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RESEARCH ARTICLE

"Environment Is Like Nature": Opinions Of Children Attending Forest Kindergarten About The Concept Of Environment

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Abstract

The purpose of the current study is to determine the opinions of children attending forest kindergarten about the concept of environment. The participants of the study are thirty six 50-70 month-old children attending a forest kindergarten. In line with the purpose of the study, the triangulation design, one of the qualitative research models, was used. In the quantitative dimension of the current study, the children were asked to draw what comes to their mind when they hear the word "environment" and then interviews were conducted with the children about their drawings. Then, on the basis of the codes derived from the drawings and DAET-R, it was attempted to understand the structure of their opinions about environment. In the qualitative dimension of the study, interviews were conducted according to the phenomenological design. As a result of the analyses conducted, it was concluded that the children generally evaluated nature as environment. In both drawings and interviews, the children generally drew and mentioned biotic and abiotic factors. The concepts of human and designed environment were rarely emphasized in the drawings and interviews. Given that the participating children were attending a forest kindergarten it was already expected by the researchers that their opinions would be "nature" centred. In light of these findings, it is thought that it is important to make educational programs built on environmental education more widespread.

Keywords: Child, concept of environment, forest school, nature

Introduction

Today, the concepts of nature and environment are frequently used interchangeably. However, environment refers to a broader order including physical, social and artificial environments (Atasoy, 2015). While the concept of environment is used mainly in the meanings of "setting" and "place of residence" and considered as the "sum of natural, economic and cultural values", nature is defined as "the unity of settings which consists of organic and inorganic matters and where people are interacting with each other" (UNEP, 1978). Although other entities in nature depend on other living or non-living elements in the system, very few affect the environment as adversely as human beings. Various actions of people first started to change their close environments and then their distant environments and in turn started to change nature and the balance of nature has started to deteriorate due to environmental problems (Orr, 1994). People creating environmental problems try to cope with both these problems and negative events brought about by the changing order of nature. Especially in rapidly growing cities, the widespread use of industrialization along with technological developments causes people to change the environment negatively (Roth, 2002). People cannot recognize that they are creating environmental problems by forgetting that they are a part of nature, getting distanced from nature and overexploiting natural resources (Wilson, 1993). This is not only a serious threat to

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humanity, but it also brings about inevitable consequences that affect other non-human beings. The recognition of these negative consequences, in other words, the existence of irreversible environmental problems, has become one of the most prominent issues of international agendas since the 1970s and thus environmental education defined as changing the individual’s behaviours in favour of nature has become one of the most popular topics of educational sciences (Pooley and O’Connor, 2000). In its broadest sense, environmental education is defined as teaching children and adults how to make intelligent decisions about how to learn and examine the environment and how to protect it (North American Association for Environmental Education - NAAEE, 2014).

The most important and effective participants of environmental education are children (Wilson, 1996). Children in their early childhood period are in interaction with both their natural and artificial environments and early childhood education theories consider the child and his/her environment as a whole from the first years of life (Copple & Bredekamp, 2009). The ecological approach, founded by Bronfenbrenner in the 1970s, emphasizes that children have an environment that affects them and is affected by them and that children and their environments are formed by mutual interaction and that child and environment interaction is a continuous whole (Bronfenbrenner, 1979). The interaction of the child with his/her natural environment has shaped environmental education from past to present and has become one of the most popular topics of research and discussion (Bonnett 2007). While Rousseau talked about the positive effects of nature on the child's healthy development, Froebel addressed nature within a pedagogical approach and named the first kindergarten opened in history as “children's garden” (Wortham, 2002). While Dewey (1998) emphasized the importance of nature and natural materials in child development and education, Louv (2010) noted that the close relationship established with nature is necessary for the protection of nature and a sustainable life. Here it is worth remembering Louv's (2010) saying “the health of the earth and the health of children are closely interdependent”. The health of the earth, in other words, protection of the environment is possible through an environmental education process in which children actively participate. It should be noted that the relationship of young children with nature is a starting point for environmental education and has a direct impact on a sustainable life (Kahriman-Pamuk, 2019). In other words, the importance of environmental education in early childhood period should be discussed in two dimensions. The first is the positive effect of being in nature on children's development and learning, and the second is that the attitudes and behaviours that children will develop to become environmentally friendly individuals begin to take shape in early childhood and with the quality time they spend in nature. Today, however, children in early childhood are growing in an increasingly urbanized and industrialized environment without any connection to the natural environment or even without going out (Nabhan & Trimble, 1994; Rivkin, 1995; Wilson, 1996). Generations who do not know their environment outside the house and shopping centre are growing due to traffic, pollution, population density and other risks. At this point, the importance of environmental education in the early childhood period should be emphasized in terms of increasing the time spent in nature and re-establishing the connection between the child and environment (NAAEE, 2014).

