

CHAPTER 3

Fostering Environmental Consciousness in Early Childhood

Elif OZTURK

Giresun University, Türkiye

To Cite This Chapter:

Ozturk, E. (2023). Fostering Environmental Consciousness in Early Childhood. In S. Erten & A. C. Atmaca Aksoy (Eds.), *Current Studies in Environmental Education* (pp. 44-70). ISRES Publishing.

Similarity Index

The similarity index obtained from the plagiarism software for this book chapter is 10%.

Introduction

In today's rapidly changing world, there is a growing recognition of the critical role that early childhood environmental education plays in nurturing a generation of environmentally conscious individuals. The experiences and knowledge acquired during the formative years of childhood have a profound and lasting impact on a child's relationship with the natural world. As educators, parents, and caregivers, we are uniquely responsible for shaping the environmental attitudes and behaviors of the youngest members of our society.

This book chapter explores the dynamic realm of early childhood environmental education, drawing upon the latest research and insights in the field. Our journey into this vital domain is guided by the understanding that fostering environmental consciousness in early childhood is not only a means of nurturing a love for the environment but also an essential step toward building a sustainable and harmonious future.

Throughout this chapter, we delve into the cognitive development of young children and their innate capacity to form connections with the environment. We examine the manifold benefits of early exposure to nature and environmental education, spanning academic, emotional, and social dimensions. In a world increasingly characterized by digital screens and indoor activities, the need to design effective early childhood environmental education programs becomes evident. We explore the strategies, curricular approaches, and roles of educators and parents in imparting these critical lessons.

The heart of this chapter lies in its exploration of recent research on early childhood

environmental education. We dissect studies that demonstrate the profound impact of nature exposure on cognitive development, emotional well-being, and long-term environmental attitudes and behaviors. Additionally, we address the challenges and barriers faced in the implementation of such programs, emphasizing the need for inclusivity and accessibility for all children, regardless of their geographical location or socio-economic background.

Furthermore, this chapter goes beyond theory to offer practical guidance. It presents three sample nature and environmental awareness activities designed to engage young children in hands-on, experiential learning about the environment. These activities are intended to serve as illustrative examples, showcasing the principles and methods discussed throughout the chapter.

As we embark on this journey into the realm of early childhood environmental education, we hope that educators, parents, and caregivers will gain a deeper understanding of the significance of their role in nurturing the environmental stewards of tomorrow. By harnessing the power of early childhood education and incorporating the latest research findings, we can collectively sow the seeds of environmental consciousness in young minds, fostering a lifelong connection to and responsibility for the natural world. Together, we can shape a more sustainable and environmentally aware future.

The Cognitive Development and Environmental Awareness in Early Childhood

Cognitive development and environmental awareness are inseparable facets of a child's early development, deeply intertwined in shaping their growth and future trajectory. In the realm of cognitive development, the formative years are instrumental in establishing the fundamental building blocks of learning, encompassing memory, attention, problem-solving, and critical thinking skills. These cognitive abilities provide the cognitive framework necessary for comprehending and engaging with environmental information.

Moreover, cognitive development plays a pivotal role in language acquisition, enabling children to articulate their observations and thoughts about their surroundings. Effective language skills empower them to express and grasp environmental concepts, fostering a bridge between cognition and environmental awareness. As cognitive abilities mature, children also become more adept at processing and categorizing environmental information, recognizing patterns, and comprehending the intricate interconnections within their surroundings.

Inextricably tied to cognitive development is the development of environmental awareness. This relationship is forged through sensory perception, as cognitive development influences a child's ability to perceive and interpret environmental cues through their senses (Bjorklund and Causey, 2018b). These sensory inputs provide the foundation upon which environmental awareness is built. Furthermore, cognitive development enables children to construct cognitive schemas, effectively organizing

their experiences and knowledge concerning the environment. These mental frameworks serve as the basis for comprehending complex environmental concepts and processes.

According to Piaget (1977), cognitive development also bestows children with vital problem-solving and decision-making skills, essential for addressing environmental challenges and making informed choices regarding sustainable practices. It fosters emotional and moral growth, allowing children to develop empathy for the environment, recognize the ethical dimensions of their actions, and cultivate a sense of responsibility toward nature. Ultimately, cognitive development in early childhood exerts a lasting influence on an individual's capacity to engage with and contribute to environmental awareness and sustainability throughout their life.

In conclusion, the interplay between cognitive development and environmental awareness during early childhood is a critical nexus in fostering environmentally conscious individuals capable of addressing the challenges of a changing world. Educational approaches in early childhood should underscore this interrelationship, nurturing cognitive development alongside environmental education to promote the holistic growth and sustainable stewardship of the environment.

Cognitive Development in Early Childhood

Cognitive development in early childhood lays the foundation for a child's ability to understand and engage with the world around them. This period, typically spanning from birth to age six, is marked by rapid cognitive growth and a series of developmental milestones. Understanding the stages of cognitive development is essential for designing effective early childhood environmental education programs.

Foundational Principles of Cognitive Development

Cognitive development is a dynamic process that encompasses various aspects of thinking, problem-solving, and understanding. Psychologist Jean Piaget's stages of cognitive development provide valuable insights into this progression (Berger, 2008):

1. **Sensorimotor Stage (Birth to 2 years):** During this stage, infants and toddlers explore the world primarily through their senses and motor activities. They learn about cause and effect and develop object permanence, understanding that objects continue to exist even when not in sight.
2. **Preoperational Stage (2 to 7 years):** In this stage, children start to use language and symbols to represent objects and ideas. However, they often exhibit egocentrism, where they struggle to see things from others' perspectives.
3. **Concrete Operational Stage (7 to 11 years):** Children in this stage become more logical in their thinking and can perform concrete operations, such as conservation (understanding that the quantity of a substance remains the same despite changes in appearance).

- 4. Formal Operational Stage (11 years and older):** At this stage, adolescents and adults develop the ability to think abstractly and engage in hypothetical and deductive reasoning.

Cognitive Abilities in Early Childhood and Environment

During the early years of childhood, cognitive abilities are rapidly evolving. Children in this age group are particularly adept at absorbing information from their environment. Their cognitive abilities include:

- **Memory Development:** Young children have a remarkable capacity for memorization, enabling them to learn and retain information about the natural world.
- **Language Development:** Language acquisition is a pivotal aspect of cognitive development. It allows children to communicate their observations, questions, and thoughts about the environment.
- **Imaginative Play:** Pretend play and imagination contribute to cognitive development by allowing children to experiment with different roles and scenarios, including those related to nature and the environment.

