

Pre-service Early Childhood Educators' Perceptions of Nature and Its Integration to Teaching Practices

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Abstract Today's pre-service early childhood educators will become the teachers of next generation young children. To create an environmentally sensitive society, they have a crucial role. It is important to understand how they perceive nature and its integration to teaching practices. In the current study, 26 Turkish pre-service early childhood educators were asked to draw nature and respond three-open ended question; "(1) What is nature? (2) Would you like to integrate nature into your future teaching practices? Why? (3) How would you plan to integrate nature into your future teaching practices?" Written answers to these questions and pre-service early childhood teachers' drawings were analyzed thematically. Findings revealed that pre-service early childhood educator defined nature as "(1) living and non-living; (2) source and (3) system" and their drawings included "flora, atmospheric features, fauna, geographical features and human-made stuff", respectively. All participants revealed that they would like to integrate nature into their future teaching practices and mostly given reason for nature integration was increasing children's environmental awareness. More than half of the participants reported that they would integrate nature into their future teaching practices via outdoor activities, it is followed by science and indoor activities. Through critically evaluating these findings, suggestions were presented for teacher training programs and future researchers.

Keywords Pre-service Early Childhood Educators, Nature, Perceptions, Integration

1. Introduction

Current research highlights early exposure to nature during the early years as an important requirement for healthy child development as much as "good nutrition and adequate sleep" [1]. However, previous research indicated that the benefit of childhood exposure to nature is bidirectional. One hand, nature experiences in early

childhood years are critical for children's whole development [2] That is, interacting with nature during early years supports children's social [3,4,5], physical [6], psychological [7], cognitive [8,9] and language [10] development since being in nature provides rich experiences for children to engage in active exploration, investigation, observation and discussion.

On the other hand, early childhood years are critical for the development of positive attitudes towards nature and environmental concerns [11,12,13] Previous studies indicated that early experiences in environment increase children's sensitivity towards the environment, environmental problems and their environmentally responsible behaviours [14]. Danks [15] stated that early exposure to nature helps children to "make connections between themselves and local natural systems... [children who spend time in nature] learn that they have an impact on their environment and have opportunities to heal it..." [p.5]. Moreover, Ewert, Place and Sibthorp [16] claimed that pro-environment attitudes might be fostered by early childhood opportunities that allow children play in nature. For instance, Vandala, Bizler and James [17] found that recreational and environmental preferences are shaped during childhood. It has been found that early exposure to nature influence "environmental career choices and environmental concerns among adults regardless of cultural background or racial and socioeconomic status" [13]. Thus, early exposure to nature during the early years contributes to nature by helping individuals to respect, protect and care for the environment.

All this research highlighted the importance of being in touch with nature during the early childhood years. However, urbanization, lack of green areas and parental concerns about crime and safety increased the time children spend indoors [18], with technological tools such as television, computer or tablets [1,19] and time spend via structured activities. Since, children spend more time in childcare settings than the time they spend in primary or secondary classes, early childhood education has a crucial role to establish previously mentioned bidirectional consequences of nature integration. Early childhood

programs, then, should fulfill this responsibility by taking action to integrate environmental education and nature into their educational practices.

In fact, the importance of the environment provided for children during the early years has been historically highlighted. Almost all pioneers of early childhood education emphasized the value of the environment. For instance, Montessori stressed out that the environment has an important role during the early years and for this reason, children should be provided “prepared environment” to be encouraged to explore their own worlds. Similarly, Malaguzzi saw the environment as the “third teacher” of the children in his Reggio Emilia Schools. The word of environment in the early childhood education is widely perceived as indoor spaces. Nevertheless, it is seen that both Montessori, Malaguzzi and others such as Froebel, Dewey, Rousseau and Gardner also highlighted the importance of nature and childhood experiences in natural spaces [14]. However, Davis [20] claimed that today in many early childhood education centres “cars are better catered for than children” [p.121]. In other words, there is not any available and enough natural area for children to be in touch with nature. She also criticizes some early childhood practitioners because of not “taking the risk of letting children move outside boundaries of their kindergartens and day care centers into the relative freedom of the great outdoor” and she suggested teachers “giving children the right to play with some freedom in natural settings” [p.121].

This is an important suggestion because though early childhood education is a whole with its educational philosophy, curriculum, environment and school staff, early childhood educators “make myriad decisions” about the process of and classroom practices in early childhood education [21, p.305]. In other words, teachers are the people who decide which activities - child-centred or teacher centred- are done in the class, what kinds of materials –structured or natural- are used in these activities, where these activities –in the class or out of the class- are done etc. Therefore, the learning experiences of children are dependent on teachers’ decision and their practices. Previous studies have indicated that teachers’ practices are under the influence of their teaching beliefs. For instance, Pajares [22] stated that teachers’ beliefs are crucial since they are the underlying reasons for their behaviours or teaching actions. Similarly, according to Nesper [23] teachers’ beliefs are the most influential determinant of their actions and teaching efforts while preparing and organizing learning activities for children.

