thus aiding the development of collective efforts to minimize the negative impact on the environment to help bring about a sustainable future.

**Keywords:** Ecological footprint, young children, preschool education, sustainability.

### INTRODUCTION

Due to the increasing industrial and human effects on the environment, environmental problems are becoming more common and intense (Yadav, Singh, Srivastava, & Mishra, 2021). Today's economic systems, which gained momentum, especially in the Industrial Revolution, aim at unlimited economic growth and increasing prosperity. However, in seeking to achieve these goals, the environment is being strained by the consumption of natural resources and the generation of waste caused by human production (Karalar & Kiracı, 2011). Therefore, in order to build a sustainable future, people need to make changes in their unsustainable lifestyles (UNESCO, 2019). Because sustainability aims to protect natural resources and ensure their availability to future generations, the increase in ecological problems is an obstacle to sustainability. Therefore, as Lopez, Orro, and Novales (2021) stated, it is our responsibility as human beings to ensure sustainability, that is, to ensure that we satisfy our needs without compromising the ability of future generations to meet theirs. Determining and evaluating sustainability indicators come to the fore in making sustainability concrete. Sustainability indicators allow the quantification of consumption impacts on the earth. At the same time, these indicators provide important clues in the process of identifying environmental problems that weaken sustainability. Sustainability indicators enable the transfer of this complex concept to society, as well as understanding the measures that need to be taken to reduce these problems and how these measures can be



implemented. This is an important step in the process of preventing environmental problems (Haberl, Fischer-Kowalski, Krausmann, Weisz, & Winiwarter, 2004).

The ecological footprint (EF), which is one of the concrete indicators of sustainability, quantitatively expresses how much the biological capacity of the planet is consumed by human activities (Wackernagel & Rees, 1996). Since EF has educational value (Cordero, Todd, & Abellera, 2008), it would be effective for individuals to learn positive behaviors for sustainability in educational settings (Çetin, 2015).

Researchers remark that environmental knowledge and attitudes towards the environment start to take shape in early childhood, and that the environmental awareness gained in this period has an important effect on positive attitudes and behavior towards the environment in following years (Ardoin & Bowers, 2020; Spiteri, 2021). It was also highlighted that negative behaviors toward the environment cannot be easily fixed (Molinario et al., 2020). For this reason, sustainability education in early childhood has an essential place for societies seeking to transition to sustainable lifestyles. Studies show that young children can understand the principles of waste management and energy saving, including reusing, reduction, and recycling, at an early age (Grodzinska-Jurczak, Stepska, Nieszporek, & Bryda, 2006; Haktanır, et al., 2011; Kahriman-Öztürk, Olgan & Güler, 2012; Prince, 2010).

In the literature, there has been an increase in educational research on sustainability in early childhood education, there are several studies showing that children can display skills related to ecological sustainability (e.g. Ärlemalm-Hagsér, 2013; Borg, Winberg, & Vinterek, 2017; Büyüктаşkapu-Soydan & Öztürk-Samur, 2017; Kahriman-Öztürk, et al., 2012; Körükçü & Güngör, 2021; Özkan, Çelik, Güngör, & Akşin-Yavuz, 2019; Stuhmcke, 2012).

Ärlemalm-Hagsér (2013) analyzed how preschool children in Sweden made sense of Earth Hour, which was organized internationally to draw attention to environmental problems in the world. In the research, it was determined that the children were willing to participate in dialogues related to the subject, to make sense of it and to take part in the process. Louv (2012) stated that young children are aware of issues such as global warming, water scarcity, extreme weather events, and threatened species. According to Ji (2015), even very young children have the ability to think complexly, identifying problems related to socio-environmental issues and seeking solutions.