Cognitive development and nature/environmental education share a deeply intertwined relationship, one that holds profound implications for a child's holistic growth. Nature, with its diverse and multisensory stimuli, serves as a potent catalyst for cognitive development during early childhood. Exposure to natural environments nurtures a child's innate curiosity, sparking questions, observations, and inquiries (Chawla, 1999). This engagement fosters cognitive skills such as critical thinking, problem-solving, and creativity. As children explore the natural world, they encounter puzzles to solve, patterns to discern, and relationships to understand, all of which contribute to the development of their cognitive faculties.

Furthermore, nature/environmental education leverages the child's inherent fascination with the environment to enhance their cognitive abilities (Müller et al., 2017). It provides a context-rich platform for learning, where complex concepts like ecosystems, biodiversity, and sustainability come to life through direct experiences. As children engage in hands-on activities such as planting, observing wildlife, or participating in conservation efforts, they not only absorb factual knowledge but also cultivate cognitive skills like categorization, analysis, and synthesis. They learn to ask questions, seek answers, and apply critical thinking to real-world environmental challenges.

Moreover, nature/environmental education amplifies the cognitive benefits of nature exposure by incorporating structured learning opportunities (Chawla, 2015). It encourages children to think critically about environmental issues, stimulating their intellectual growth. They explore cause-and-effect relationships, consider the long-term

consequences of human actions on the environment, and develop the capacity to make informed decisions based on a deeper understanding of ecological systems. In essence, nature/environmental education complements and enhances cognitive development by fostering a profound and lasting connection between a child's cognitive faculties and the natural world.

In conclusion, cognitive development and nature/environmental education share a symbiotic relationship, with nature serving as a dynamic canvas for cognitive growth, and environmental education offering a structured framework to channel that growth towards ecological understanding and responsible stewardship. This synergy not only enriches a child's cognitive development but also equips them with the knowledge and skills necessary to navigate the complex environmental challenges of our world.

The Emergence of Environmental Awareness

As children progress through their early years, they begin to form connections with the environment and develop an awareness of the natural world (Alliance, 2017). This awareness is a crucial step towards fostering environmental consciousness. Here are some key aspects to consider:

Early Signs of Environmental Awareness



Children often exhibit an innate curiosity about animals, plants, and natural phenomena (Prins et al., 2022). They may ask questions about the world around them, such as “Why do birds sing?” or “Where do clouds come from?” This curiosity is a natural part of their developmental process, as they seek to understand and make sense of the environment, they live in. It's a sign of their growing awareness and the beginning of their exploration of the natural world.



Many children develop attachments to animals, both real and fictional. These attachments

can take various forms, from having favorite animals they adore to expressing empathy and care towards animals. These connections with the animal kingdom can be powerful, often shaping their interests and fostering a sense of responsibility and compassion. It's not uncommon for children to develop a deep affection for pets or to form strong emotional bonds with characters from stories featuring animals.

Figure 1.

Example Early Signs of Environmental Awareness



Young children often display a keen interest in seasonal changes, weather patterns, and the outdoor environment. They eagerly anticipate and observe the arrival of different seasons, from the excitement of snowfall in winter to the joy of spring blossoms. Their fascination with weather can lead to a desire to understand the science behind it, such as what causes rain or how seasons change. This interest in the natural world can be nurtured and harnessed as a valuable educational tool, helping children develop a deeper understanding of their surroundings.

Developing a Sense of Place and Attachment to Nature

Children develop a sense of place as they become familiar with their local environment. This sense of place forms the basis for their connection to and sense of responsibility for their surroundings. Additionally, building emotional connections to nature is vital (Otto et al., 2019). Children who feel emotionally attached to the natural world are more likely to care for and protect it as they grow.

Age-Appropriate Ways to Introduce Environmental Concepts

Tailoring educational experiences to a child's developmental stage is crucial. For instance, preschoolers may benefit from simple, hands-on activities that involve observing and exploring the natural world, while older children can engage in more complex discussions about environmental issues. In nurturing environmental awareness, it's essential to recognize that children's connection to the environment is a gradual process (Brussoni et. al, 2017). By acknowledging and supporting their innate curiosity

and attachment to nature, we can pave the way for deeper environmental understanding and a lifelong commitment to sustainability.

Early exposure to environmental concepts is integral to shaping a child's environmental consciousness and fostering a commitment to sustainable practices (Chawla, 2015). Environmental education at a young age lays the foundation for responsible environmental stewardship in the future (Chaney, 2021). However, it is crucial that educators and parents adopt age-appropriate methods and strategies to effectively communicate these concepts to children. This paper seeks to elucidate the significance of tailoring environmental education to different developmental stages and presents practical approaches for introducing environmental concepts to children.

Early Childhood (Ages 3-6): The early childhood years are characterized by a profound curiosity about the world. To introduce environmental concepts effectively at this stage, educators and parents should focus on sensory experiences and hands-on activities. Nature walks, simple gardening, and storytelling sessions that highlight the beauty and wonder of the natural world can captivate young minds. Incorporating basic concepts like the importance of clean water and air, the role of plants and animals, and the idea of conservation through age-appropriate language and activities can set a strong foundation for environmental awareness.

Middle Childhood (Ages 7-11): As children progress into middle childhood, their cognitive abilities expand. At this stage, educators can delve deeper into environmental concepts by introducing more complex topics such as ecosystems, biodiversity, and environmental challenges (Louv, 2005). Hands-on experiments, field trips, and interactive projects can engage children in understanding ecological interdependencies. Discussions about climate change, pollution, and waste management can be framed in a way that encourages critical thinking and problem-solving. Encouraging children to take small actions, like reducing waste or participating in community clean-up events, can empower them to make a tangible difference.

Adolescence (Ages 12-18): During adolescence, teenagers develop a deeper capacity for abstract thinking and critical analysis. Environmental education at this stage can include an in-depth exploration of environmental issues, ethical considerations, and the global impact of human actions. Students can engage in debates, research projects, and advocacy efforts related to environmental conservation. Encouraging them to explore topics of personal interest within the environmental field, such as renewable energy, conservation biology, or sustainable agriculture, can ignite a passion for environmental science and advocacy.