When teachers’ beliefs and perceptions are under the consideration, it should be noted that these perceptions or beliefs are shaped during teachers’ undergraduate years. Menon and Christou [24] stated that particularly new teachers’ experiences are mainly influenced by perceptions and expectations formed during teacher training. Similarly, it has been proposed that pre-service teachers’ beliefs influence their future teaching practices [25]. Therefore, it

might be claimed that pre-service teachers’ beliefs regarding the importance of being in touch with nature and the importance of integrating nature into the educational process might increase the possibility of their effort to integrate nature into their teaching process. For this reason, there is a need to understand how pre-service early childhood educators perceive and define nature and whether they would like to integrate nature into their future teaching practices. Majority of studies conducted with pre-service early childhood educators have examined their perceptions and beliefs about environmental education [26-29], outdoor play and natural learning environments [30,31]. For example, Torquati, Cutler, Gilkerson and Sarver [37] examined early childhood educator’s perceptions of nature, science and environmental education. They compared in-service and pre-service teachers’ perceptions and found that both groups perceived nature/science domain of curriculum as the least important for children while they were identifying language and literacy experiences as the most important. In the same study, different definitions were revealed for nature such as “outside, habitats and environments, living vs. non-living, not manmade, God created, all around us/encompassing, complex unique, developing respect and appreciation” [37, p. 733]. Both groups stated that “the best way for children to learn about nature was to explore using all of their senses in hands on activities” [p.734].

There are studies investigated young children’s [32-34] and youth’s [35,36] perceptions of nature. However, there are very few studies examined how pre-service early childhood educators perceive nature. Therefore, we know very little about how pre-service early childhood educators perceive nature and nature integration to teaching process. In order to fill this gap in the literature, in this basic qualitative description study, it is aimed to understand how preservice early childhood educators define nature, what they think about integrating nature into teaching process. Additionally, the current study examined the reasons of integrating nature into children’s learning experiences and the ways participants would like to integrate nature in their future teaching processes. In the light of these aims, the following research questions are elicited for the study,

- How do pre-service early childhood educators describe nature?
- What do pre-service early childhood educators think about integrating nature into their future teaching practices?
- How would candidate early childhood educators like to integrate nature into their future teaching practices?

2. Materials and Methods

2.1. Research Design

Sandelowski (2000) declared that qualitative studies, which are not purely phenomenology, grounded theory,

ethnography or case study falls into the category of basic qualitative description. The “expected outcome of qualitative descriptive studies is a straight descriptive summary of the informational contents of data organized in a way that best fits the data” and it is “the method of choice when straight descriptions of phenomena are desired” [p.339]. Since the current study aims to understand and describe pre-service early childhood educators’ subjective definitions and their own ideas regarding the nature and its integration into early childhood teaching practices, it adapted basic qualitative description as research design.

2.2. Participants

Purposive sampling was the sampling strategy used in the current study. In purposive sampling, “inquirer selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon in the study” [38, p. 125]. As suggested by Miles and Huberman [39] criterion sampling was chosen as a purposive sampling technique. Since previous studies indicated a relationship between having a course about environmental education and positive attitudes toward environmental education among pre-service teachers, the criteria set for the current study was not having an environmental education before. It was assumed that by including pre-service early childhood educators who have not taken any course about environmental education might provide information about individual’s pure perceptions and the influence of a regular early childhood education teacher program’s possible influence on students’ perceptions of nature and its’ integration. To serve this aim, both the first-grade and the fourth-grade preservice early childhood educators were included into the study.

Totally 26 pre-service early childhood educators participated to the study. Half of these participants were at the first grade and half of them were at the fourth grade of their teaching program. All the participated candidate early childhood teachers were female with the average age of 22.30 years old. None of the participant had a course about environmental education during their teacher education program.

2.3. Data Collection

For the current study, the author developed a written interview protocol, which comprises two different parts. In the first part, participated pre-service early childhood educators were asked to draw “nature”. This data gathering technique was also used as “Draw- A-Scientist test” [40] or “Draw-An-Environment-Test” [41]. Since the same data gathering technique was also used with young children in one of the previous studies [33], it was thought that using this technique might provide an opportunity to compare young children’s and candidate pre-service early childhood

educators’ drawings. Therefore, in the current study it was used with the name of “Draw Nature Task”. At the first page of the questionnaire a big framework was provided to participants and the following direction was given: “Please draw nature in the following framework”. No additional information or direction was given to the participants.

It was thought that, relying only drawings of participants provides limited information on their perceptions of nature. Therefore, the second part of the written interview form included three open-ended questions which are; (1) What is Nature? (2) Would you like to integrate nature in your future teaching profession? Why? (3) How would you integrate nature into your educational program?