The aim of environmental education in early childhood is to support children to connect with the environment they live in and develop environmentally friendly attitudes, to give children opportunities to take an active role in solving environmental problems and to ensure that children see nature as a learning tool, a guide and a teacher (Davis, 1998; Haktanır, 2007; NAAEE, 2014; Wilson, 1996). Although children have been one of the most important participants of environmental education programs from past to present, how they perceive the concept of environment and their interactions with the environment have not received enough attention in the related literature (Loughland, Reid, Walker & Petocz, 2003; Wals 1994). However, a good understanding of how

children perceive the environment and their relationship with the environment can make the environmental education process more effective by making it more responsive to the needs of children and enable its planning in a developmental framework (Bonnett 2007; Bonnett & Williams 1998). Educators need to be aware of how young children perceive their environment and how their experience affects their environmental perceptions while developing environmental education experiences, environmental education activities or environmental education programs for young children (Wals, 1994). Another important point to be emphasized here is how children perceive the environment will affect the connections they will establish with the environment when they become adults. There are studies called as significant life experiences to investigate the effect of autobiographical variables such as where they lived when they were children, time they spent in nature and type of the house they lived in on their attitudes and tendencies during their adolescence (Hsu, 2009; Palmer, Suggate, Robottom, & Hart, 1999).

Thus, environmental education programs to be conducted in schools or nature-based early childhood approaches are needed more for children to have the opportunity to meet with nature (Kenny, 2013; Knight, 2009; 2013). Based on the idea that the child's learning process is more pleasant and lasting in nature, with the links established with nature, the pedagogy of forest school first initiated in Scandinavia in the 1950s and gradually spread in Europe and the United Kingdom (O'Brien & Murray, 2007) has been affecting nature education initiatives in New Zealand (Elliott & Chancellor 2014) because young children, who can benefit from the forest school approach, have numerous opportunities to develop their understanding of the natural environment. They are personally involved in the learning processes of the development of the basic elements of life such as trees, plants, soil, animals, air and water (Kahriman- Pamuk, 2019). In their studies, Ridgers, Knowles & Sayers (2012) and Nawaz & Blackwell (2014) reported that children's experiences in natural environments have positive effects on their environmental awareness. In this context, the purpose of the current study is to determine the views of children attending a forest school which gives them numerous opportunities to establish connections with their environment about the environment and to try to get an idea about their environmental perception. In this connection, the research question of the current study was worded as:

- “What are the opinions of 50-70 month-old children attending a forest school about the environment?”

Methodology

Research Model

The current study aims to determine the opinions of 50-70 month-old children attending a forest school about the concept of environment. To this end, the current study was modelled in compliance with the triangulation design, one of the qualitative research methods. In studies using the triangulation design, qualitative and quantitative data collection methods are of equal importance and used simultaneously (Wiersma & Jurs, 2005). According to Fraenkel and Wallen (2009), the triangulation design is effective in terms of manifesting a strong structure by pressing the limitations of the two research methods.

The quantitative part of the current study involves the scoring of the children’s drawings by using the Draw an Environment Test Rubric (DAET-R) and the determination of the relationships between the scores belonging to the categories. In this part, the descriptive analyses were conducted on the scores obtained from the rubric and the relationships between the sub-dimensions were determined. The

quantitative part of the current study was designed as a phenomenological research. Creswell (2013) defines phenomenological research as the type of research aimed at finding the common meaning of the experiences of individuals about the target phenomenon or concept. Although there are different types of phenomenological research, the qualitative dimension of the current research was carried out as interpretive phenomenology, which Van Manen (1990) defines as being oriented to lived experiences and interpreting texts about life. The purpose of the quantitative dimension is to understand the opinions of 50-70 month-old children attending a forest school about the phenomenon of environment. In this context, in line with DAET, the environment is defined as “... describing the broad view that environmental education takes of “environment” , incorporating concepts such as system, interdependence, and interactions among humans, other living organism, the physical environment and their built or designed environment (North American Association of Environmental Education, 2004; 9).” In whole of the current study, all the evaluations and interpretations were made on the basis of this definition.

Considering that the children in the study group were between 50-70 months, it was assumed that using the drawing technique alone would not provide sufficient data due to the children’s sophistication about drawing and thus interviews were conducted with each child on their drawings. The findings were examined according to both quantitative and qualitative research paradigms and thus it was aimed to gain a deeper understanding of the children's views on the phenomenon of environment. For this reason, the mixed research method was used for research to make it compatible with the research model.

Setting

A school principal, an education specialist and four teachers and two assistant personnel are employed in the forest school where the current research is conducted. A total of 35 children between 50 and 70 months are studying at the school. There is a child with special needs. The teacher-child ratio is two adults to 17/18 children. In addition to the school head, who is responsible for the administrative work of the school, an education specialist who designs the school's curriculum and coordinates the implementation and evaluation of the daily flow of the instruction is also employed. There are two personnel assigned for the cleaning and catering works of the school, one indoor and one outdoor.

There are two groups in the Serpi’lin Dünyası Forest Kindergarten, which is a private kindergarten. The groups were constructed by their ages. The national pre-school education curriculum (Ministry of National Education, 2013) is followed at the school and the principles of the program are integrated into the forest school.