Age-appropriate introduction of environmental concepts is pivotal in nurturing a generation that is environmentally conscious and capable of addressing the complex

ecological challenges of the future. By recognizing the developmental stages of children and tailoring educational approaches accordingly, educators and parents can maximize the effectiveness of environmental education. The strategies outlined in this chapter, from sensory experiences in early childhood to critical analysis in adolescence, provide a roadmap for cultivating a sense of environmental stewardship from a young age. In doing so, we can empower children to become informed, responsible, and proactive custodians of our planet.

Role of Curiosity and Exploration

Curiosity is a driving force in children's learning and plays a pivotal role in their environmental awareness and education. Understanding how to harness and encourage this curiosity is essential for effective early childhood environmental education.

How Curiosity Drives Learning in Young Children

- Curiosity is a natural inclination that compels children to explore and seek answers to their questions. It motivates them to investigate the world around them.
- Inquisitiveness promotes active engagement with the environment. Children are more likely to retain information when they are genuinely interested.

Encouraging Curiosity About the Natural World

- Create opportunities for exploration and discovery in natural settings. Outdoor environments, parks, gardens, and nature trails offer rich learning experiences.
- Encourage open-ended questions and inquiry-based learning. Instead of providing immediate answers, guide children in exploring and finding answers themselves.

Benefits of Open-Ended Exploration and Inquiry

- Open-ended exploration allows children to develop problem-solving skills and critical thinking abilities as they encounter challenges and seek solutions in the natural world.
- It fosters creativity and imaginative thinking. Nature's complexity provides ample opportunities for children to use their imagination and invent stories, games, and scenarios.

Fostering a Sense of Wonder and Awe in Nature

- Cultivating a sense of wonder and awe in children is a powerful way to deepen their connection to the environment. Encourage moments of quiet observation and reflection in nature (NLI, 2019).
- An educator can share a sense of wonder and enthusiasm about the natural world. When adults model a fascination with nature, children are more likely to adopt similar attitudes.

In summary, curiosity and exploration are fundamental drivers of early childhood environmental education. By understanding the role these qualities play in cognitive development and environmental awareness, we can design educational experiences that tap into children's innate curiosity, encourage exploration, and ultimately cultivate a deep appreciation for the natural world. In the subsequent sections of this chapter, we will explore the benefits of early childhood environmental education and guide designing effective programs to harness the potential of young minds in building a sustainable future.

Benefits of Early Childhood Environmental Education

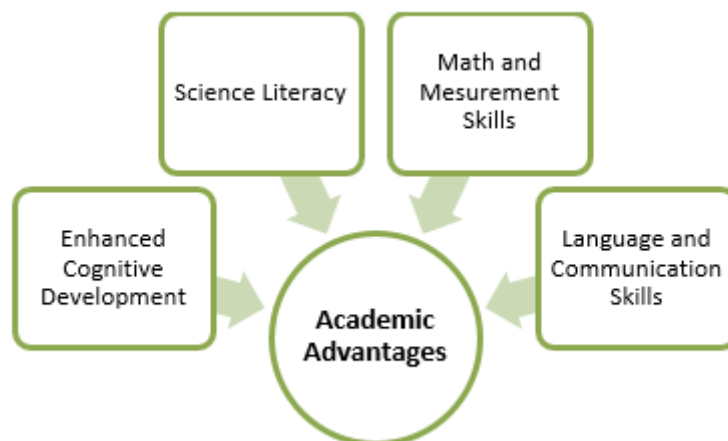
Early childhood environmental education, when thoughtfully designed and implemented, offers a multitude of profound and far-reaching benefits. These advantages extend beyond the immediate developmental gains, leaving a lasting impact on children's cognitive, emotional, and social well-being. In this section, we delve into the various dimensions of these benefits, emphasizing the significance of nurturing young environmental stewards.

Academic Advantages

Early exposure to environmental education provides a strong foundation for academic achievement. Research has demonstrated that such programs enhance cognitive skills, promote problem-solving abilities, and foster a deeper understanding of scientific concepts (Meyer et al., 2017; Shutte et al., 2017; Williams and Dixon, 2013)). Key academic advantages include:

Figure 2.

Academic Advantages of EE



Engaging with the natural world encourages critical thinking and observation skills (Wells, 2000). Children learn to make connections between their experiences in nature and abstract academic concepts, thereby improving their cognitive abilities. Secondly, early exposure to environmental science concepts helps children develop science literacy, including an understanding of ecosystems, biodiversity, and environmental processes (Cutter-Mackenzie & Edwards, 2013). This foundation can lead to improved

performance in science-related subjects throughout their educational journey.

Moreover, many environmental activities involve quantifying and measuring natural phenomena. This provides children with opportunities to develop math skills through practical applications, reinforcing numerical concepts (Wilson, 1996). Additionally, Environmental education encourages communication and vocabulary development as children describe their observations and engage in discussions about the natural world. These interactions enhance language acquisition and communication skills.

Emotional and Social Development

Beyond academic advantages, early childhood environmental education contributes significantly to emotional and social development. It fosters empathy, emotional resilience, and positive social interactions, laying the groundwork for healthy emotional intelligence (Chaney, 2021, Dankiw et al., 2020). Key emotional and social benefits include:

- **Empathy and Compassion:** Caring for and learning about the environment instills a sense of responsibility and empathy for living beings. Children develop a deeper connection to nature and a greater appreciation for the well-being of others.
- **Emotional Resilience:** Exposure to the natural world can reduce stress and anxiety in children. Spending time outdoors promotes emotional resilience, helping children manage emotions and cope with life's challenges.
- **Teamwork and Collaboration:** Many environmental education activities are collaborative. Children learn to work together, share responsibilities, and communicate effectively with peers, enhancing their teamwork and collaboration skills.
- **Respect for Diversity:** Environmental education encourages an understanding of the interdependence of all living things and ecosystems. This fosters an appreciation for diversity, both in the natural world and among people.

Engaging with the environment fosters empathy and compassion within children, nurturing a profound sense of responsibility towards all living beings. This connection to nature cultivates a heightened appreciation for the well-being of others, promoting a more compassionate outlook on life. The natural world serves as a powerful antidote to stress and anxiety, benefiting children's emotional resilience. Time spent outdoors equips them with valuable tools to manage their emotions, helping them navigate the challenges that life presents with greater ease. EE frequently involves collaborative activities that encourage teamwork. Children partake in shared responsibilities and effective communication with their peers, honing their ability to collaborate and work as part of a team. Through EE, children gain insight into the intricate interdependence of

all living things and ecosystems. This awareness not only deepens their respect for the natural world but also fosters an appreciation for the diversity found both within nature and among people.