The author administered the questionnaire to all participants through giving the identical instructions. All participants filled the questionnaire in the class. Data gathering process lasted approximately half-an hour in each group.

2.4. Data Analysis

Data analysis process completed at two phases. At the first phase, the content of participants’ drawings was examined. During this phase codes that were developed by Wals [35] were used. These codes were flora, fauna, atmospheric features, geographical features and human made staff. Each drawing was analyzed separately and number of each item in the pictures was calculated for each code. At the second phase, written responses of participants to open-ended questions were thematically analyzed. Analyses were separately done by the author and one PhD student, whose dissertation is about environmental education. Codes were compared and inter-rater reliability was found .85. Through discussions the agreement was established, and the last codes were decided.

3. Findings

In this part, findings regarding the content of drawings and written responses of pre-service early childhood educators to open-ended questions will be presented. Before presenting the thematic analyses, it should be mentioned that all participated pre-service early childhood educators except five responded positively to the question of “Do you feel competent to provide environmental education for children in your future professional practice?”. As mentioned before, the criterion to be included in the study was having no specific course for environmental education. However, students were asked “Have you taken any course about environmental education before?” in the demographic form. Interestingly some students responded to this question positively and mentioned the course of “Introduction to Early childhood education”. Nevertheless, this course was provided by the

author and it is known that in this course there is not any specific information about environmental education. This response of student indicated that they have not a clear understanding about what environmental education means in fact.

3.1. Definitions of Nature

Participated candidate early childhood educators were asked to define nature through the question of “What is nature?”

The analysis of the written responses of participants indicated that nature was defined as living and non-living, as a system and as a source. Figure 1 indicates participants’ meanings of nature through percentages of categories.

As Figure 1 indicates, most of the participated candidate early childhood educators [56%] defined nature as living and non-living. That is while defining nature participants mainly focused on either living things such as flora, fauna and people or non-living things such as geographic features. Below there are some sample definitions for the category of “nature as living and non-living”;

- “Nature is fresh air with a great deal of oxygen, trees, flowers and bird voices...”
- “Nature is a living area that includes animals, people and plants...”
- “Nature is water, sand and sun... Greenery...”
- “It is trees, flowers, animals, sky, atmosphere and water...”
- “Nature is things that we see around us such as trees, flowers, sky, air, water and the sand...”
- “It is fresh air, trees and flowers...”
- “Nature is an area that people, animals and trees are living in...”

Nature also defined as a source by 35.5 % of participants. Written responses of participants indicated that nature was defined as the source of life, fresh- air,

health, development, quality life and emotional well-being. Following statements are the definitions of “nature as source”;

- “It is the healthiest living area...”
- “Nature means life...”
- “It is the source of life.”
- “I think, nature is the epitome of the life.”
- “Nature means life, infinity, breath, water and sand... In short, nature is life and life is nature”
- “Nature is a source that includes the raw stuff of all materials. It is an area that provides a great deal of opportunity for humans to observe and develop themselves. It is the source of life...”
- “Nature is the calmness.”
- “Nature is the source of a quality life; it is the most important thing that we have to protect for our own health.”
- “Nature provides all beneficial things to human beings. It also provides shelter for animals. It is an area that includes everything for human beings and provides fresh air for us. Without nature, there would be no human life.”
- “It means an environment that gives warm-and-fuzzy. It means tranquillity.”

The last and the least mentioned category is “nature as system”(8.5%). Some of the participants’ defined nature as a changing system that can self-renew, self-develop and change continuously. Sample statements were “Nature is all living and non-living things that continuously renews and change themselves.”, “Nature is setting that continuously renews and changes by itself...” and “A setting that is able to renew itself...”. However, some participants define nature as a stable system, which retains its original form. For instance, one participant defined nature through the following statement, “nature is a living area that did not change so much...”. Similarly, another participant defined nature as “... the most clean and undifferentiated form of the world”.

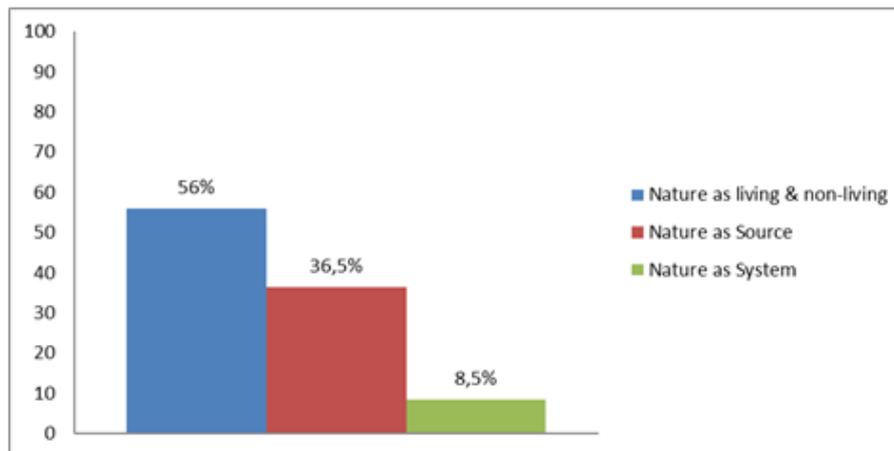


Figure 1. Participants meanings of nature (percentages of categories)