Most of the daily flow of the instruction at the school consists of free play. In the afternoon activities, mostly art, music and story-telling activities are conducted. Opportunities for science and mathematics are mostly offered to children as semi-structured during forest visits. Every day, each group visits the forest. While the children only perform eating and large group activities with their own groups, the groups come together from time to time during free play. After each forest visit, teachers and children evaluate the day in the circle time and make plans for the next day. Evaluations made at the end of the day give the teachers and the educational expert ideas about how much children can be free, what they have experienced and what they have learned during the day, and data that contribute to the curriculum development phase are obtained.

The kindergarten is located next to the forest area and has a large outdoor land area. The kindergarten uses an area not restricted with borders within this forest area. The daily flow of the instruction offered in the school occurs in the forest area; in addition,

daily forest walks and discoveries are organized. The school garden completely surrounds the school building. In the front side of the school (entrance), there is an empty area, followed by the main road; in the back side and other sides of the school is there the forest area. In the kindergarten having only one one-storey main building, children spend almost the whole day outdoor.

There is no classroom inside the school that is used permanently by each group; all classes can be used in common. There is also a kitchen, administrative offices, a teacher's room, a warehouse and a toilet inside the school. Although the garden has direct access from the classes, the main door in the hallway is mostly used for this purpose. In front of this door is designed a quite broad dressing area. While groups spend their breakfast and lunch hours mostly in the school yard, some days, meals are eaten in the forest where some of the groups arrive after a short walk. The breakfast and lunch are provided by the school for the children; yet, in the afternoon at about five o'clock, they eat what they have brought from home and some snacks given by the school.

In the school garden, there are two large and four small materials depots, toilets, two sand pits, a slide, a swing, a climbing ladder, a sowing-planting area, wooden benches, open and closed wooden patios, small wooden structures (play house, boat) that can be entered into, wooden and stone sculptures made by a local artist, large trees, shrubs and a wooden amphitheatre area. While the part of the garden surrounded with trees has typical features of a forest such as pits, recesses, wetlands, shrubs, there are some other areas with plank flooring, soil and gravel floorings.

The teachers are in the role of a guide in both the class and the forest area. They intervene in the children very little (in case of an accident or a serious conflict); they only offer their help when required by children. Moreover, the teachers observe children mostly in free play time and sometimes participate in for short periods of time.

Study Group

The study group of the current research is comprised of 36 children attending the Serpilin Dünyası forest school in the city of Mersin located in the south part of Turkey. In the construction of the study group, the homogenous sampling technique was used. Though this method, widely used in qualitative studies, decreases differences between the participants, it was preferred as it facilitates focusing on the target phenomenon and simplifies the analysis process (Miles and Huberman, 1994). Though the reduction of differences is a limitation, as only the children receiving education in a forest school were focused on in line with the general purpose of the current study, this limitation is believed not to have any negative effect on the credibility of the study.

The children in the study group come from families with middle and upper middle socio-economic levels. In addition, the city of Mersin, where the children live, is one of the Turkey's largest, most cosmopolitan cities and it is also one of the most developed cities in industrial, commercial and humanitarian respects. According to the statistics issued by the Turkish Statistics Institute (2019), the city of Mersin is well over the Turkey average in the fields of education, health, culture and economy. Moreover, according to the current data of Mersin Regional Directorate of Forestry, the general area of the city is 178, 677 m2, of which 97, 751 m2 is forest land (Mersin Regional Directorate of Forestry, 2019). Accordingly, more than half of the city of Mersin is covered with forests. In light of these data, it can be said that the children in the study group live in a large and rich province both in terms of artificial environment (urbanization, roads etc.) and natural environment. Thus, on the basis of the

assumption that these children experience all aspects of the concept of environment in everyday life, they would make the ideal participants for current research.

Ethics Codes

The current study was carried out in the private Serpilin Dünyası Forest Kindergarten affiliated to the Ministry of National Education. As the school is a private school, no direct permission was taken from the City Directorate of National Education. However, the general purpose of the current study and all the activities to be performed during the research were explained to the school administration and other stake holders and the necessary permissions for the research were taken. After granting these permissions, the researchers entered the school and informed the families and got them to sign consent forms. All the families gave their consents for their children to participate in the study. During the collection of the data, the children were explained that what would be administered to them would not include any evaluation or classification and that they would not have to participate in the research and that they could leave the research whenever they wished. During the drawing activities, the children used their own paints yet the drawing papers were provided by the researchers. Throughout the research process, no intervention was made to any child, any stakeholder and any other living thing in the school (two dogs of the school etc.) to distort their normal daily lives. Throughout the two weeks during which the study was conducted, no inventory was harmed due to the research activities at the school and the educational environments were not abused.

Data Collection

The data in the quantitative dimension of the current study are made up of the children's drawings of the environment. These drawings were produced according to DAET-R and findings were obtained. The data in the qualitative dimension are constituted by the interview documents collected from the interviews. Both types of data were collected by one of the researchers within a two-week period in April 2019.

The drawing data in the quantitative data were collected in a single session from all the children at the same time. A convenient place was arranged in the school for the children to produce their drawings. A great care was taken for the children not to see each other's drawings and the seating arrangement was made considering this. The drawing activity lasted for about 40 minutes. After the completion of the drawing activity, each child was interviewed about their drawings. During these interviews, the children were asked to explain what they had drawn. In this way, the limitations arising from the children's drawing development were attempted to be kept under control and some insights about the qualitative dimension were provided for the researchers.