Building a Lifelong Connection with Nature

One of the most enduring benefits of early childhood environmental education is the cultivation of a lifelong connection to the natural world. Children who experience the wonders of nature at a young age are more likely to become environmentally conscious adults (Adams & Savahl, 2017; Stern et al., 2014; Wals & Benavot, 2017). Key aspects of building this lifelong connection include:

- **Environmental Stewardship:** Early exposure to environmental concepts instills a sense of responsibility for the planet. Children learn the importance of conservation and sustainable living practices, leading to environmentally conscious choices in adulthood.
- **Nature as a Source of Well-being:** Encounters with nature in childhood establish a positive relationship with the outdoors. As adults, individuals who have experienced the benefits of nature in their formative years are more likely to prioritize outdoor activities and seek solace in natural settings.
- **Environmental Advocacy:** Early childhood environmental education empowers children to become advocates for environmental causes. As they grow, they are more inclined to engage in environmental activism, making meaningful contributions to addressing environmental challenges.

In conclusion, the benefits of early childhood environmental education are multifaceted, encompassing academic, emotional, and social advantages, as well as the development of a lifelong connection to nature. These benefits underscore the importance of incorporating environmental education into early childhood curricula, nurturing the growth of environmentally conscious citizens who are equipped to address the complex environmental issues of the future.

Designing Effective Early Childhood Environmental Education Programs

The success of early childhood environmental education hinges on the thoughtful design and implementation of educational programs that cater to the unique needs and developmental stages of young learners. This section explores the essential elements and strategies for creating effective programs that nurture a love for the environment and promote sustainable behaviors among children.

Age-Appropriate Curriculum Development

Recognizing the developmental differences among young children is paramount in designing effective environmental education programs. Curriculum development should align with the cognitive, emotional, and physical capabilities of the target age group.

Key considerations include developmentally appropriate practices, hands-on learning, and storytelling and play.

Programs should incorporate activities and materials that are suitable for the specific age range, ensuring that children can engage meaningfully with the content. Moreover, young children learn best through hands-on experiences. Incorporating sensory-rich activities, such as the exploration of natural materials, encourages active learning (Gibson, 2014). Also, storytelling and imaginative play can be powerful tools in environmental education (Wilson, 1996). Narratives and role-play scenarios help children connect with environmental concepts on a personal level.

Incorporating Nature-Based Learning

Nature-based learning is a fundamental component of early childhood environmental education. It offers direct experiences with the natural world, fostering a deep connection to and appreciation for the environment. Key principles of nature-based learning include:

- **Outdoor Exploration:** Frequent and varied outdoor experiences provide children with opportunities to observe, interact with, and learn from the natural world. Nature trails, gardens, and outdoor classrooms are valuable resources.
- **Seasonal Observations:** Encouraging children to observe and document seasonal changes in their environment builds an understanding of ecological processes and the cyclical nature of life.
- **Wildlife Encounters:** Interactions with local wildlife, such as birds, insects, and small mammals, spark curiosity and inspire questions about the interconnectedness of life.

The Role of Educators and Parents

Educators and parents play pivotal roles in the success of early childhood environmental education programs. Their guidance and support are essential in cultivating a child's environmental consciousness. Key roles and responsibilities include:

- **Educator Training:** Teachers and caregivers should receive training in environmental education principles and pedagogy to effectively facilitate learning experiences.
- **Creating Nature-Rich Environments:** Educators and parents can shape learning environments by providing access to natural materials, books on environmental topics, and opportunities for outdoor play.
- **Encouraging Inquiry:** Both educators and parents should encourage children to ask questions, explore their surroundings, and share their observations. This fosters a sense of curiosity and inquiry.
- **Modeling Environmental Stewardship:** Adults can model environmentally

responsible behaviors, such as recycling, conserving resources, and practicing sustainable living, to reinforce the importance of such actions.

Promoting Outdoor Play and Exploration

Outdoor play is a cornerstone of early childhood environmental education. It not only supports physical development but also provides a context for children to apply their environmental knowledge. Strategies for promoting outdoor play include:

- **Free Play:** Allowing unstructured play in natural settings enables children to explore and discover the environment at their own pace, fostering creativity and problem-solving skills.
- **Nature Journals:** Encouraging children to keep nature journals to document their outdoor experiences promotes observation skills and reflection on their interactions with the environment.
- **Nature-Based Art and Crafts:** Artistic activities using natural materials, such as leaves, sticks, and stones, connect creativity with the natural world and encourage resourcefulness.

In summary, effective early childhood environmental education programs are thoughtfully designed to align with the developmental stages of young learners, incorporate nature-based learning experiences, involve educators and parents as partners, and promote outdoor play and exploration. By integrating these elements, programs can instill a lifelong love for the environment and equip children with the knowledge and values necessary to become environmentally conscious and responsible citizens.

Recent Research on Early Childhood Environmental Education

The field of early childhood environmental education has witnessed a surge in research activities in recent years, as educators, policymakers, and researchers recognize the importance of fostering environmental consciousness in young children. This section delves into some of the noteworthy studies and findings that shed light on the impact and effectiveness of early childhood environmental education programs.

Studies on the Impact of Nature Exposure

Numerous studies have delved into the positive impacts of children's exposure to natural environments on their physical, cognitive, and emotional development. These investigations consistently underscore the significance of integrating nature into early childhood education.

One compelling area of influence is cognitive development, where research has established that regular exposure to natural settings plays a pivotal role in enhancing cognitive growth in young children. The presence of nature-rich environments stimulates their innate curiosity, encourages keen observation, and fosters problem-solving skills. It has been observed that children who are regularly exposed to green spaces tend to

exhibit better performance in tasks demanding sustained attention and focus.

In addition to cognitive benefits, the emotional well-being of children is profoundly influenced by exposure to nature. Multiple studies have documented the positive impact of nature exposure on emotional health. Time spent in natural settings has been linked to reduced levels of stress, anxiety, and symptoms associated with attention deficit disorders. Furthermore, the immersion in nature fosters a profound sense of calmness and emotional resilience, empowering children to navigate and cope with various challenges they encounter.