As McNichol, Davis, and O'Brien (2011) stated, due to its easy-to-understand nature, EF can be an effective mechanism to help young children in their learning about sustainability and their actions related to it, and even reach the wider communities in which they live. However, the literature on directly focusing on the awareness of the EF of young children is limited (Güngör & Cevher-Kalburan, 2018; Güngör, 2019; Simsar, 2021). Güngör and Cevher-Kalburan (2018) proposed an innovative data collection tool: 'The Ecological Footprint Awareness Scale for Children (EKAY-O)'. Güngör (2019) revealed that the EF awareness levels of children increased with the sustainability practices carried out in preschool. Simsar (2021) applied EKAY-O to the group of 100 preschool children aged 5-6 in Turkey to examine their EF awareness and environmental attitudes. The results of the study show that the children's awareness of the EF was low and their environmental attitudes were anthropocentric. Also, according to the results, the children's mothers were an important factor in the children's EF awareness and environmental attitude behaviors. This finding is in line with the idea that sustainable behaviors in early childhood can be learned by modeling adults, as reported in the literature (Borg, et.al., 2017; Bozyiğit & Madran, 2018). Therefore, eco-friendly experiences provided by parents and teachers, who are part of the immediate environment of young children, have an important role in terms of EF awareness. There are studies that show that attitudes and behaviors are positively associated with education level (Aydın & Çepni, 2012; Bülbül, Büyükkelik, Topal, & Özoğlu, 2020; Değirmenci, 2012). The aforementioned studies have shown that university graduates have higher environmental friendly attitudes and behaviors than others.

Another way children learn is through school experiences. The programs implemented in the school, the physical facilities provided, and the social environment created are important elements of these



learning experiences. Preschool education in Turkey is carried out in different types of schools, such as public or private, as well as preschool alone or preschool within a primary school. Private preschools in Turkey can create their own programs instead of following the national preschool education program. In addition, preschools can integrate different projects or intervention programs into the existing program. Private preschools can provide better financial opportunities. Preschools alone can be more advantageous than preschools within primary schools in terms of physical facilities. Therefore, all these differences between private and public schools may play a role in affecting children's awareness of EF.

Mainly motivated by these ideas, the proposed study aims to contribute to the advancement of the EF related literature by using a novel game-based scale, Ecological Footprint Awareness Scale for 60-72-month-old Children (EKAY-O), and considering the following research questions:

- What are the EF awareness levels of the participating children?
- What are the awareness levels of the children on the sub-components of EF?
- Are the EF awareness levels of the children affected significantly by the education levels of their parents?
- Are the EF awareness levels of the children affected significantly by the type of the school they attend?

## METHOD

### Research Model

This research is a descriptive study which aims to reveal the EF awareness levels of 60-72-month-old children attending preschools. Descriptive studies are generally conducted to enlighten a given situation, to make evaluations in line with standards, and to reveal possible relationships between events (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2016). The independent variables of the study were the education levels of the parents and the type of school the child attended.

### Study Group

The study group consisted of 60-72-month-old children attending preschools in a city in the Aegean region of Turkey. The stratified sampling method was used to determine the study group. This method is used when the selected sample represents the features of variables considered at the same rate as the universe they come from (Büyüköztürk, et al., 2016). The condition considered in the creation of the stratified sample in the research is the socio-economic levels of the regions where the schools are located. In determining these levels, the opinions of the Local National Education Directorate were used. The schools in the study group were chosen from those that volunteered from the schools categorized based on the socio-economic levels of the region. Demographic information of the study group is classified and presented in Table 1.

**Table 1.** Demographic information of the study group

Demographic Information		n	%
Gender	Female	127	47.7
	Male	139	52.3
	Total	266	100
Education level of mother	Primary school – high school	131	49.2
	College	135	50.8
	Total	266	100
Education level of father	Primary school – high school	130	48.9
	College	136	51.1
	Total	266	100
Type of school	Official preschool	163	61.3
	Private preschool	52	19.5
	Official preschool within a primary school	51	19.2
	Total	266	100



## Data Collection Tools

In the study, a Demographic Information Form developed by the researchers was used to determine the age and gender of the children, the education levels of the parents and the type of school the children attended. The Ecological Footprint Awareness Scale for Children (abbreviated as EKAY-O in Turkish), which was developed by Gngr and Cevher Kalburan (2018), was used to determine the EF awareness levels of children. It is a novel game-based measuring tool which consists of 19 items under five themes: “Evaluation of waste: Recycle, reduce, re-use”, “Energy consumption”, “Water consumption”, “Food consumption”, and “Transportation”. The total score of these themes determines the EF awareness level of the participant. The EKAY-O uses the following materials needed for the game to collect data from the participant.