3.2. Drawings of Nature

As in the Keliher's [33] study in which preschool children were asked to draw nature, in the current study candidate early childhood educators were asked to draw nature. Later the content of their drawings was analyzed and categorized. In parallel with their definitions, participants' drawings include flora, fauna and geographical features. Additionally, in their drawings of nature candidate early childhood educators included some atmospheric features and human-made stuff.

All of participants included flora into their drawings, it is followed by atmospheric features (23%), fauna (16%), geographical features (15%) and human-made stuff (7%). Figure 2 summarizes the findings regarding the content of participants' drawings of nature. As it is seen, flora is mostly seen content in all drawing (100%). All participants drew at least one tree. Moreover, flowers, grass and fruits on the trees were seen in the drawings. Some participants drew only a leaf or a tree when they were asked to draw the nature.

Atmospheric features are the second most used images

while drawing the nature. Atmospheric features drawn by the participants were clouds, sun and rain. In twenty-six drawings, there were totally thirty-two atmospheric feature. Nineteen of them were the sun and eleven of them were the clouds. Only two drawings included rain as an atmospheric feature.

Fauna, i.e. animals, was the third most used figures while drawing nature. Mostly drawn animal was a bird. Totally 23 animal figures were seen and twelve of them were birds. Remaining animals included to drawings were fishes, cats, dogs, rabbits, and butterflies.

Geographical features were following mostly seen figures in the drawings of participated pre-service early childhood educators. Mostly included geographic features were sea or river. Totally 21 geographical features were seen in the drawings and 10 of them were related to water. They were followed by mountains.

The last category, which is named as human-made stuff included houses, swings at outdoor, ships, car, trash can and bicycles. Only seven drawings include people and all represented people were playing children.

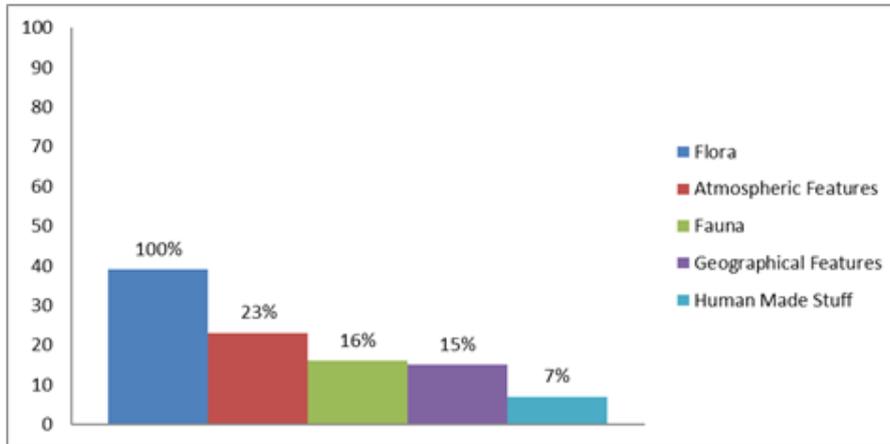


Figure 2. Content of Drawings of Nature

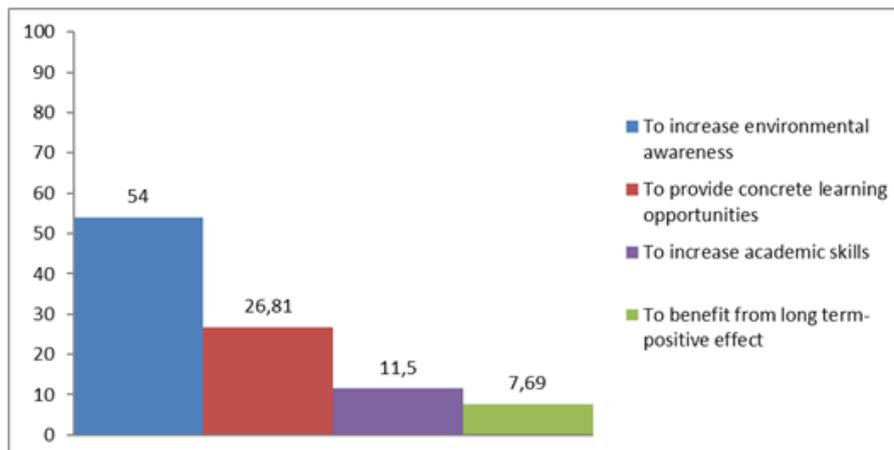


Figure 3. Reasons of nature integration

3.3. The Reasons of Integrating Nature into Future Teaching Practices

The second question asked to participants was “Would you like to integrate nature to your future teaching practices? Why?”