The advantages of integrating nature into early childhood education extend beyond the cognitive and emotional realms to encompass physical health. Research findings have consistently demonstrated that outdoor play in natural environments promotes physical activity and encourages healthier lifestyles among children (Gray et al., 2015; Meyer et al., 2017; Twohig-Bennett & Jones, 2018). Those who engage in nature-based activities are more likely to exhibit lower rates of childhood obesity and related health issues, showcasing the tangible health benefits of nature-rich educational environments.

To summarize, the body of research illuminates the multifaceted advantages of incorporating nature into early childhood education. From augmenting cognitive development and emotional well-being to nurturing physical health, these findings underscore the imperative of integrating natural environments into educational settings, facilitating holistic development and well-rounded growth in our youngest learners.

Assessing the Effectiveness of Outdoor Classrooms

Outdoor classrooms, where learning unfolds in natural settings, have garnered significant attention and recognition within the realm of early childhood education. Rigorous research endeavors aimed at examining the effectiveness of these environments have generated valuable insights, shedding light on the multifaceted advantages they offer.

Firstly, studies have consistently suggested that outdoor classrooms hold the potential to positively influence academic achievement among children (. The immersive nature of outdoor learning experiences often translates into enhanced performance across a spectrum of academic disciplines, including science, mathematics, and language arts. This phenomenon underscores the idea that the integration of natural environments can serve as a powerful catalyst for intellectual growth.

Moreover, outdoor classrooms serve as dynamic spaces for social and emotional development. Encounters with the natural world inherently encourage social interactions, cooperation, and collaborative problem-solving among children. Research findings indicate that these environments play a pivotal role in fostering social and emotional growth, contributing to the development of advanced communication skills and conflict-resolution abilities. Such attributes are essential for holistic child development.

Furthermore, the profound impact of outdoor classrooms extends to the cultivation of pro-environmental attitudes and behaviors among young learners. Exposure to these environments has been closely linked to the development of heightened environmental consciousness. Children who engage in learning activities within nature-rich settings tend to exhibit greater concern for the environment and an increased willingness to embrace sustainable practices. This facet highlights the potential of outdoor classrooms to nurture environmentally responsible citizens who are attuned to ecological issues.

Outdoor classrooms have emerged as a dynamic and multifunctional asset within the realm of early childhood education. They not only enhance academic performance but also facilitate holistic development by promoting social and emotional growth. Additionally, the cultivation of pro-environmental attitudes and behaviors underscores their role in shaping environmentally conscious individuals. As the educational landscape continues to evolve, outdoor classrooms stand as a testament to the potential of nature-integrated learning environments in nurturing well-rounded, environmentally aware young minds.

Long-Term Outcomes of Early Environmental Education

Longitudinal studies that have meticulously tracked the effects of early childhood environmental education well into adulthood have provided compelling evidence of its profound and enduring impact. These studies offer a glimpse into how early exposure to environmental concepts and values continues to shape individuals throughout their lives, with far-reaching consequences for both personal choices and societal contributions (Stern et al., 2014).

Foremost among the findings is the emergence of environmental stewardship as a defining trait among those who received early environmental education. Such individuals are more likely to exhibit environmentally responsible behaviors in adulthood. They actively engage in practices such as recycling, conserving energy, reducing waste, and supporting various environmental causes. This enduring commitment to sustainable living is a testament to the lasting imprint of early environmental education on personal values and actions.

Moreover, research highlights that early environmental education can be a catalyst for environmental advocacy. Adults who were exposed to environmental education during their formative years often translate their passion and knowledge into meaningful action. Many become active participants in community-based environmental initiatives and advocacy efforts, striving to effect positive change on a broader scale. Their engagement in these activities underscores the transformative power of early environmental education in nurturing a sense of environmental responsibility and the drive to make a difference.

Furthermore, the influence of early environmental education extends beyond individual behaviors and into career choices. Individuals who receive a strong foundation in environmental education during childhood frequently gravitate towards careers that

are intrinsically linked to environmental conservation and sustainability. These career paths encompass diverse fields, including ecology, environmental policy, conservation biology, and sustainable development. The alignment of personal values cultivated in childhood with professional pursuits reflects the profound and enduring impact of early environmental education on life trajectories.

Figure 3.

Long-Term Outcomes of Early Environmental Education



In conclusion, the evidence from longitudinal studies underscores the lasting significance of early childhood environmental education. It not only shapes individuals into environmentally responsible adults but also propels them towards active advocacy and careers dedicated to addressing pressing environmental challenges. The ripple effects of early environmental education extend well beyond the classroom, contributing to a more sustainable and environmentally conscious society.

Implications for Curriculum and Pedagogy

Recent research on early childhood environmental education has yielded findings with substantial implications for the development of educational curricula and the evolution of pedagogical approaches (Stern et. al., 2014; Wilson, 1996; Wals & Benavot, 2017). These insights underscore the need for educational systems to adapt to the growing recognition of the profound impact of environmental education on young learners.

One prominent implication is the increasing integration of nature-based elements into early childhood education curricula. Curriculum designers are acknowledging the cognitive and emotional benefits that stem from exposure to natural environments. As a result, educational programs are incorporating outdoor experiences, nature walks, and hands-on activities in natural settings to provide children with direct encounters with the natural world. This shift aims to tap into the inherent curiosity and wonder that children exhibit when exposed to nature, thereby enhancing their learning experiences.

Complementing this shift is imperative for teacher training programs to equip educators

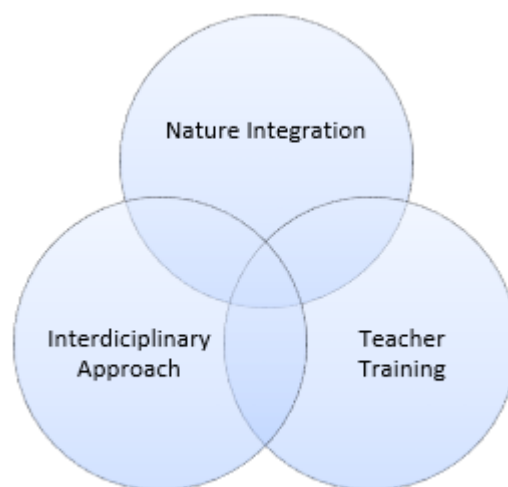
with the knowledge and skills required to effectively implement outdoor and nature-based learning activities. Educators are being prepared to facilitate meaningful experiences for young learners in natural settings, fostering a deeper connection between students and the environment. Training programs emphasize the importance of guidance and mentorship in outdoor education, enabling educators to create safe and engaging outdoor learning environments.