The interviews conducted in the qualitative dimension were conducted with the children individually separated from the classroom. As the researcher conducting the interviews was also one of the consultants to the school, he/she was not a complete stranger to the children. This was also a measure taken to protect children against various types of anxieties. Interviews lasted 4.5 minutes on average. By asking open-ended questions during the interviews about the phenomenon of environment, it was attempted to elicit their opinions about the phenomenon as clearly as possible.

Data Analysis

In the quantitative dimension of the current study, DAET-R designed by Moseley, Desjean-Perrott and Utley (2010) was used in the analysis of the collected data. DAET-R deals with the concept of environment as a systematic and interdisciplinary concept. DAET-R also requests individuals to explain their drawings. In addition, as DAET-R makes it possible to make classification on the basis of the total score, it enables statistical operations. DAET-R accepts the definition of the environment as it is given in the definition of the phenomenon of environment in the current study. On the basis of this definition, the rubric is divided into four factors. These are; F1: human, F2: biotic, F3: abiotic and F4: human built or designed. Each factor is scored with points between 0 and 3. If no element related to this factor is depicted in the drawing, then 0 point is assigned; if the element is drawn on its own without any connection, then 1 point is assigned; if it is drawn as related to at least another element, then 2 points are assigned and if the element is drawn as related to at least two other elements systematically, then 3 points are assigned. A total score ranging from 0 to 12 can be taken from the rubric. A higher score means that the participant has an understanding and view of the environment complying with its definition. DAET-R has been used as a data collection tool in different studies (Ahi, Balcı & Alisinanoğlu, 2017; Shepardson, Wee, Priddy & Harbor, 2007). The data collected from DAET-R were subjected to descriptive analyses. First, the codes found in the drawings were determined. Then, the descriptive analyses of the scores taken from DAET-R and correlation coefficients between the sub-dimensions were calculated. Erkuş (2011) suggests the calculation of Pearson Product-Moment Correlation Coefficient for the determination of the linear correlation belonging to two continuous variables in cases where the size of the sampling is larger than 30. Therefore, Pearson Product-Moment Correlation Coefficient was used in the current study.

The data collected in the quantitative dimension of the current study were analyzed on the basis of the concept of interpretative phenomenology. In this regard, both the textural and structural description of the collected data was made. According to Creswell (2013), the textural description focuses on the understanding of what the participant has experienced about the phenomenon and the structural description focuses on the understanding of how the participant has experienced it in terms of the state and content. The drawings make up the textural description by enabling us to understand what the children have experienced about the phenomenon of environment and the building of the environment in their minds.

In interview texts were used for structural description. Through the data collected from the interviews, it was attempted to elicit how the children view and experience the phenomenon of environment in terms of the conditions and situations in which they are in. Through both textural and structural descriptions, it was attempted to elicit how the phenomenon exists in the children's minds and how they understand and internalize the phenomenon. All these analyses were carried out according to the analysis method developed by Colaizzi (1978). As a requirement of this analysis technique, important sentences in the interviews texts were determined and in light of these, certain meanings were developed and on the basis of these meanings, themes were developed.

Trustworthiness

A two-stage system was applied to verify the trustworthiness of the scores obtained from DAET-R. First, scores were produced by two experts together with a researcher and the same scoring system and rubric were used. A two-stage system was designed for interrater reliability, as well. If any inconsistency about ratings of drawings was determined, the two researchers independently re-scored drawings in

different settings. When there were 2-3 points difference between the scores given, the interview conducted with the child having produced the drawing was analyzed and thus a decision was reached. In the second stage, 3 drawings from the data pool and five drawings from each sub-group were randomly selected, interrater correlation coefficient was calculated. For this purpose, Pearson Product-Moment Correlation Coefficient was used. Moreover, for the interrater reliability, the formula proposed by Miles and Huberman (1994) Reliability = [Agreement / (Agreement + Disagreement)] X 100 was used. As a result of these analyses, Pearson Product-Moment Correlation Coefficient was calculated to be .83 and interrater reliability was found to be .89.

Yıldırım and Şimşek (2011) defined the concept of internal reliability and external reliability with the alternative concepts of consistency and external reliability, respectively. They defined the method used for consistency as consistency analysis and the method used for verifiability as verification analysis. In the current study, for the trustworthiness and reliability studies, all the stages followed in the interview process and all the analyses and interpretations made as a result of the interviews were examined by an external expert. Kvale (1996) states that the most important thing in ensuring the reliability of the interviews is the interpretation of the interviewer's text by at least two experts. Again, according to the author, seven stages should be applied to ensure the validity of the interview in a modern and postmodern context. These stages are: (1) identifying themes, (2) determining research design, (3) interviewing, (4) exploring, (5) analysis, (6) validity, and (7) reporting. These stages were taken into consideration during the interviews conducted within the current research. All phases of the interview were conducted in the presence of a researcher and an expert.

