



NATURE-BASED EDUCATION IN THE LIGHT OF MONTESSORI PHILOSOPHY: MEANING, PRINCIPLES AND PRACTICES

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Abstract:

The subject of the article is the role of nature in learning as an essential part of the Montessori Philosophy in early childhood education. This article highlights the use of nature-based activities within Montessori's pedagogical perspective for including content about the natural world in early childhood settings. In this paper, it is aimed to increase the awareness of learning through nature on child development and to disseminate nature-based practices used in line with the Montessori approach in preschools. Firstly, the role of nature as an educational tool is described, followed by an understanding of nature pedagogy and its educational value according to Maria Montessori. Additionally, the article reviews the implementation of nature-based learning activities as an integral part of the educational work in Montessori schools. In this educational stream, nature-related work stands as the main methodical means for early childhood education and supporting the development of children. Nature in itself serves as a kind of special resonance and restorative effect that can help children understand the world and impart meaning to their lives. Subsequently, recommendations for nature-based practices that can be applied in preschools were presented in light of the Montessori philosophy.

Keywords: nature-based education; Montessori education; role of nature; nature-based activities

1. Introduction

Since ancient times, humans have lived as a part of nature and benefited from nature in meeting their needs and education processes. There is no doubt that nature-relatedness positively influences the physical (Gunnell, Flament, Bucholz, Henderson, Obeid, Schubert & Goldfield, 2016) and psychological health of individuals (Mygind et al., 2019;

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Schalkwijk, van der Zwaard, Nijpels, Elders & Platt, 2018; McCormick, 2017). Early childhood is a critical period for the inculcation of the love, concern and consciousness of nature. Rousseau, Dewey, Pestalozzi and Froebel emphasized that nature and natural materials are important components of educational processes, and the close relationship that the child establishes with nature supports development (Davis, 1998). Within this scope, there is a growing recognition of nature's inherent value and its special contribution within childhood. Specifically, a child's experience with nature has a significant effect on different aspects, especially in cognitive, social and psychological development (Gullestad, 1997; Kahn & Kellert, 2002; Louv, 2005; Warden, 2010). Nature in itself serves as a kind of special resonance and restorative effect that can help children understand the world and impart meaning to their lives. For this reason, it is necessary for children to be in natural environments surrounded by appropriate stimuli during this period. The subject of the article is the role of nature in learning as an essential part of the Montessori Philosophy in early childhood education. This article highlights the use of nature-based activities within Montessori's pedagogical perspective for including content about the natural world in early childhood settings. It is aimed to increase the awareness of learning through nature on child development and to disseminate nature-based practices used in line with the Montessori approach in preschools. Additionally, the article reviews the implementation of nature-based learning activities as an integral part of the educational work in Montessori schools. Subsequently, recommendations for nature-based practices that can be applied in preschools were presented in light of the Montessori philosophy.

2. How Nature Promote Child Development?

Spending time in nature supports cognitive processes. Considering the fact that humans have a special resonance with nature (Rathunde, 2009), it is clear that students benefit from direct contact with nature, and learning through nature has numerous benefits, including a restorative effect on attention (Rathunde & Csikszentmihalyi, 2006). Likewise, the nature-observed outdoors offers unique stimuli that capture children's interest and attention. Indeed, children are always interested in exploring plants, animals, and other living or non-living things in nature. In this regard, discovering natural elements is essential to draw children's attention to the species richness and diversity of nature. A sense of discovery and admiration influences meaningful learning and fosters an emotional connection (Bento & Dias, 2017). Thus, proximity to natural environments and daily exposure increase children's ability to focus and improve cognitive abilities (Wells, 2000). Several key studies have provided empirical support for the connection between natural environments and attention restoration. In a study conducted by Martensson et al. (2009), on the healing effect of open green spaces, it was determined that children improved their attention skills more when they were playing outside in more woodland, heathland, and hills compared to other environments with less green. Similarly, Chawla (2015) revealed that greater access to green spaces and