The analysis of written responses indicated that all participants, regardless of their grade, stated that they would absolutely integrate nature into their educational program and similarly all participants stated that it is important to do so. As seen in the Figure 3, reasons provided by participants yielded four categories; (1) to increase environmental awareness, (2) to provide concrete learning opportunities for children, (3) to support children’s personal development, and (4) to increase children’s academic skills.

More than half of the participants [54 %] reported that integrating nature into their educational program would increase children’s environmental awareness. For instance, one participant stated that “I would absolutely integrate nature into my education program because I want to bring up children who are conscious about the importance of nature and are respectful towards it.” Another participant wrote, “Yes, I would integrate nature to my educational program to help children be aware of, love and respect to the nature they belong to.” Another participant focused on the protection of nature and stated that; “Yes I would absolutely integrate nature because I want children to understand the fact that we need to protect nature, the value of all living things. I want them to understand that if we do not protect the environment and keep it clean, in the future we would not have a nice and healthy living area”.

The second mostly mentioned reason for integrating nature into the future teaching practices was providing concrete learning opportunities for children. More than one fourth of participants (26%) stated that by interacting nature children would have the opportunity to learn-by-doing. For instance, one participant stated that “... because I believe that there is nothing that is more effective than learning in nature. Seeing the trees and animals in their natural environment would be more effective and more enjoyable”. Similarly, another candidate early childhood educator stated that, “... because I want them to learn by doing. To reach my aim I should provide opportunities for children through which they experience nature and use natural materials. I prefer using real materials rather than using pictures or other symbols...”. Another participant focused on the permanency of learning “... because I believe that the

provided information would not be permanent if nature, the most important part of life, is not integrated with the education program...”.

In the third category, 11.5 % of participated candidate early childhood educators focused on positive influences of integration of nature on children’s future personality traits. For instance, one participant focused on the long-term effect of integrating nature into the educational program through the following statement; “... because the experiences and information children gather during the early years would influence their behaviours in the future. By integrating nature into my educational program, I would be able to help them to behave more sensitive towards nature, trees and flowers around them”. Similarly, another participant stated, “I would integrate nature into my educational program because I believe that doing this would influence children’s love of and respect for nature and their personality. They would be more sensitive and conscious adults in the future”.

Lastly, 7.69 % of candidate early childhood educators focused on how the integration of nature would be able to increase children’s academic skills such as observation and problem-solving. For instance, one participant stated “... because nature is a setting that provide opportunities for human beings to improve their problem-solving skills both in the past and today. I would integrate nature into my curriculum to increase children’s observation and problem-solving skills”.

3.4. Ways to Integrate Nature into Educational Program

In the present study, participants were lastly asked about their ideas regarding how to integrate nature into their educational program. Figure 4 summarizes the findings regarding this question.

As seen in Figure 4, more than half of the participants (51%) thought that they would integrate nature into their educational program through outdoor activities. Mentioned outdoor activities were organizing bush walking, picnics, visits to the zoo, field trips, cleaning the school yard and planting. For instance, one participant stated, “I would conduct activities at outdoor when the weather is nice. I could also organize bush walking. I want to make activities to encourage children to plant, particularly I would organize tree planting activities to help them understand how nice we feel when we plant trees.”

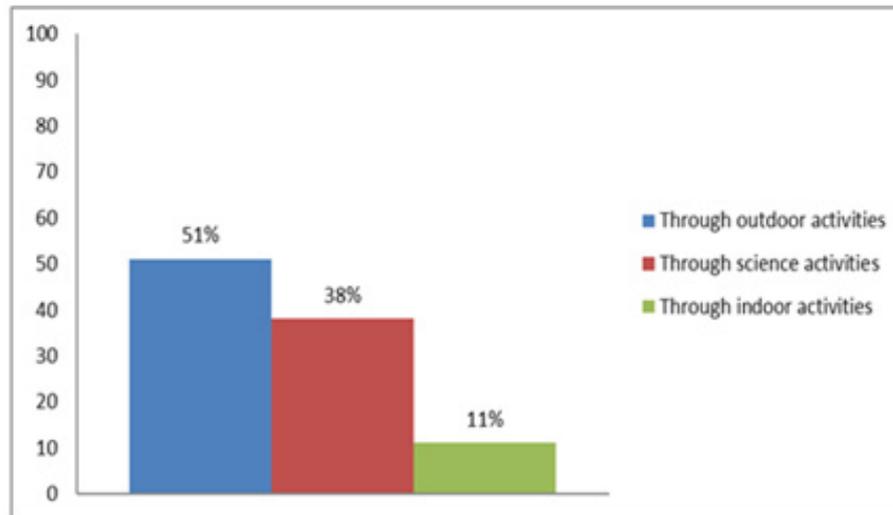


Figure 4. Ways of nature integration

Very few participants (11%) stated that they would integrate nature into their teaching practices through indoor activities. These participants reported that they would either talk about nature, use nature while talking about other topics such as healthy life or teach about nature through films, songs or reading activities. For instance, one participant wrote, “I use nature while talking about healthy life...” Additional statements were, “I would always talk about the importance of nature, “... I would use films about nature...” and “I would use nature during my language activities and music activities...”