Findings

The findings of the research are explained in this section. Firstly, the findings obtained from the quantitative dimension of the research and then the findings from the qualitative dimension are presented.

Findings Obtained from the Quantitative Dimension

The quantitative dimension of the study consists of the drawings made by children and the scores obtained from DAET-R for these drawings. Firstly, the codes obtained from the drawings of 36 children are shown in Table 1.

Table 1.
Codes Derived from the Drawings

Codes	Female		Male		Total	
	f	%	*f*	%	*f*	%
Biotic Elements						
Three	8	44.4	10	55.6	18	100
Fruit	2	66.7	1	33.3	3	100
Grass	12	50	12	50	24	100
Flower	11	68.8	5	31.3	16	100

Butterfly	4	57.1	3	42.9	7	100
Insect	1	33.3	2	66.7	3	100
Spider	0	0	2	100	2	100
Snail	0	0	2	100	2	100
Bird	3	50	3	50	6	100
Bee	2	100	0	0	2	100
Dog	5	71.4	2	28.6	7	100
Rabbit	2	100	0	0	2	100
Chicken	1	50	1	50	2	100
Abiotic Elements						
Sun	17	58.6	12	41.4	29	100
Cloud	6	54.5	5	45.5	11	100
Moon	1	50	1	50	2	100
Sky	5	41.7	7	58.3	12	100
Soil	7	46.7	8	53.3	15	100
Sea	1	0	0	0	1	100
Rain	1	33.3	2	66.7	3	100
Wind	1	0	0	0	1	100
Rainbow	8	80	2	20	10	100
Human	8	80	2	20	10	100
Designed Environment						
House	1	16.7	5	83.3	6	100
Building	2	100	0	0	2	100
Ship	1	50	1	50	2	100
Plane	1	50	1	50	2	100
Machine	0	0	1	100	1	100

As can be seen in Table 1, a total of 28 different codes were produced within the four dimensions of DAET-R. The sub-dimension within which the highest number of codes was produced is the biotic factor. Within the biotic factor sub-dimension, a total

of 13 different codes were drawn. These nearly make up half of all the codes produced. Of these 13 codes, 9 are animals and the remaining 4 are plants. In the aibotic factor sub-dimension, 9 codes; in the artificial environment sub-dimension, 5 codes were produced and in the human sub-dimension, as only human is considered to be a code, 1 code was produced. The code most frequently drawn was found to be sun (f= 29), followed by grass (f= 24) and tree (f= 18). One of the remarkable findings related to codes is that the human code was only found in the drawings of just 10 children. Thus, it can be argued that a small percentage of the children (27.7%) see human as an element of the environment. Another remarkable finding is that the number of the codes produced under the sub-dimension of the Designed Environment is 5 and from among these codes, the most frequently used one was the "door" depicted in their drawings by 6 of the children. On the basis of this finding, it can be thought that the designed environment is not within the environmental experiences of the children.

There are four sub-dimensions in DAET-R and the highest score to be taken from each sub-dimension is 3. A high score shows that the codes belonging to the related sub-dimension were drawn as related to other codes and sub-dimensions within a system (Moseley, Desjean-Perrott and Utley, 2010). The scores obtained from the sub-dimensions of DAET-R are presented in Table 2.

Table 2
Distribution the Scores Obtained from the Sub-dimensions of DAET-R

	F1 (Human)		*F2 (Biotic)*		*F3 (Abiotic)*		*F4 (Designed Environment)*	
Score	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
0	26	72.2	3	8.3	2	5.6	24	66.7
1	7	19.4	29	80.6	31	86.1	11	30.6
2	3	8.3	1	2.8	1	2.8	1	2.8
3	0	0	3	8.3	2	5.6	0	0
Total	36	100	36	100	36	100	36	100

As can be seen in Table 2, the sub-dimension least depicted by the children in their drawings is the human. Only 10 of the children drew a human figure in their drawings. In seven of them, human was depicted as not involved in any interaction. In the designed environment sub-dimension, 24 children did not draw any code (66.7%). 11 children (30.6%) on the other hand drew the codes not in interaction. The highest number of codes was found in the biotic sub-dimension. In this sub-dimension, 29 of the children (80.6%) drew the biotic codes not in an interaction. The same holds true for the abiotic factor sub-dimension. Thirty one children (86.1%) drew codes belonging to the abiotic factor as not related to the other codes. In relation to the scores taken from the sub-dimensions, 2 and 3 points show the drawing of codes in interaction. While 2 points indicate that the code was drawn in interaction with a code in the same sub-dimension or a code in another sub-dimension, 3 points indicate that it was drawn in an interaction with at least two different codes within a perception of a system. Seen from this perspective, in the drawings included in the human sub-dimension, human was drawn in interaction with another human. In biotic and abiotic factors, three and

two children respectively were found to have drawn the codes in an interaction with at least two codes in a systematic perspective.

The highest score to be taken from DAET-R is 12 points. Increasing scores mean that the drawing about the environment includes different sub-dimensions as required and these sub-dimensions were drawn in interaction within a system. The distribution of the total scores obtained from DAET-R is shown in Table 3.