proximity to these areas for a longer time, is positively associated with higher concentration, increased memory greater self-control, and academic achievement. In line with nature's experiences, children's desire for attention, curiosity and discovery is more active due to the continuity and the flow associated with it in nature. More importantly, natural outdoor activities have curative effects on children's pre-frontal cortex and mediated directed attention system (Wells, 2000; Atchley et al., 2012). Executive functions (EF), is one of the basic functions of the pre-frontal cortex, are expressed as a term that reflects the dynamic and complex nature of information processing in the brain to describe high-level cognitive functions (Kilic, 2002). According to Moriguchi et al. (2016), executive function skills in the pre-frontal cortex of the brain are subskills of cognitive flexibility, working memory and inhibitory control. In accordance with this term, there is a great deal of evidence that contact with nature positively influences on children's executive function skills. Natural outdoors improve metacognitive skills such as attention ability, working memory, problem-solving skills and creativity. After nature walks, children respond faster to tasks that require attention (Kaplan, 1995; Wells 2000, Martensson et. all, 2009, Atchley et al., 2012, Schutte et al., 2017; Dadvand et al., 2015; Chawla, 2015; Bento & Dias, 2017). Many studies have revealed a variety of benefits from exposing children to nature through free outdoor play. Supporting this view, studies have shown that, the experiences of children in free play in the outdoors were influential on their thinking and problem-solving skills. Researchers observed improved socialization, problem-solving, focus, self-regulation, creativity and self-confidence in children (Sandseter, 2011; Stephenson, 2003; Little & Wyver, 2008; Johnson et al., 2010; Little et al., 2011; Brussoni et al., 2017). Furthermore, there is a positive effect of spending time in natural environment areas with young children as they develop, on their academic performance, and environmental awareness (Chawla, 1999; Faber Taylor & Kuo, 2006; Kuo, Bacaicoa, & Sullivan, 1998; Louv, 2005/2008; Tanner, 1980; Wells, 2000; Wells & Lekies, 2006). Investigations into the subject have revealed that children perform significantly better in tests of math, reading and science; connection to nature improves concentration, self-cognitive, linguistic, social-emotional, motor skills, and increases in speaking abilities owing to nature-based experiences (Perry, 2001; The American Research Institute, 2005; Yildirim & Ozyilmaz Akamca, 2017; Bartosh, 2003; Sozer & Oral, 2016; Smeds et al., 2011; Donovan et al., 2018).

Besides those aspects mentioned above, another advantage of connecting children to nature is that nature-related work fosters ethical behaviors and the moral growth of children. Nature-based education, significant life experience research, and studies involving green spaces revealed that children's experiences in the natural world have a positive effect on their attitudes, behaviors, and ecological appreciation. Especially, being in the natural outdoors can reduce aggression and crime in urban settings (Kuo & Sullivan, 2001a, 2001b) and may positively affect a child's ethical development and behavior (Damasio, 1994, 2003). Additionally, a growing number of studies proved that, child's experience with nature ensures great contribution to general conditions such as self-regulation, social and emotional learning already apparent in the early childhood