Furthermore, recent research underscores the interdisciplinary nature of early environmental education. It highlights the interconnectedness of environmental concepts with various subject areas, including science, mathematics, language arts, and social studies. Consequently, contemporary educational programs are moving towards integrating environmental themes and concepts into these subject areas, promoting a holistic understanding of the environment. This interdisciplinary approach not only enhances students' environmental literacy but also reinforces the relevance of environmental issues across multiple domains of knowledge.

Overall, it can be said that recent research on early childhood environmental education are reshaping educational practices. The integration of nature-based elements, teacher training in outdoor education, and the adoption of interdisciplinary approaches are transformative steps in nurturing environmentally conscious and well-rounded individuals. These developments reflect a growing recognition of the pivotal role early environmental education plays in preparing children to understand, appreciate, and protect the natural world.

Figure 4.

Aspects Of Implications for Future Curriculum Development and Pedagogical Approaches



In summary, recent research on early childhood environmental education underscores its positive impact on children's cognitive, emotional, and social development. It

emphasizes the importance of nature exposure, outdoor classrooms, and a lifelong commitment to environmental stewardship. These findings inform the design of curricula and teaching practices that harness the potential of early environmental education to shape environmentally conscious and responsible citizens for the future.

Overcoming Challenges and Barriers

Early childhood environmental education, while immensely valuable, faces certain challenges and barriers that educators and advocates must address to ensure equitable access and effective implementation. This section explores key challenges and strategies for overcoming them.

Limited Outdoor Access in Urban Areas

Challenge: In urban environments, limited access to green spaces and natural settings poses a significant challenge to providing meaningful outdoor experiences for young children. High population density, limited parks, and safety concerns can hinder opportunities for nature-based learning.

Strategies for Overcoming the Challenge

- **Urban Greening Initiatives:** Encourage urban planning authorities to invest in creating green spaces and pocket parks within city limits. These spaces can serve as accessible outdoor classrooms.
- **Community Gardens:** Establish community gardens and urban farms, providing children with opportunities to interact with nature and learn about sustainable agriculture.
- **Schoolyard Transformations:** Transform schoolyards into nature-rich environments with trees, gardens, and wildlife habitats, creating accessible outdoor learning spaces.
- **Nature Exploration Excursions:** Organize field trips to nearby nature reserves, botanical gardens, and urban wildlife centers to expose urban children to natural environments beyond their immediate surroundings.

Addressing Cultural and Socioeconomic Disparities

Challenge: Cultural and socioeconomic disparities can lead to unequal access to early childhood environmental education. Some communities may lack resources or face cultural barriers that limit their engagement with nature-based programs.

Strategies for Addressing the Challenge

- **Culturally Relevant Curriculum:** Develop culturally inclusive and relevant curriculum materials that resonate with diverse communities, respecting their values and traditions.
- **Community Partnerships:** Collaborate with community organizations and leaders to bridge cultural gaps and build trust. Involve local community members

in program development and implementation.

- **Scholarships and Subsidies:** Offer scholarships and subsidies for children from underserved communities to ensure that financial constraints do not hinder their participation in environmental education programs.
- **Cultural Competency Training:** Provide training for educators to enhance their cultural competency, enabling them to better understand and address the needs of diverse learners.

Building Support from Parents and Caregivers

Challenge: Engaging parents and caregivers in early childhood environmental education programs can be challenging, as they may have limited awareness of the benefits or face time constraints.

Strategies for Building Support

- **Parent Workshops:** Organize workshops and informational sessions for parents and caregivers to educate them about the importance of early childhood environmental education and its positive impact on child development.
- **Home-Based Activities:** Provide parents with resources and ideas for nature-based activities they can incorporate into family routines, fostering a sense of continuity between home and school.
- **Parent-Teacher Partnerships:** Foster strong partnerships between educators and parents, encouraging open communication and collaboration in planning and implementing environmental education activities.
- **Community Events:** Organize family-oriented outdoor events, such as nature hikes, environmental clean-up activities, and gardening projects, to involve parents and caregivers directly in environmental education experiences.

In conclusion, while early childhood environmental education offers a host of benefits, it is crucial to acknowledge and address the challenges and barriers that may hinder its effective implementation. By creatively overcoming limitations in urban areas, fostering inclusivity and cultural sensitivity, and actively engaging parents and caregivers, educators and advocates can work toward ensuring that environmental education reaches all young learners, regardless of their background or circumstances.

Nature and Environmental Awareness Activities for Kids

Activity 1: Nature Scavenger Hunt

Aims:

- Foster a sense of wonder and curiosity about the natural world.
- Encourage children to explore and observe their environment.
- Develop basic observational and sensory skills.
- Promote a connection between children and their local natural surroundings.

Scope:

- Designed for ages 3-8, with adaptations for non-readers.
- Emphasizes hands-on exploration and discovery.
- Encourages outdoor play and active engagement with nature.

Philosophical Base: This activity aligns with the philosophy that children are natural explorers and that learning about the environment should be an active and enjoyable experience. It supports the idea that early childhood environmental education should begin with simple, accessible activities that build a foundation for future environmental awareness and stewardship.

Objective: To encourage young children (ages 3-8) to explore nature and observe their environment.

Instructions:

1. Create a simple scavenger hunt checklist with pictures instead of words to make it accessible for non-readers. For example, include pictures of a flower, a leaf, a rock, a bird, and a butterfly.
2. Use colorful baskets or bags with handles to make it easier for younger children to carry and collect their finds.
3. Provide adult supervision to ensure safety and to assist younger children with their scavenger hunt.
4. Encourage older children (ages 6-8) to assist and guide the younger ones, fostering a sense of teamwork and responsibility.

Activity 2: Planting and Caring for a Garden

Aims:

- Introduce the concept of gardening and plant growth in a hands-on way.
- Cultivate a sense of responsibility for living things.
- Foster an understanding of the interdependence between plants and the environment.
- Encourage a connection to the natural world through gardening experiences.

Scope:

- Suitable for ages 3-8, with adaptations for younger children.
- Incorporates gardening as an immersive learning activity.
- Emphasizes the growth and care of living organisms.

Philosophical Base: This activity is grounded in the philosophy that children learn best when they are actively involved in caring for and observing living things. It aligns with the idea that gardening connects children to the cycles of nature and fosters a sense of responsibility for the environment, promoting early environmental stewardship.