Table 3
Distribution of the Total Scores Obtained from DAET-R

Total Score	*n*	*%*
0-4	34	94.4
5-8	2	5.6
9-12	0	0
Total	36	100

As can be seen in Table 3, in the children's drawings of the environment, the sub-dimensions and the codes in these sub-dimensions were generally drawn not in interaction. In the drawings of two children on the other hand, it is seen that there is a certain level of interaction and a simple level of system perception. In the interviews conducted with the children about their drawings, this gained greater clarity. In the drawing of C5, the child drew a pond under the soil and emphasized that this is necessary for grass. Ç6 indicated that pollens are blown away in the wind. Ç10 explained the large flower he/she drew in his/her drawing as "the flower growing fast tanks to the sun" thus gave a good example of the relationship between biotic and abiotic factors. Ç20 and Ç23 drew soil under flowers and emphasized that this is necessary for flowers. Ç22 drew a person watering flowers and thus emphasized the simple relationship between human and biotic factor. Ç24 drew a spider net one a tree, indicating the relationship between two biotic factors. Though the samples given are few in number, considering the age of the children, the relationships established seem to be remarkable. Samples from the drawings are shown in Picture 1.

Picture 1.

Samples from the Children's Drawings

C22's drawing. A person watering flowers	C24's drawing. The 6th code is a spider net. It is drawn as located on a branch of a tree.

The results of the Pearson Product-Moment Correlation test conducted to elicit the correlation between the sub-dimensions of DAET-R and total scores are given in Table 4.

Table 4.
Pearson Product-Moment Correlation Coefficients between the Total Scores and Sub-dimensions

	Human	*Biotic*	*Abiotic*	*Designed environment*	*Total score*
Human	-	-.097	.074	.108	.549**
Biotic	-	-	-.026	-.114	.431**
Abiotic	-	-	-	.182	.556**
Designed environment	-	-	-	-	.518**

** $p < .001$

As can be seen in Table 4, no statistically significant correlation was found between the sub-dimensions of DAET-R. But all the sub-dimensions were found to be significantly correlated with the total score. According to Cohen (1988), a value between .1 and .29 means a low correlation, between .3 and .49 a medium correlation and between .5 and 1.0 a high correlation. Thus, there is a medium correlation between the biotic factor and the total score and high correlations between the other sub-dimensions and the total score. The findings shown in Table 4 are important in terms of supporting the findings presented in Table 2 and Table 3. The most general conclusion to be reached on the basis of the data presented in these three tables is that the environment depicted in the children's drawings are limited in terms of covering the sub-dimensions in a systematic and interactive way.

Findings Obtained from the Qualitative Dimension

The findings obtained from the qualitative dimension of the current study were collected through the interviews. The interviews were conducted on the basis of the interpretative phenomenology within the framework of the analysis process of Colaizzi (1978). In this way, the interviews were decoded. After the decoding, the children's opinions about the phenomenon of environment were collected under themes. Within the context of the current study, the children's opinions about the environment were collected under one theme. The researchers named this theme as nature.

The most important reason for the collection of the children's opinions under one theme is the way that the children made sense of this phenomenon. As a result of the analysis of the interviews, it was found that a total of 4863 words were used in the interviews. With the subtracting of conjunctions, the number of the words was reduced to 4812. The number of environment-related words was found to be 3654. Some of the words were found to be indirectly related to the phenomenon of environment. The words used were classified according to the sub-categories in DAET-R. Thus, a total of

26 different words were used belonging to the biotic factor sub-dimension. Of these words, 19 are related to animals and 7 are related to plants. The sub-dimension having the second largest vocabulary content was found to be the abiotic factor. Here, it was determined that 9 different words were produced. While only one word was used in the artificial sub-dimension, no word was used in the human sub-dimension. That is, the children did not mention the designed environment and human elements while describing or talking about the environment. The most frequently used words are tree (f= 24), flower (f= 19) and leaf (f= 11). All of the most frequently used words are in the biotic factor sub-dimension. In the abiotic factor sub-dimension, the most frequently used words are soil (f= 8) and sun (f= 5). In light of these findings, it can be argued that the children's opinions about the phenomenon of environment are comprised of biotic (e.g. tree, bird, cat) and abiotic (e.g. sun, soil, mountain) factors. The elements belonging to the designed environment (e.g. building, car, road) and the human factors are not present in the children's conception of environment. Some of the children's opinions are given below.

C23 *"There are trees, birds, pine cones in the environment. I am very happy there because I am playing, I am hugging trees, I am smelling flowers."*

C12 *"There are trees, forests, insects in the environment. The sky and sun are our environment."*

C18 *"There are trees, flowers and grass in my environment. I love them so much. I smell flowers. There are plants and insects."*

All of the students expressed opinions like the ones given above. Seven children in the study group on the other hand directly defined environment as nature and related to it. C8 *"Environment is like nature. It is green. There are trees, forests. There are many animals in nature.";* C30 *"Our environment is natural. There are insects, bears, wolves. There are wild animals. There is the sun. Insects live in the soil"* and Ç13 *"There are animals in the environment, there are birds. There are trees, plants as well. Nature is our environment."*

As can be understood from the children's opinions, none of the children see the elements of the designed environment and human as a part of the environment. During the interviews, all of the students stated that they feel good and happy in the environment. In addition to this, they stated that they have fun doing activities such as playing games, climbing trees and that they excessively enjoy them.