- 2x2 m playing mat (Figure 1)
- Story cards consisting of pictures that show the items on the scale (Figure 2)
- Six-sided dice
- Felt-covered platform on which the story cards are placed
- Miniature recycle bin
- Miniature trash bin



**Figure 1.** Playing mat



**Figure 2.** EKAY-O story cards



Regarding the scoring of the scale, when the child chooses the right option, if the answer they give to the question “why” is related to the EF, they get “1” point, that is associated with their EF awareness, and “0” point if it is not related to it. When the child chooses the wrong option, the child is not asked the question “why” and gets “0” point. The highest score is 19 and the lowest is 0. Analyses are performed on the total scores obtained from the scale. For the internal consistency reliability of EKAY-O, the KR-20 coefficient was calculated as .66. Özdamar (2004, p.632-633) states that KR-20 values between .80-.1.00 are highly reliable, while those between .60-.80 are quite reliable.

### Data Collection Process

After the necessary official permissions and parental approvals were obtained, prospective children were briefed about the study and asked if they would like to participate. The EKAY-O was applied to the children who volunteered by the researcher in a quiet room of the preschool they attended. The researcher explained the game used in the scale to the child and asked the child to move on the game set with the dice they threw. For each item, the researcher showed the child a picture, briefly explained the event depicted in the picture, and asked questions about how the character in the picture thought he should behave or where he would throw the waste in front of him. The child was asked the question "why?" regarding their choice, and their score was determined. For example, in the article on waste, by showing the child cards with pictures of different types of waste (recyclable or non-recyclable), the child was asked “Where do you think we should throw this waste? Would you throw it in the recycle bin or the trash?” Depending on the answer given, the child may be asked "why?" The game consists of 10 items after the game part of the scale is finished, the child is seated on the ground and the story part is started. In this section, the child is told a story. As each of the items related to EF appears in the story, the corresponding card is shown to the child, and the child is asked "How would you like the child in the story to behave?" The story continues by including the answer given by the child in the story. The story section consists of nine items. Administration of the EKAY-O takes approximately 15-20 minutes per child.

### Data Analysis

The data of the study were analyzed using the SPSS 22.0 statistical package program. First, Kolmogorov–Smirnov test values were examined to determine whether the data followed a normal distribution to decide which statistical tests to use. Since the data did not fit a normal distribution ( $K-SZ = .117$ ;  $p < .05$ ), Mann–Whitney U and Kruskal–Wallis tests, which are nonparametric tests, were used to analyze the data ( $p < .05$ ).

## RESULTS

This section presents the findings obtained from the data analysis following the order of the research questions.

**Table 2.** The lowest mean score, the highest mean score, the average score (Mean) and the standard deviation (Std.Dev.) values of EKAY-O

	n	Lowest Score	Highest Score	Mean	Std.Dev.
Scale	266	0	17	10.64	3.465

According to Table 2, the lowest score obtained by the children participating in the study was 0 and the highest was 17. In the study, in order to determine the children’s EF awareness levels, the scores were categorized into low, medium, and high levels by using the arithmetic mean and standard deviation values. The findings obtained are shown in Table 3.

**Table 3.** Score ranges, frequency, and percentages related to children's EF awareness levels

Category	Ecologic Footprint Awareness Score Range	f	%
Low	$0 < X \leq 6$	40	15
Medium	$6 < X \leq 12$	137	51.5
High	$12 < X \leq 19$	89	33.5
Total		266	100



When Table 3 is examined; 15% of the children participating in the study were in the low "ecological footprint awareness" score range, 51.5% were in the medium range, and 33.5% were in the high range. From these results, it can be claimed that the children's EF awareness levels were mostly at the medium level.