Objective: To introduce young children (ages 3-8) to the concept of gardening and plant growth in a fun and engaging way.

Instructions:

1. Choose fast-growing plants or seeds that are easy to care for and maintain, such as sunflowers, marigolds, or beans.
2. Use larger pots or garden beds to accommodate the age group's smaller hands and make planting easier.
3. Supervise closely during planting and watering to ensure that young children handle soil and plants gently.
4. Incorporate storytelling and imaginative play into the activity by encouraging children to pretend to be garden fairies or scientists exploring plant growth.

Activity 3: Wildlife Observation and Journaling

Aims:

- Encourage children to observe and appreciate local wildlife and nature.
- Develop basic scientific observation skills.
- Cultivate empathy for living creatures and their habitats.
- Promote a sense of connection to the natural world.

Scope:

- Designed for ages 3-8, with adaptations for different age groups.
- Utilizes simple tools like picture books and nature artboards.
- Focuses on building observational and descriptive abilities.

Philosophical Base: This activity is rooted in the philosophy that young children are natural observers and can develop a deep connection to the environment through close encounters with wildlife and nature. It aligns with the idea that early childhood environmental education should nurture children's curiosity about the natural world and encourage them to become compassionate and informed caretakers of the Earth.

These activities collectively emphasize experiential learning, hands-on exploration, and a child-centered approach to early childhood environmental education. They aim to lay the foundation for environmental awareness, curiosity, and stewardship from a young age, aligning with the philosophy that children are inherently connected to and influenced by their environment.

Objective: To engage young children (ages 3-8) in observing and appreciating local wildlife and nature.

Instructions:

1. Use picture books or flashcards with images of common local wildlife species to help young children identify and understand what to look for.
2. Instead of traditional journals, provide young children with large sheets of paper or nature art boards for drawing pictures of what they see.
3. Encourage children to use their imagination to describe animals and their behaviors in simple language. For example, they can say, "I saw a big brown bird with a long beak" or "I saw a butterfly on a yellow flower."
4. Make observations fun by using animal-themed binoculars and magnifying glasses designed for children.

Adapting these activities for the 3-8 age group ensures that they are developmentally appropriate and enjoyable for younger children while still offering valuable nature and environmental experiences.

Activity 4: Nature Art and Creativity

Aims:

- Encourage children to express their creativity through art while connecting with nature.
- Develop an appreciation for the beauty and diversity of the natural world.
- Promote sensory exploration of natural materials.
- Foster a sense of environmental stewardship through art and creativity.

Materials Needed:

- Paper or cardboard
- Crayons, colored pencils, or markers
- Natural materials (leaves, twigs, pinecones, flowers, rocks)
- Glue or adhesive putty
- Optional: Watercolor paints and brushes

Philosophical Base: This activity aligns with the philosophy that creativity and art are powerful tools for connecting children to nature. It promotes the idea that appreciating the beauty of the environment can inspire care and stewardship. By incorporating natural materials into their art, children not only express their creativity but also deepen their connection to the natural world.

Instructions:

1. Begin by discussing the importance of nature and its beauty. Talk about how nature can inspire art and creativity.
2. Take children on a nature walk to collect various natural materials like leaves, twigs, flowers, or rocks. Encourage them to explore their senses by touching, smelling, and observing these materials.
3. Provide each child with a sheet of paper or cardboard and art supplies (crayons, colored pencils, or markers).
4. Invite children to create nature-inspired art using the collected materials. They can glue leaves to their paper, make rubbings of textures they find, or draw pictures inspired by what they observed in nature.
5. For an added creative touch, offer watercolor paints and brushes for children to paint their natural materials or create watercolor backgrounds for their artwork.
6. While they work on their art, discuss their observations and thoughts about the natural world. Ask questions like, “What do you like about this leaf?” or “What did you learn from our nature walk?”
7. Once their art is complete, have a mini art show where children can share their creations, describing what inspired their work.

References

- Adams, S., & Savahl, S. (2017). Nature as children's space: A systematic review. *The Journal of Environmental Education*, 48(5), 291–321. <https://doi.org/10.1080/00958964.2017.1366160>.
- Alliance, N. S. (2017). *Nature preschools and forest kindergartens*: 2017 national survey.
- Ardoin, N. M., & Bowers, A. W. (2020). Early childhood environmental education: A systematic review of the research literature. *Educational Research Review*, 31, 100353. <https://doi.org/10.1016/j.edurev.2020.100353>.
- Brussoni, M., Ishikawa, T., Brunelle, S. & Herrington, S., (2017). Landscapes for play: Effects of an intervention to promote nature-based risky play in early childhood centers. *Journal of Environmental Psychology*, 54, 139-150. <http://dx.doi.org/10.1016/j.jenvp.2017.11.001>.
- Chaney, A. J. (2021). *Effects of Nature Play in Early Childhood Education*. Culminating Experience Projects. 50.
- Chawla, L. (1999). Life paths into effective environmental action. *The Journal of Environmental Education*, 31(1), 15–26. <https://doi.org/10.1080/00958969909598628>
- Chawla, L. (2015). Benefits of nature contact for children. *Journal of Planning Literature*, 30(4), 433–452. <https://doi.org/10.1177/0885412215595441>.
- Cutter-Mackenzie, A., & Edwards, S. (2013). Toward a model for early childhood environmental education: Foregrounding, developing, and connecting knowledge through play-based learning. *The Journal of Environmental Education*, 44(3), 195–213. <https://doi.org/10.1080/00958964.2012.751892>.
- Dankiw KA, Tsiros MD, Baldock KL & Kumar S (2020) The impacts of unstructured nature play on health in early childhood development: A systematic review. *PLoS ONE* 15(2): e0229006. <https://doi.org/10.1371/journal.pone.0229006>.
- Gibson, J. J. (2014). *The ecological approach to visual perception*. Hove: Psychology Press, <https://doi.org/10.4324/9781315740218>.
- Gill, T. (2014). The benefits of children's engagement with nature: *A systematic literature review*. *Children, Youth, and Environments*, 24, 10–34. <https://doi.org/10.7721/chilyoutenvi.24.2.0010>.
- Gray, C., Gibbons, R., Larouche, R., Sandseter, E. B. H., Bienenstock, A., Brussoni, M. (2015). What is the relationship between outdoor time and physical activity, sedentary behavior, and physical fitness in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6455–6474. <https://doi.org/10.3390/ijerph120606455>.
- Greeno, J. G. (1994). Gibson's affordances. *Psychol. Rev.* 101, 336–342. <https://doi.org/10.1037/0033-2909.101.3.336>.