period (Martensson, et al., 2009; Monti, Farne, Crudeli, Agostini & Minelli, 2017; Ulset, Vitaro, Bredgen, Bekkhus & Borge, 2017). In line with the above-mentioned points, it is obvious that whether short-term contact with nature or long-term activities, nature-related work and experience positively affect the developmental areas of children. On the contrary, spending less time outdoors results in a wide range of behavioral problems, especially in children. Louv (2008) calls this “*nature deficit disorder*”. This term has been used to describe a set of symptoms linked to parental fears and separation from nature. Nature deficit disorder is also linked to an increase Attention Deficit Hyperactivity Disorder (ADHD), childhood obesity, lack of creativity and curiosity, ignorance of local flora and fauna, loss of respect for nature and the living world, and a diminishing sense of community. As a result, a childhood that never touched the stones on the ground harms the child in different areas. Palmer (2015) recommends nature walks and nature explorations with children as a remedy. Considering the results that are supported by the literature, it can be stated that natural outdoors is not only efficient in the developmental areas (Blachford, 2005), but also provide an interesting environment for children to interact with each other in the learning process. In addition, child's active experience with nature their all senses supports their creativity (Gomez 2013; Lieberman & Hoody, 1998). However, with the increase in industrialization and urbanization, natural areas have diminished and the change in social life in cities has accelerated the separation from nature. Children spend much less time in nature than previous posterity. Over time, children grow up unaware of the natural environment they live in and remain ignorant of the natural world (White, 2004). In order to strengthen the bonds of children with nature, they need to get to know the natural environment they live in (Chawla & Cushing, 2007; Collado, Staats & Corraliza, 2013). Consequently, the nature-based school initiative has gained popularity as a way to raise children's bond with nature, and also to benefit for their educational development (Cordiano, Lee, Wilt, Elszasz, Damour & Russ, 2019).

In recent times, with the increasing interest in the importance of nature in connection with education processes, a new concept has been introduced, and the notion of “*nature-based learning*” has taken its place in the literature in the last decade. Nature-based learning is a conceptual framework, which basically describes a concrete structure of the learning experience by utilizing nature as the material and the learning environment (Rahmawati, 2021). Further, nature-based learning, which is an alternative approach in early childhood, is defined as a hands-on approach and outdoor learning where children can gain emotional affinity and awareness of nature, structured in a natural environment and nature-related materials (Beames, Higgins, & Nicol, 2011; Rickinson et al., 2004). Rahmawati (2021), describes nature-based learning as an approach to promoting character-building values for children, and this approach can be certainly used to embed character education value for children through an innovative and pleasant activity. In addition to character-building values for children, nature-centered education and learning ensures a great contribution to children’s developmental aspects, especially in the cognitive domain. In this context, it is necessary for preschool teachers to be able to use their immediate environment in their activities and to develop children's

developmental areas, sense of wonder and discovery of nature at all times (Gerrish, 2014). It is believed that children's knowledge, skills and desires for nature-based education will foster in the event that effective use of nature-based approaches such as Montessori, Reggio Emilia, and Waldorf and outdoor learning environments (Ernst & Theimer, 2011). Therefore, preschool teachers should adopt these approaches and use outdoor learning practices more in their activities.

3. The role of nature in education according to Maria Montessori

Maria Montessori (1870-1952) was a philosopher and practitioner. She made a breakthrough in child education with the "Montessori Method" and developed it in the early 1900s. Montessori regarded humans as an inseparable part of nature and stated that nature is a tool to understand people (Bertolino & Filippa, 2021). The essence of this method is the freedom given to a child during the period of movement and other activities so that children can reveal their strength in a pre-prepared environment (Montessori, 1912/1917). The key idea of this method is "Cosmic Education", first presented in London in 1935 (Haspel, 2004; Salvenmoser, 2005). Cosmic education covers all topics related to nature, although not in a strictly scientific way. These topics include a wide range and involve a spiritual perspective. In other words, the main element of cosmic education is the respect and order shown not only to humans but also to the materials and systems in nature. As stated by Chawla (2002), nature is the prepared environment that fosters an intense sense of cosmic harmony; a sense of the world which was such an important element of Maria Montessori's goal for education. Montessori aimed to teach the value of nature and its mystery with cosmic education (Vilscek, 1966; Salvenmoser, 2005).