**Table 4.** Mean and standard deviation of each item included in the EKAY-O

Scale Items	Mean	Std.Dev.
item 1 (energy consumption, renewable energy)	.32	.467
item 2 (waste management: recycling, plastic)	.65	.479
item 3 (waste management: recycling, glass)	.61	.490
item 4 (waste management: recycling, battery)	.66	.475
item 5 (waste management: recycling, tin)	.58	.494
item 6 (waste management: recycling, paper)	.73	.445
item 7 (waste management: recycling, organic waste)	.82	.385
item 8 (waste management: reduce)	.07	.252
item 9 (waste management: reduce)	.59	.493
item 10 (food consumption)	.08	.270
item 11 (transportation, using public transportation)	.23	.424
item 12 (waste management: reduce)	.41	.492
item 13 (energy consumption)	.82	.385
item 14 (waste management: reuse)	.61	.488
item 15 (waste management: reuse)	.84	.369
item 16 (waste management: reduce)	.80	.403
item 17 (transportation, walking)	.64	.480
item 18 (food)	.38	.487
item 19 (water consumption)	.81	.391

The arithmetic mean, total score, and standard deviation values obtained for each item in EKAY-O are shown in Table 4. As shown in Table 4, item 15 on waste management is the item with the highest total score and the highest mean. For item 15, two pictures were shown to the child. The first picture depicted a child closing the caps of her felt-tip crayons after using them, so she could use them again. In the second picture, the child left the caps of the felt-tip crayons open and asked for new crayons from her teacher, as she could no longer use hers. Then the question is asked: "Which child in the picture do you use felt-tip crayons like?" For item 8, the item with the lowest total score, the researcher told the child: "There is food waste in this bag. Do you want to give this waste to stray animals such as cats and dogs or do you want to throw it in the trash? Drop the waste wherever you want." Then the child was expected to make a choice. The other 17 items in EKAY-O were similarly applied to the children of the study group.

**Table 5.** Mann-Whitney U Test Results for the EF Awareness Levels of the Children According to the Mother's and Father's Education Level

Education Level of Mother	n	Mean Rank	U	Z	p
Primary school – high school	131	119.93	7065.000	-2,845	.004*
College	135	146.67			
Total	266				
Education Level of Father	n	Mean Rank	U	Z	p
Primary school – high school	130	123.40	7527.000	-2,102	.036*
College	136	143.15			
Total	266				

\* $p < .05$



Table 5 indicates that the EF awareness levels of the children significantly differed according to the education level of the mother. The levels of the children whose mothers were university graduates were higher than those of children whose mothers were high school and primary school graduates. Similarly, the EF awareness levels of the children whose fathers were university graduates were significantly higher than those of children whose fathers were primary and high school graduates.

**Table 6.** Kruskal-Wallis test results for the EF awareness levels of the children according to school type

Type of School	n	Mean Rank	Df	$\chi^2$	p
Private school	52	133.54	2	10.274	.006*
Official preschool within a primary school	51	103.48			
Official preschool	163	142.88			
Total	266				

\* $p < .05$

Table 6 reveals that the EF awareness levels of the children significantly differed according to the type of school they attended ( $\chi^2=10.274$ ,  $p < .05$ ).

**Table 7.** Mann-Whitney U test results for the EF awareness levels of the children according to the variable of school type

Type of School	n	Mean Rank	U	Z	p
Private school	52	57.87	1021.000	-2,021	.043*
Official preschool within a primary school	51	46.02			
Private school	52	102.17	3935.000	-,779	.436
Official preschool	163	109.86			
Official preschool within a primary school	51	83.46	2930.500	-3,190	.001*
Official preschool	163	155.02			

\* $p < .05$

Table 7 shows that the EF awareness levels of the children who attended a private school were significantly higher than those educated in an official preschool within a primary school ( $p < .05$ ). Likewise, children who attended a preschool had significantly higher EF awareness levels than children educated in an official preschool within a primary school ( $p < .05$ ). Although the difference between the EF awareness levels of children attending a private school and those educated in a preschool was in favor of the latter, the difference was not significant.

## DISCUSSION and CONCLUSION

The findings of the study indicate that the EF awareness levels of the children were mostly (51.5%) at the medium level ( $6 < x \leq 12$ , the highest score being 19). In his study, conducted to examine the relationship between children's EF awareness levels and their environmental attitudes by using EKAY-O, Simsar (2021), found that the EF awareness levels of children were low, and he associated these low levels of awareness with the cognitive development levels of the children. From the point of view of cognitive development, the cognitive development of children is greatly affected by their interactions with their immediate environment. Therefore, the moderate level of EF awareness of children can be associated with their school and home experiences related to waste, energy and water use, food consumption, and transportation. However, it is considered necessary to conduct a more in-depth study to discover the factors that affect children's low or high EF levels.