4. Discussions

The aim of this study is to understand how nature is perceived by pre-service early childhood educators, whether participants would like to integrate nature into their future teaching and how they would like to plan to integrate nature into their future teaching practices. To reach this aim a questionnaire developed by the researcher was used. Participants’ definitions of nature were mainly based on living and non-living things (56%). Similarly, drawings of nature mostly included flora [all drawings included at least one tree while some participants were just drawing a leaf or tree branch] and fauna (mostly seen animal was a bird). This finding is consistent with previous studies that elicited children’s and youths’ definition of nature [33-36] For instance, in her the study that 6-7 years old children were asked to draw nature, Keliher [33] found that children perceive nature as “flowers, trees and animals”. When children were asked what nature means, participated children stated trees and animals-mostly bird-. Very similar pattern was also seen among urban youths’ in the study of Wilhelm and Schneider [36]. In their study, they found that flora was the most common theme and trees were the most seen

subtheme. Flora was followed by fauna and birds are mostly seen subtheme. This similarity between young children, youths and pre-service early childhood educators who are between 19 and 32, supported the claim that environment-related perceptions shaped during the early years of life, resistant to change and remain same in later years [33-36].

When participants responses to the second question (“Would you use nature in your educational program? “Why?) was examined, it is seen that all of the participants would like to integrate nature into their future teaching practices. This finding is inconsistent with the results of previous studies. For instance, Ernst and Tornabene [30] found that early childhood educators prefer “maintained” outdoor areas for educational purposes rather than “natural” outdoor areas. When the drawings and definitions of participants of the current study are examined, it is seen that they mostly mentioned natural areas both in their definitions and pictures such as forests, sea etc. Therefore, it can be claimed that by responding to the second question positively, these pre-service teachers mention natural areas as nature not maintained areas such as human-made parks.

When the mentioned reasons for integrating nature into future teaching practices were examined it is seen that the main and mostly given reason is increasing environmental awareness among children. It is followed by providing concrete- experiences for children, improving children’s personal development, and increasing academic skills. This finding is one of the most important findings of the current study, because previous studies consistently indicated that teacher training programs providing environmental education courses for teacher candidates are successfully increase teacher candidates’ awareness toward educational issues [28, 42]. Moreover, it has been found that growing up in urbanized areas with little chance to have experiences in nature affect youth’s

knowledge and perceptions of natural world negatively [43]. As mentioned before, these participants have never taken any course about environmental education, majority of these participants grown up in urbanized areas. However, more than half of these participants believed that it is important to integrate nature into the curriculum to increase environmental awareness among next generation. There might be several reasons for this finding. First, as mentioned before early childhood education and environmental education shares some common goals [20]. Therefore, participated early childhood educators might respond this question by depending on the general aims of early childhood education such as being sensitive towards all living and non-living things, being respectful towards our environment etc.

Second reason might be the influence of media. Today it is easy to see a great deal of videos, posts, advertisements that aim to increase environmental awareness in all social media devices such as Facebook, twitter etc. There is a great deal of web-pages that highlights environment and environmental sensitiveness. Vandrick [44] claims that "...the Internet's huge reach and accessibility make it one of the best resources for people all over the world to find information about climate change, environmentalism, and how to be green" [p.20]. There are many studies indicating the influence of social media on environmental awareness. For instance, Zita, Burger and Sicholtz [45] aimed to "examine the environmental awareness of staff members in a higher education institution through the use of social media and an environmental awareness campaign" and they found Facebook as the most influential social media platform that is used to spread information and initiate "green practices".

Third, as a nation, Turkey experienced a lot of environmental destruction; millions of trees have been cut, some historical public parks were destroyed, many oil trees were cut, and some nuclear power stations were established. These events activated many environmentalists. One of the most important examples was experienced through strong civil resistance, Gezi Parkı Resistance, between 28th May-30th August 2013. This resistance was toward the government that aimed to destroy a national public park so-called "Gezi Parkı" to construct a historical artillery barracks. To do this the government wanted to cut millions of trees. This resistance begins in İstanbul Gezi Parkı, however, it spread out the nation in a very short time. During this resistance and other governmental attempts for environmental destructions, social media was effectively used to inform people about the environmental issues, disadvantages of cutting trees, destroying nature etc. When it is considered that all participated pre-service early childhood educators are using Facebook or other social media devices such as Twitter and etc., it might be claimed that their awareness toward environmental

problems might be positively influenced by social media.