Accordingly, this education tries to help children feel that they belong to a place in the universe. From her perspective, Montessori states the universe is a common resource beyond the borders formed by religions and nations. In order to show the interdependence of the whole universe, it includes studies on the galaxy, the milky way, the solar system, other planets including the earth and the formation stages of the world, the first living species, all plant varieties and finally humans (Wolf, 2004). Through these studies, she tries to develop children's feelings of respect for the opinions of others, love and interest in objects in the outside world (Montessori, 1933). According to the Montessori approach, children should understand the order, harmony and beauty of nature (Montessori, 1975, 1972). Within this scope, she emphasized that nature education can help to foster children's moral development, behavior and gratitude towards nature (Desmond, Grieshop & Subramaniam, 2002). For example, the child knows that the plants will dry out if they are not watered and that the life of the plants depends on the care in watering them. Thus, the child feels ready for life (Seldin, 2000; Montessori, 1997, 2002). For this reason, Montessori suggested teachers to take care of children patiently as they observe nature spontaneously, and to spend time with them while looking at a flower, a leaf of grass, or animals or insects (Bertolino and Filippa, 2021; Chalufour & Worth, 2003).

From her perspective, respect for nature develops with exercises done in nature (Salvenmoser, 2005; Montessori, 1933), so Montessori drew attention to the importance of being in connection to nature for the development of the child (Dowdell, Gray & Malone, 2011; Gilder, 2009).

According to Montessori, when children come into contact with nature, they reveal their strength (Crain, 2001). When children are allowed to play for a long time in a naturalistic wild space, it encourages active, motivated thinkers who will take risks with their learning (Russell, 2014). Exposure to natural environments improves children's cognitive development by improving their attention, awareness, reasoning and observational skills (Pyle, 2002; Nett, 2011). In this respect, nature experience and the cultivation of environmental literacy among children contribute to creative thinking, academic performance, and positive relationships with the natural world (Oregon Environmental Literacy Task Force, 2013; Children and Nature Network, retrieved January 2023). Moreover, Montessori approach emphasizes that nature-based education is imperative for proper physical and psychological development (Johnson, 2013). Montessori guides recognize first-hand the significance of going out and exploring nature. The fresh air along with children's natural desire to explore their surroundings is much more beneficial than staying inside the classroom. According to Montessori (1967), the child is a spontaneous observer of nature. Childhood feelings of calm and connection may strengthen a person for life. In a study of thirty-eight 20th-century autobiographies conducted by Chawla (1986, 1990), it was revealed that those authors who said they had benefited from childhood experiences with nature most commonly referred to a lasting sense of peace and rootedness in the world.

4. Implementation of nature-based activities in the Montessori Approach

According to Montessori (1953), acting independently is the first instinct that nature gives to the child. Connection with nature and its inspiring wonder are integral parts of the Montessori Philosophy and Method. For this reason, outdoor activities are a natural extension of the classroom in Montessori schools (Little, Sandseter & Wyver, 2012). Children have an environment where they can learn about nature and intertwine it with nature (Islamoglu, 2017). Hills to run up and down, timber to walk on, ladders to climb, logs to step on, and buckets and shovels for filling and draining materials such as soil and stones support children's mobility skills and respond to the needs of the child's spirit (Austin Montessori School, 2022). Montessori classrooms in the interior are illuminated by natural light coming in through large windows, and the doors of the classrooms open to the garden (Louv, 2008). Children are allowed to go for a nature walk, observe nature, search for frogs or make exciting discoveries about plants' life (Russell, 2014). Montessori Schools have an extensive garden that children undertake care and maintenance (Johnson, 2013). Students and their guides regularly take care of potted plants, remove weeds, water the plants with the rainwater they collect in the barrels, and fill the bird feeders. Classifying the different types of leaves and flowers in the garden, the children

study the soil and compost. Fruit and vegetables collected at harvest time are used for community meals such as picnics (Montessori Community School, 2022; Kahn, 1997; Montessori 1964) Measuring plants, drawing shapes on sand and soil, reading in the shade of a giant tree, early literacy and math work using natural materials provide valuable life skills to children (The Garden Montessori, 2022). Through these life skills, children have the opportunity to get to know the environment, work independently, gain self-confidence, and establish healthy peer relationships (Isaacs, 2007).