The item with the highest mean score of the children in the scale is related to recycling. It was observed that the topic of recycling in early childhood education has become popular both in Turkey and the rest of the world in recent years (e.g. Bolanos, Reeve, Reeve, Sidener, Jennings, & Ostrosky, 2020; Buil, Roger-Loppacher, & Tintoré, 2019; Kartal & Ada, 2020; Mackey, 2014; Onur, Çağlar, & Salman, 2016; Öztap & Bartan, 2019; Schill, Godefroit-Winkel & Hogg, 2020; Tosun & Demir, 2018). Mackey (2014) studied children for their understanding of the concept of recycling and emphasized that during the sustainability education process included in the program, preschool sought ways to improve their sustainability practices. In the study by Schill, et al., (2020), it was seen that children were



knowledgeable and worried about recycling. The findings also showed that children developed their recycling abilities through self-learning and observation-based learning, often at school and sometimes in the family setting. On the other hand, in the study by Kartal and Ada (2020) involving children aged 3-6, it was revealed that children's perceptions about recycling were limited. However, the data of the research obtained through children drawing and talking about recycling showed that as the age of the children increased, their knowledge of recycling also increased. Another study, Onur, et al., (2016), found that children's paper recycling activities contributed to the development of their environmental awareness. In parallel, Öztap and Bartan's (2019) study showed that being involved in art activities in terms of 'reuse' increases children's awareness of recycling. In light of the studies in the literature, it can be stated that the level of recycling knowledge and skills of children increases with age; and also school experiences play an important role in the development of recycling awareness.

The lowest average score in the study was observed in the item related to waste reduction. Grodzinska-Jurczak et al. (2006) revealed that children's attitudes towards paper waste were not positive enough in relation to waste reduction. It was stated that the reason for this is that families may not have a sufficient level of awareness. On the other hand, Davis, Rowntree, Gibson and Eglinton (2005) found that the education program for sustainability positively affected the skills of preschool children in reducing waste. In an experimental study with preschool children by Buyer (2013), both teachers and parents admitted that children did not engage in any practices related to reduced/reducing consumption in both home and school environments. At the end of a six-week practice based on the principle of reduce, reuse, and recycle composting, it was determined that the children's increased experience with reducing reflected positively on their behavior in this regard. Based on the above studies, it can be said that children need to model the positive behaviors of adults, both at home and at school, and to increase their opportunities to gain direct experience.

According to the results of the research, it was seen that the children had high average scores on energy and water consumption in the items in EKAY-O. Similarly, in the study of Grodzinska-Jurczak et al. (2006), it was found that children were competent in saving water and energy. In parallel, Samaltani and Christidou (2013) claimed that young children can develop positive attitudes and values towards sustainable water use. In the action research carried out by Güngör (2019) on reducing the ecological footprint in a preschool, teachers reported that children sincerely participated in actions on water and energy saving, enjoyed educational activities on these subjects, and that their behavior towards conserving water and electricity developed rapidly. Based on this, it can be said that preschool children can make sensible choices about water and energy consumption.

According to the research findings, children's awareness of food consumption and transportation (preferring public transportation) are low. This finding can be associated with insufficient efforts by schools and parents on the subject. Children usually do not make food and transportation decisions. Parents and school officials decide how children arrive at school and what they eat at school. However, children can participate in decision-making processes related to improving sustainability and actively engage in EF-reducing behaviors. Cevher-Kalburan and Güngör (2019) offered suggestions on reducing ecological footprint via consuming seasonal foods, growing vegetables and fruits as much as possible, and choosing to shop locally for food. As another idea, Davis, Gibson, Pratt, and Eglinton (2005) study found that the 'litterless lunch' practice, which promotes healthy lunches prepared at home, positively affects children's awareness. Regarding food consumption, measures can be increased with the participation of children at home and at school.