Lastly, as mentioned before, in the current study all participated pre-service educators were female. Gender was found as influential on environmental attitudes and females have been consistently found to be more sensitive towards environmental issues. For instance, in their study Tikka et al [46], found that female participants had more positive attitudes toward the environment and they have a higher sense of responsibility than male participants. According to Tuncer et al. [47] "as is the case in other parts of the world, in Turkey, environmental topics, in general, are considered an appropriate area for female interest" [p. 434]. In their study, they also found that female pre-service teachers have more positive favourable attitudes and have more responsible actions towards the environment than male pre-service teachers.

The second mostly mentioned reason for integrating nature to future teaching practices was providing concrete learning opportunities for children. This is an expectant result since early childhood education as a philosophy gives importance to children's concrete learning opportunities. As mentioned before, importance of natural experiences emphasized by many pioneers of early childhood education. This finding is also consistent with previous studies. For instance, Torquati et al. [37] found that both in-service and pre-service early childhood educators "felt that the best way for children to learn about nature was to explore using all of their senses in hands-on activities" [p.734].

In the current study, the last aim was to understand how pre-service early childhood educators would like to integrate nature into their future teaching practices. Previous studies suggested different forms of environmental education. Palmer [48], for example, suggested three different forms of environmental education; education for, about and in or from the environment. Education for environment aims to create awareness about the interrelationship between human and environment. It acknowledges individuals about their roles in conserving and contributing to the well-being of the environment. Education for the environment has the purpose of increasing the knowledge, concepts and understanding the environmental issues. Lastly, education in the environment requires "learner's engagement with the environment and thus gaining first-hand experiences from the environment by promoting environmental knowledge, understanding and some skills necessary particularly to become a problem solver and explorer of the environment related topics" [28, p.22]. Participants' responses in the current study indicated that more than half of the participants believe that they integrate nature into their education program through outdoor activities such as bushwalking, picnics, zoo visits and field trips (51%). This response was followed by science activities such as making experiments about natural events, observing the nature or collection of rocks (38%) and

in-class activities (watching films about nature) and talking about nature (11%). When these responses evaluated in the light of Palmer's model, it is seen that majority of pre-service early childhood educators mainly prefer education in and for the environment and very few participants prefer providing education about the environment. This finding is also somewhat consistent with the findings of Torquati et al [37]. In their study, early childhood educators stated that they mostly organize activities such as observing plants and animals, nature experiences outside, planting a garden, conversations in interactions, bringing the nature and art experiences in nature. One difference between the results of two study is about the area that nature is integrated. Participants in Torquati et al.'s study mentioned that they organize art experiences in nature, or they read books about nature. However, in the current study, only one participant stated that she would integrate nature to all kinds of learning areas such as music, art or literature while remaining participants mainly stated science activities as the best way to integrate nature into their future teaching practices. This is consistent with the previous literature that indicates there is a tendency to integrate environmental education to science courses [49,42]. This might be the result of the national education system, because in Turkey although integration of learning areas are stressed out by National Early Childhood Education Program, in elementary, secondary and high school education each learning area has its own roots and environmental topics were only emphasized in science lessons.

4.1. Practical Implications of the Study

This study aimed to understand pre-service early childhood educators' perceptions of nature, their beliefs regarding why and how to integrate nature into their future teaching practices. Findings indicated that participants aware of the importance of natural experiences for children. They aimed to increase environmental awareness among next generation and some of the responses such as "I would integrate nature into my educational program since children should need to learn respect for the nature for next generations" indicates that these participants are aware of the importance of sustainability. As mentioned in the discussion part, pre-service early childhood educators' perceptions of nature and their drawings were almost identical with those of young children in the Keliher's [33] study and of youths in the Wilhelm and Schneider's [36] study. Therefore, this finding supported the claim that these perceptions develop during early years and remains the same in later years and highlighted the importance of early years one more time.

As mentioned, all the 26 participants except five believe that they are competent to provide environmental education when they become a teacher. However, in the

demographic information form, some of the participants mentioned the course "Introduction to Early Childhood Education" that they had taken in the first year of their undergraduate education, as a course about environmental education. Since this course was given by the author herself, it is known that environmental education did not touch upon during this course. This indicates that these pre-service teachers do not have the correct idea about the content of environmental education. In their study, Moseley, Reinke and Bookout [50] provided a three-day environmental education in natural settings and they found that pre-service teachers' self-efficacy remains same before and after the education, but after seven weeks it began to decrease. According to them, the reason for this decrease is student teachers' increased awareness for environmental education. By depending on this interpretation, it might be claim that since participants in the current study had not got any courses about environmental education, they feel themselves as competent. Another important finding of this study is undifferentiated responses of first grade and fourth grade students. As mentioned in the method section, in the current study half of the participants were first and half of the participants were fourth-grade pre-service early childhood educators. However, there is not any conspicuous difference in their drawings, definition of nature and beliefs regarding the integration of nature in their future teaching practices. This indicates that four-year teacher training program is not able to successfully influence pre-service early childhood educators' perceptions of nature or nature integration. This study, therefore, revealed a strong need for a specific environmental education course in the early childhood teacher education course.