Plants and animals are significant for the Montessori approach. Children are inherently inquisitive, they have an anxious interest in living things, and the satisfaction of this interest gives them pleasure (Chalufour & Worth, 2003; Carson, 1998). Therefore, they like taking care of animals and plants (Montessori, 1966). According to Montessori, love and respect for nature can only be achieved by nurturing living beings, since caring enables children to discover the infinity and beauty in the diversity of other living things in the world. Within this scope, Montessori gave great significance to animal feeding and plant breeding in the "Children's House" (Hunt, & Valsiner, 2013). From her perspective, the sense of nature develops with regular practice. The best way to instill this feeling is to guide and provide opportunities for children to experience nature. Pupils easily undertake simple actions that do not require special effort and give immediate results, such as picking grass on the paths, and picking dry branches and leaves. They maintain the environment by cleaning the surroundings or collecting fruit from trees. Children's favorite activities are tying grains with colorful ribbons at harvest time, picking olives, finding flowers hidden under vine leaves, searching, distinguishing and smelling flowers with different scents (Isaacs, 2007). According to Montessori, children enjoy harvesting more than planting. What makes planting attractive is knowing that the harvest will be done. After the wheat, grape and olive harvest experience, children are interested in experiencing the planting work done in the field. Gardens where fragrant plants are planted, distinguishing between flowers with a variety of scents and the image created by the coming together of the branches enable children to exercise their senses (Durakoglu, 2014).

Montessori encourages children from the age of three to be given scientific opportunities, such as observing how a seed turns into a plant and why water evaporates (Abelman, 2020). Children engaged in gardening work begin to observe events and phenomena, and with the increase in observation through experiences where their interest in living things begins to increase (Nett, 2011). Pupils who learn that the lives of planted plants depend on irrigation and care, fulfill these vital tasks through internal control (Russell, 2014; Montessori, 1964). Kids show patience when they put a seed in the soil and observe which seed germinates quickly and which slowly sprouts and waits for it to flower and bear fruit. When children plant a seed in the soil and water it regularly, they get a crop and accept the gift of nature. Owing to these stages, child development follows the natural path (Montessori, 2009). According to Ozdag (2014), who examines the reflections of the concept of the natural environment in Montessori schools, the garden and outdoors allow children to be intertwined with nature, experience the

diversity and beauty of nature directly, and to cover natural materials through observation. By including animals and plants in the school garden, information about natural life is given, and children are provided with a sense of responsibility to take care of these creatures. Additionally, natural materials used in schools allow children to gain awareness of nature in their early years. Some empirical studies provide support for these ideas about connecting children to nature. Within the scope of the research by Russel (2014) aimed at examining the child-nature interaction in a Montessori school with 39 children aged 4-6, plant and animal cards, fruit-vegetable materials and various materials brought from nature walks were gradually presented to the children in different seasons and various seasonal activities were organized. At the beginning of the research process, the children spent at least 30 minutes a day in nature to experience these studies. Parent surveys, nature diaries, observation and anecdotal records made before and after the research showed that children's interactions with nature increased. In a six-week study conducted by Lerma (2018) in a Montessori school where 27 children aged 3-6 attend, 20-minute nature-based activities were included in which children actively participated. During the study, worm composting was done, the plant in the pot was moved to another pot, the seed was planted and the plant was grown into a bulb. In the following weeks of the study, it was observed that children's participation in nature-based activities increased. Children who are interested in plants in their classrooms and gardens gradually begin to pay attention to more details, make botanical drawings, name seeds, study the life cycle of plants and herbs, and regularly record their daily observations in their nature diaries (Capra, 2013; Leonard & Allen, 2013). Thus, children are made aware of scientific facts by connecting with time, space and nature (Buyuktaskapu, 2012).