In the current study conducted in the mixed design, when the findings obtained from both the quantitative and qualitative dimensions are generally considered, it can be said that the children attending a forest kindergarten see nature as independent of the elements of the designed environment and human and that the elements frequently used by them to define and explain the environment are mostly constituted by biotic and abiotic factors and that the children primarily associate the phenomenon of environment with nature.

Results and Discusion

When the findings obtained from the children's drawings are examined, it is seen that the code most produced by the children is the biotic factor sub-code from among the biotic, abiotic, human and designed environment codes. Biotic codes are followed by abiotic codes. It is remarkable that the number of biotic codes is nearly half of all the codes produced. In this connection, when the relevant literature is examined, it is seen that Keliher (1997) examined the nature perception of the children aged 6-7

and reported that they mentioned biotic factors such as "birds, trees, flowers". Similarly, in a study conducted by Wals (1994) on relatively older children, it was found that the children associated their perception of nature with biotic factors. Taşkın and Şahin (2008) stated that when children were asked "what is environment?", they mentioned biotic factors such as tree, child, flower, bird yet they could not express the relationships between these objects. In the current research, the children were asked "how they perceive the environment". However, just as in the studies of nature perception, the children explained the environment in reference to the elements related to nature, which is of great importance in many respects. When studies on nature perceptions of children from different age groups (Hart & Nolan 1999; Rickinson 1999, 2001) are examined, as indicated by the findings of the current study, they show that children associate it with living things. There are many elements related to children's perceptions of the environment. In these studies conducted on different samplings with different methods and techniques, it has been reported that some independent variables such as age, gender, socio-economic level, family's education level, place of residence, emotional experiences lived in their surroundings and duration of formal education affect children's environment-related learnings, perceptions, attitudes and behaviours. From among these variables, the variable of duration of formal education has been reported to contribute to the development of positive attitudes towards the environment (Taşkın, 2004; Lubomira, 2004; Palmer, 1995). In the current study, the environmental perception of the 6-year old children from similar socio-economic levels attending a forest school was investigated. When considered within the context of the current study, it can be argued that the children's being students of a forest school in their formal education period and their experiencing a nature-based pre-school education process shape their perception of nature. Sobel (1996) noted that children's first-hand experiences with the environment strengthen their ties with the environment. In this respect, it was an anticipated result that the children spending most of their time in nature, among trees, birds, flowers in a forest school drew objects such as trees, flowers, birds etc. in their drawings of environment.

When the findings of the current study are examined, it is seen that one of the remarkable findings is that human codes were produced in the drawings of just 10 students and that the designed environment was not perceived as an element of nature by any of the children. Thus, it can be maintained that very few of the children see human as an element of the environment. Thus, it can be concluded that the elements of human and designed environment do not occupy any place in the environment experiences found in the minds of the children. Another remarkable finding connected with this is that the sub-dimensions of the drawings of the children were mostly depicted as unrelated and not in interaction with each other. That is, the children could not mostly associate the biotic, abiotic environment factors and the designed environment, human factors in their drawings. Only in the drawings of two children, a certain level of interaction and a perception of a simple system were observed. For example, in his/her drawing, Ç10 defined the big flower he/she drew as "the flower growing fast thanks to the sun" and thus gave a good example of the relationship between biotic and abiotic factors. Ç22 drew a child watering the flowers and thus pointed out the relationship between human and a biotic factor. In a similar manner, Loughland, Reid, Walker and Petocz (2010) and Ahi & Alisinanoğlu (2016) also reported that children define the environment as consisted of plants and animals and a self-sufficient place. The authors; just as in the current study, stated that only a small minority view the environment from an interactional point of view and that this small minority may have significant effects in relation to environmental education. In this sense, although the number of examples is small, it can be said that the relationships established are remarkable considering the age of the children. On the other hand, as a result of their study conducted on relatively larger age groups, Kalvaitis and

Monhardt (2012) reported the presence of findings related to human-environment interaction in children's perceptions of the environment, and that as children grow older, they perceive the environment as a setting where animate and inanimate beings interact. The qualitative findings of the study support the quantitative findings. The interviews with the children show that their views on the environment are related to nature. Similar to their drawings, during the interviews, the children first described biotic and then abiotic elements while defining the environment; they hardly touched upon the designed environment and the human elements. Thus, it is understood that children do not see the designed environment and human beings as a part of the environment, but limit the environment to biotic and abiotic factors and associate it with nature.

In summary, when the results of the current research and other findings in the literature are evaluated in the context of this research, the children's perceiving the environment as nature and the fact that not many children mentioned relational elements. It can be related to their experiences in nature; exactly, forest school children spend most of their formal school time in nature. Similar conclusions have been reached by Keliher (1997) and Wals (1994). The authors reported that the children spending time in nature in different ways, even if not in a forest school, perceive the environment differently from the ones not spending time in nature. In relation to the primary purpose of the current study, focusing on how children perceive the environment, it can be said that the children identified the phenomenon of environment with nature.