In the action research carried out by Güngör (2019), it was understood that school personnel's awareness of transportation increased, but behaviorally positive changes did not occur. On the other hand, it was found that if children were allowed to actively participate transportation-related activities, which could be adapted to the developmental level of the children, positive changes in children's awareness, attitudes, and behaviors were expected to occur. Similarly, in the study of Grodzińska-Jurczak et al. (2006), it was determined that while children prefer environmentally friendly transportation, parents prefer the opposite. Regarding this difference, the researchers emphasized that children could develop





environmentally friendly attitudes and behaviors through resources such as books and television and by modeling individuals other than their parents, such as teachers. In this respect, it can be said that the experiences offered to children within preschool programs play a critical role in the development of EF awareness.

According to the results of the study, the EF awareness levels of the children showed significant differences based on the education levels of their parents. The levels of children whose parents were university graduates were higher than those whose parents were high school and primary school graduates. From the decisions taken at the World Summit held in Rio de Janeiro in 1992 on education for sustainability to the present day, significant progress has been made in integrating sustainability education at all levels around the world through the efforts of UNESCO. The targets for 2030 are to provide all students with the knowledge and skills required for sustainability through education on sustainable lifestyles (UNESCO, 2019). These developments have also positively affected education policies in Turkey, and the projects for the dissemination of environmental education at all levels have also been reflected in education policies. Therefore, it can be considered that individuals with a high level of education have more opportunities to gain educational experiences that improve their attitudes and behaviors towards the environment. Bronfenbrenner (1986) described the family and school environment as a critical environment for children to learn behavior and develop attitudes appropriate to their culture. In this context, the increase in the education level of parents may have increased the EF awareness levels of the children by affecting the positive attitudes and behaviors of the parents towards the environment.

Kahriman-Öztürk, et al. (2012) stated that the possibilities of different school types to provide educational visual and printed stimuli may differ; therefore, they suggested that school type (e.g. private or public) should also be examined as a variable due to its possible effects on children's ecological behavior. In the current study, the children's EF awareness levels were evaluated according to the type of school they attended, and it was determined that their levels differed significantly according to the school type. Children attending private schools had significantly higher EF awareness levels than those educated in an official preschool within a primary school. Similarly, children who attended a preschool had significantly higher EF awareness levels than those educated in a preschool within a primary school. Güngör (2019) states that ecological awareness levels of children increased with the sustainability applications carried out in a preschool. In the literature, there are studies pointing out that training provided on the subject has positive effects on children's attitudes and behaviors towards the environment (Benzer & Şahin, 2013; Çabuk & Çabuk, 2017; Erol & Ogelman, 2019; Güven, 2014; Hadzigeorgiou, Prevezanou, Kabouropoulou & Konsolas, 2011; Karimzadegan, 2015; Liefländer 2015; Şallı 2013; Uslucan, 2016). These differences between schools detected in the study can be associated with the perspective of schools on sustainability education. Schools that attach importance to sustainability education will undoubtedly reflect this importance in their practices for children, which increases children's awareness on the subject, as can be seen in the studies in the literature.

According to the results of the research, educational programs for children, parents, and teachers could be developed and expanded, especially in the fields of food consumption and transportation. In future studies, the effects of these educational programs on EF awareness can be determined.

This study is limited to 266 children who attended preschools in central areas of the city. A future study could be implemented with a larger sample size that includes both central and rural areas in various cities, even in different countries. The independent variables considered in this study are limited only to parental education levels and preschool types. However, there are various other factors that affect children's awareness of sustainability. It is thought that it would be useful to investigate the effect of different variables such as teachers' awareness of EF, the existence and characteristics of the practices within the scope of sustainability education in preschools, child's school attendance year, parent's occupation, and income level. Another limitation of this study is that EF was only examined with EKAY-O. Conducting research using qualitative and/or mixed models with different data collection tools, such as observation and interviews, is important in terms of obtaining in-depth information.



Another aspect of the research is to include qualitative studies in which the opinions of teachers and parents are collected in addition to the opinions of children. Furthermore, longitudinal studies on the subject could be conducted in order to understand the development and nature of EF among children.

### **Ethics and Conflict of Interest**

The authors declare that the study has not unethical issues and that research and publication ethics have been considered carefully. This study was partially presented as an oral presentation in Turkish at the International Congress of Research in Education held on 09-11.05.2018 in Manisa, Turkey. The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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