Learning in the natural environment and raising animals are among the other activities that support children in the Montessori program. According to the Montessori approach, the purpose of animal science is to arouse curiosity and excitement in children (Dowdell, Gray & Malone 2011). Children observing the natural environment are interested in the study of the animal kingdom, its structural development, habits, distribution and its classification. For this reason, content such as getting to know animals, examining their anatomy and learning how to take care of them are included in studies with children (Hachey & Butler, 2012). Rinke, Gimbel & Haskell (2012) stress that Montessori classrooms provide opportunities for children to acquire and discuss scientific knowledge in various ways. Because children decide freely on the tools, they will always choose ones with essential and useful materials to help them achieve their goals (Montessori, 1972). The classrooms offer rich opportunities to integrate animal science into the learning environment. Models related to animals, objects, cards, puzzles, books, and live animals such as photographs and posters with natural habitats of animals, and examples such as horns, skin, feathers, teeth, shells, and claws can also be used (Kahn, 1990). Previous studies have shown that, there are significant gains in children's knowledge of identifying animals and their attitudes towards wildlife in activities involving animal breeding practices. In the study conducted by White, Eberstein & Scott (2018) aimed to evaluate the effectiveness of an urban environmental education project

to improve children's awareness, knowledge and attitudes towards local wildlife. In this direction, "Bird Buddies", a six-week bird feeding and monitoring project, was implemented. The results revealed that children immediately showed an increase in bird identification and attitudes towards wildlife, and improved awareness of biodiversity as well. In another study conducted by Lewis, Mansfield & Baudains (2010), students in an independent kindergarten in Perth, Western Australia, participated in a study in which they observed turtle nests. Students drew attention to the problems of insufficient wetlands and the lack of suitable nesting areas. Based on these problems, rectangular wetlands were created for turtles and a safe nesting area was provided. It was stated that owing to this project, students' awareness of the ecosystem increased. Emphasizing that animals are an important stimulant for humans and children, Axford, DeLoache, LoBue, Pickard, and Sherman (2013) conducted three experiments in which they investigated the proximity of children to animals. In Experiment 1, a free play environment was provided in which 11-40 month old children were encouraged to interact with a few interesting toys and two live animals (a fish and a hamster). Experiment 2 aimed to examine whether children's behavior would be different for potentially threatening animals. Finally, in Experiment 3, 18-33 month old children's interactions with three different animals (fish, hamster and lizard) were evaluated against three physically similar toy animals. According to the results of the research, it was determined that children interacted with animals more than toys, talked about animals more than toys, and asked more questions about them in all three experiments. The research supports the view that children are more interested in animals even when interesting toys are available. Abelman (2020) aimed to provide teachers with inquiry-based animal science teaching plans based on Montessori philosophy. The study was carried out in a Montessori classroom with 24 children aged 3-6 years with basic materials. The teaching plans are related to other fields such as mathematics and language and feature different animal species living in North America. The initial plan consists of seven habitats in North America: desert, forest, ocean, plains, river, tundra, and wetlands, and different animal species and learning objectives in each habitat. As a result of the research, according to the survey data applied to the teachers, it was determined that the activities in the teaching plans were clear, understandable, interesting, suitable for the age group and applicable in the classroom.

5. Summary and Recommendations

Early childhood is a period of full of experiences in which children gain basic notions and scientific process skills. Children are quite inquisitive due to their developmental characteristics and try to explore the environment and nature by asking questions about the world in this period. Starting from the earliest ages, children are able to learn much faster and more actively in an environment where they can use their senses and wonder to observe and test (Stephens, 2007). Environments outside the classroom offer great opportunities for learning in this sense. Clearly, the foundation of nature consciousness will be formed by developing awareness and love through nature activities, and at the