In addition, during the interviews, all of the children stated that they feel good and happy in nature. Kalvaitis and Monhardt (2012) also reported that children associate their experiences with nature to being happy in their study with primary school students. It was also reported that the basic reason behind the positive feelings of children studying in a forest school is open air and playing freely, which are the strongest aspects of forest schools (Knight, 2009). In forest school, an integrated approach is adopted towards the development and learning of children. It aims to maximize the current potential of each child in intellectual, emotional, social and physical fields through learning processes that children experience by exploring, researching and most importantly having fun (Knight, 2013; Maynard, 2007). Every child in a forest school takes responsibility for their own learning and reflects their own uniqueness and competences by using their unique ways of thinking, feeling and practicing in the forest where they spend time almost every day. In other words, a forest school supports children's self-development by taking into account their individual differences (Knight, 2013; Williams-Siegfredsen, 2017; Q,Brien, 2009). The fact that all the children participating in the current research feel good in the forest school can also be based on the above-discussed grounds.

Conclusions

The focus of this research is how pre-school children perceive the environment. United Nations (2008) mentioned the importance of strengthening children's ties with the environment as the key to sustainability. At this point, it is necessary to emphasize the role of forest schools once more. Ernst & Theimer (2011) and Otto & Pensini (2017) emphasize that one of the most important principles of nature-based approaches, such as forest school, is to strengthen children's bond with nature. Given that children's relationship with the environment has an important role in early childhood education approaches, it is already expected that children in the forest school participating in this study will perceive the environment as nature. During the learning processes in a forest school, children have many experiences about the natural environment such as examining the habitats of many animals from insects to birds, recognizing many species of plants and trees, and observing the life cycle of living things. Chawla (1988) and Hsu (2009) argued that this process that children

experience leads them to developing more positive and protective attitudes towards the environment and that these environmentally friendly attitudes will turn into environmentally friendly behaviours in adulthood.

However, nowadays, time spent by children in nature decreases day by day due to reasons such increasing traffic problems, distorted urbanization and decreasing green areas (Clements, 2004; Louv, 2010). At this point, it is evident that environmental education programs to be carried out in early childhood are needed to increase the time spent by children in nature qualitatively and quantitatively (Malone & Tranter, 2003). Sobel (1996, 2008) and Kellert (1985, 1993) emphasized that the first years of life are critical periods to establish connections with the environment. In this context, the reason why children perceive the environment as nature in the research design employed by the current study is that children in forest schools often meet with nature and that environmental education is integrated into the existing routines and education process. In addition, the research focused exclusively on children attending a forest school. This is considered a limitation by the researchers. In the studies to be carried out, it is thought that comparing the views of children who are educated in different school types particularly with quantitative-based research model designs and determining the differences and relationships between their opinions about the environment are believed to make important contributions to the literature.

▪ ▪ ▪

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RESEARCH ARTICLE

"ÇEVRE DOĞA GİBİDİR": ORMAN ANAOKULUNA GİDEN ÇOCUKLARIN ÇEVRE KAVRAMI HAKKINDAKİ GÖRÜŞLERİ

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Özet

Bu araştırmayla Türkiye'de orman anaokuluna giden çocukların çevre kavramı hakkındaki görüşlerinin belirlenmesi amaçlanmıştır. Araştırmaya orman anaokuluna devam eden 50-70 aylık toplam 36 çocuk katılmıştır. Bu amaç doğrultusunda araştırma nitel araştırma modellerinden biri olan üçgensel karma araştırma modelinde yürütülmüştür. Araştırmanın nicel boyutunda çocuklardan çevre denilince akıllarına gelen şeyleri çizmeleri istenmiş ve çizimleri hakkında görüşmeler yapılmıştır. Sonrasında çizimlerden elde edilen kodlar ve DAET-R üzerinden de çevre hakkındaki görüşlerinin yapısı anlaşılmaya çalışılmıştır. Nitel boyut ise fenomenolojik anlayışa çocuklarla görüşmeler yapılmıştır. Yapılan analizler sonucunda çocukların çevreyi genel olarak "doğa" şeklinde yorumladıkları anlaşılmıştır. Gerek çizimlerde gerekse görüşmelerde çocuklar sıklıkla biyotik ve abiyotik faktörler çizmiş ve bahsetmiştir. İnsan ve yapılandırılmış çevre (building environment) ise çizimlerde ve görüşmelerde nadiren değinilmiştir. Katılımcıların orman anaokuluna gittikleri düşünüldüğünde çevreye ait görüşlerin "doğa" temelli olması araştırmacılar tarafından beklendik bir sonuç olarak düşünülmüştür. Bu bulgulardan hareketle çevre eğitimi temelli eğitim programlarının yaygınlaştırılmasının önemli olduğu düşünülmektedir.

Anahtar Kelimeler: Çocuk, çevre kavramı, orman anaokulu, doğa

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