This study also indicated that pre-service early childhood educators have limited knowledge about how to integrate nature into their future teaching practices. Responses of participated pre-service early childhood educators indicated that their beliefs regarding the integration of nature into educational program is limited to science activities. This is the reflection of general trend seen in the national education system and teacher education system. As mentioned before, in Turkey, there is not any specific course for environmental education in elementary, secondary or high school education and environmental education is seen as a part of science education. This remains same when students pass to the higher education. That is, in teacher education programs environmental education is either provided as a selective course if there is a faculty interest about the environmental education [28] or not provided. In the study of Güner [28] in which early childhood educators' perceptions of environmental education provided in the teacher education program, student early childhood educators stated that environmental education is

highlighted and integrated in Science course only. However today it is widely accepted that environmental education should be integrated to all learning areas. Both Güner [28] and Yılmaz and Gültekin [51] recommended that environmental education should be linked to different undergraduate courses and the findings of this study also supported this suggestion.

This study also implies that there is a need to increase pre-service early childhood educators' awareness regarding the forms of nature integration into educational program. In the current study most of the pre-service early childhood educators preferred to integrate nature into their future teaching practices through the Palmers' [48] "education in the environment" form. Although three form of the environmental education was seen in the responses of participants, it was seen that each participant stated only one form rather than integrating nature to serve for the three forms of environmental education. Since each form of environmental education provides different outcomes for the learners, Palmer's model highlights the importance of using all environmental educations forms in a balance. Therefore, each course provided during the undergraduate years, should be organized to provide opportunities that pre-service early childhood educators experience all forms of environmental education. By this way, candidate teachers' point of view of environmental education might be enlarged and teachers would be aware of the importance of using all forms of environmental education.

In addition to including a specific course for environmental education and integrating environmental education to different courses, pre-service early childhood educators might be encouraged to use social media effectively to understand environmental issues. As mentioned above, social media and mass media has an important influence on environmental awareness [44,45]. Today almost all individuals and specifically young people use Facebook or Twitter and almost all companies and universities and even faculties have their own web-pages, Facebook groups or Twitter groups. Therefore, universities and teacher education programs should use these social media devices effectively to increase their students' environmental awareness. Through university or faculty-based campaigns, pre-service teachers might be encouraged to be more environmentally sensitive. By this way, teacher education programs might also encourage their students to use social media devices to increase their own students' environmental awareness in the future.

4.2. Limitations of the Study

Despite its implications and strengths, this study has some limitations. At first, this study conducted with a small sample, which is recruited from a single university in which there is no available elective course for environmental education. Therefore, findings of the

current study cannot be generalized to all pre-service early childhood educators. In universities that an elective course for environmental education is provided, pre-service early childhood educators might have different points of view about the meaning of nature, about the importance of integrating nature to teaching practices and about the ways to integrate nature into teaching practices. There is a need for future studies to be conducted with pre-service early childhood educators who took an environmental education course.

In the current study, almost all the participants have grown up in urban areas. This might limit their responses. Previous studies indicated that early childhood educators' personal experiences in nature might have an influence on their perceptions of nature. Drawings of participants reflected this fact. None of the participants' drawings were detailed. Drawings, as mentioned before, mainly included a tree, some birds, mountains, water and sun. Similarly, definitions of participants were superficial such as "nature is the environment around us". These might be different when the same questions would be asked to individuals who were grown up in rural areas and had a chance for more contact with nature. Therefore, future studies might include students who grown up in rural areas and compare differences among individuals' responses to same questions.

Another limitation of this study is about the gender of participants. All participated pre-service early childhood educators were female. Since previous studies found that females are more responsive and sensitive toward environmental issues, this study might be replied by including male pre-service early childhood educators.

Moreover, this study depends on participants' written responses and drawings. Although these techniques used rarely in the literature, written responses have some limitations such as "being short, lack of depth and possibly be difficult to code if the writing is illegible or the grammar or sentence construction is difficult to understand" [Desjean-Perrotta, Moseley & Cantu, 2008]. Although in the current study none of the coders had difficulty to understand the written responses, some of the answers were short, superficial and lack of depth. Therefore, future studies might include additional data gathering ways such as face-to-face interviewing to understand participants' perceptions of nature more deeply.

Lastly, since this study conducted with pre-service early childhood educators, information about the future plans of participants were gathered during the study. Although previous studies indicated a relationship between perceptions and beliefs and practice, follow up studies might be included in future studies to understand whether or how perceptions of pre-service early childhood educations change when they become an in-service teacher and began to study with children.

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