same time, the child's physical, cognitive, social, emotional and moral development will be supported (Gullestad, 1997; Kahn & Kellert, 2002; Louv, 2005; Warden, 2010; Kuo & Sullivan, 2001a, 2001b). For this reason, it is important to disseminate nature-based activities in pre-school education institutions and to reflect them in education programs. However, with the increase in industrialization and urbanization, natural areas have diminished and the change in social life in cities has accelerated the separation from nature (White, 2004). Children spend much less time in nature than in previous generations. In order to strengthen the bonds of children with nature and support their developmental areas, they need to get to be familiarized with the natural environment they live in, and acquire nature-based education (Chawla & Cushing, 2007; Collado, Staats & Corraliza, 2013). In this context, it is necessary for preschool teachers to be able to use their immediate environment in their activities and to develop children's sense of exploring nature (Gerrish, 2014). It is significant to disseminate the nature-based education curriculum in pre-school education institutions as a way to increase children's bond with nature and to ensure effective learning. Within this scope, preschool teachers should adopt more nature-centered approaches such as Montessori, Waldorf, Reggio Emilia, and forest schools and use outdoor learning environments more in their activities. It is necessary to increase the knowledge and skills of teachers towards nature-based education (Bailie 2012; Ernst & Theimer, 2011). Therefore, this article highlights the use of nature-based learning activities by taking Montessori pedagogy as an example of including content about the natural world in early childhood settings.

As it has been realized, Maria Montessori is an educator, practitioner and philosopher who supports the discovery and freedom of learning in natural environments. Montessori emphasizes that human is the only creature that can realize the cosmic plan and people must take responsibility for everything that exists in the World (Haspel, 2004; Salvenmoser, 2005). She stresses that this feeling should be aroused especially from young ages. Scientific facts are taught by establishing connections with nature and space in the Montessori approach. She emphasized the significance of practical skills of nature-based education for students in her work at that time (Duncan et al., 2016; Subramaniam, 2002). Montessori favors education in harmony with and through nature. She regarded humans as an inseparable part of nature, and also stressed that nature is a tool to understand people (Bertolino & Filippa, 2021). The realm of nature-based practises forms a very significant component of educational work in preschools that work in the spirit of Montessori education. According to Montessori the sense of nature develops with practice (Salvenmoser, 2005; Montessori, 1933). The best way to instill this feeling is to provide various opportunities for children to gain experience in nature. In this context, nature-based activities have been highlighted in this article as a useful and creative approach to exploring and expressing an understanding of the natural world. Children are inherently inquisitive, they have an anxious interest in living things, they like taking care of animals and plants (Montessori, 1966) and the satisfaction of this interest gives them pleasure (Chalufour & Worth, 2003; Carson, 1998). Within this scope, Montessori gave great significance to animal feeding and plant breeding in the

"Children's House" (Hunt, & Valsiner, 2013). Therefore, activities including plants and animals form the basis of the Montessori method.

In light of the Montessori philosophy, suggestions for nature-based practices that can be applied in kindergartens are presented. The materials that children encounter in their daily lives can be used to support their daily life skills. In order to support these skills in nature, some activities may be conducted such as growing plants, feeding animals and observations of nature. Sensory education has an important place in Montessori pedagogy. Sensory education activities motivate children to meet their basic needs. Therefore, natural materials can take place in the learning environment of children. Planting areas can be added in school gardens and the care of plants in these areas can be carried out together with children. Window gardens can be created if there is not enough garden space in schools. Playgrounds can be arranged to support outdoor learning experiences. It is assumed that the examples of nature-based activities in the Montessori approach can be used as a model in order to disseminate nature-based experiences in preschools. This philosophy, which is applied while teaching scientific facts in the Montessori approach, has been examined in detail in this study because it would bring a different perspective to a preschool nature-based education. It is believed that it would be beneficial for preschool teachers and teacher candidates to increase their knowledge about cosmic education, nature-based education philosophy and activities in the Montessori approach and reflect it on their education programs.

Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

Zeliha Ozgen received a master's degree in early childhood education from Istanbul Okan University Graduate School of Social Sciences, Early Childhood Education Postgraduate Program. She dedicated her master thesis to examine teachers' attitudes to family involvement in preschool education in Montessori, Reggio Emilia and Ministry of National Education approaches. Her areas of interest and research are; alternative education approaches, Montessori education, nature-based education and creativity in early childhood education. Email: zelihaozgen84@gmail.com; zelihaozgen@hotmail.com

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