[org/10.4172/2165-7025.1000167](https://doi.org/10.4172/2165-7025.1000167).

Herzog, E. N. (2022). *The importance of children's time spent in nature and the role of parents as active outdoor play partners*. Master's thesis. California State University.

<https://lloydcenter.org/exploring-the-benefits-of-environmental-education-for-children/>

<https://naaee.org/programs/eeworks/benefits-k12-students>

<https://www.firstdiscoverers.co.uk/science-education-early-childhood/>

Lerstrup, I., and Konijnendijk van den Bosch, C. (2017). Affordances of outdoor settings for children in preschool: Revisiting heft's functional taxonomy. *Landscape Research*, 42, 47–62. <https://doi.org/10.1080/01426397.2016.1252039>.

Louv, R. (2005). *Last Child in the Woods: Saving our Children from Nature-Deficit Disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill. Print.

Meyer, J., Müller, U., & Macoun, S. (2017). Comparing classroom context and physical activity in nature and traditional kindergartens. *Children, Youth, and Environments*, 27(3), 56–77. <https://doi.org/10.7721/chilyoutenvi.27.3.0056>.

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage.

Moore, R. & Cosco, N. (2010). *Using behavior mapping to investigate healthy outdoor environments for children and families: conceptual framework, procedures, and applications*. In Ward Thompson, C., Aspinall, P. and Bell, S. (Eds), *Innovative Approaches to Researching Landscape and Health: Open Space People Space 2*. London: Taylor and Francis, (33-72).

Müller, U., Temple, V.A., Smith, B., Kerns, K., Eycke, K. T., Crane, J., et al. (2017). Effects of nature kindergarten attendance on children's functioning. *Children, Youth, and Environments*, 27(2), 47–69. <https://doi.org/10.7721/chilyoutenvi.27.2.0047>.

National Science Teachers Association (NSTA). 2009. *NSTA Position Statement: Parent Involvement in Science Learning*.

NGSS Lead States (2013). *Next Generation Science Standards: For states, by states*. Washington, DC: National Academies Press.

North American Association for Environmental Education (2017). *Nature preschools and forest kindergartens: 2017 national survey*. Washington, DC: Author.

North American Association for Environmental Education (2019). *K–12 environmental education: Guidelines for excellence*. Washington, DC: Author.

North American Association for Environmental Education (NAAEE) (2016). *Early childhood environmental education programs: Guidelines for excellence*. Washington, DC: Author.

- North American Association for Environmental Education (NAAEE), (2017). *Nature preschools and forest kindergartens: 2017 national survey*. <https://naaee.org/news/press-room/nature-preschools-kindergartens-record-numbers-us>.
- Otto, S., Evans, G. W., Moon, M. J., & Kaiser, F. G. (2019). The development of children's environmental attitude and behavior. *Global Environmental Change*, 58. <https://doi.org/10.1016/j.gloenvcha.2019.101947>.
- Prins J., van der Wilt F., van der Veen C. & Hovinga D (2022) Nature play in early childhood education: A systematic review and meta-ethnography of qualitative research. *Front. Psychol.* 13:995164. <https://doi.org/10.3389/fpsyg.2022.995164>.
- Scholz, R. W. & Tietje, O. (2002). *Embedded Case Study Methods: Integrating Quantitative and Qualitative Knowledge*. London: Sage Publications Inc. ISBN 0-7619-1946-5
- Schutte, A. R., Torquati, J. C., & Beattie, H. L. (2017). Impact of urban nature on executive functioning in early and middle childhood. *Environment and Behavior*, 49(1), 3–30. <https://doi.org/10.1177/0013916515603095>.
- Stern, M. J., Powell, R. B., & Hill, D. (2014). Environmental education program evaluation in the new millennium: What do we measure and what have we learned? *Environmental Education Research*, 20(5), 581–611. <https://doi.org/10.1080/13504622.2013.838749>.
- The Natural Learning Initiative (NLI) (2019). *Impact of Naturalized Early Childhood Outdoor Learning Environments: Research Brief*. The Natural Learning Initiative. NC State University. https://irp.cdn-website.com/808ae3ba/files/uploaded/Research-Brief-Naturalizing-Early-Childhood-Outdoor-Learning-Environments-ver1.1_7-31-20-2.pdf
- Twohig-Bennett, C., & Jones, A. (2018). The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. *Environmental Research*, 166, 628–637. <https://doi.org/10.1016/j.envres.2018.06.030>.
- Wals, A. E. J., & Benavot, A. (2017). Can we meet the sustainability challenges? The role of education and lifelong learning. *European Journal of Education*, 52(4), 404–413. <https://doi.org/10.1111/ejed.12250>.
- Wells, N. (2000). At home with nature. Effects of “Greenness” on children's cognitive functioning. *Environment and Behavior*, 32(6), 775–795.
- Williams, D. R., & Dixon, P. S. (2013). Impact of garden-based learning on academic outcomes in schools: Synthesis of research between 1990 and 2010. *Review of Educational Research*, 83(2), 211–235. <https://doi.org/10.3102/0034654313475824>.

Wilson, R. A. (1996). Environmental education programs for preschool children. *The Journal of Environmental Education*, 27(4), 28–33. <https://doi.org/10.1080/00958964.1996.9941473>.

Yin, R. K. (2003). *Case Study Research, Design and Methods*, 3rd ed. Newbury Park: Sage Publications. [ISBN 0-7619-2553-8](#).

About The Author



Elif ÖZTURK earned her undergraduate degree from Middle East Technical University in 2005 before achieving her master's and doctoral degrees at Hacettepe University. She currently holds the position of associate professor at the Department of Early Childhood Education, Faculty of Education, Giresun University. In addition to advising on numerous theses in higher education, she has also authored numerous research articles and books discussing the topics of childhood and elementary school education.

E-mail: elif.ozturk@giresun.edu.tr

ORCID:  0000-0002-3764-4526

She has researched early childhood education institutions in various countries and has encountered diverse educational philosophies and approaches. Her ongoing research on early childhood education extends both within Turkey and internationally. In addition, the academician has received awards, including the Science Service Award for her work on developing environmental awareness in children and training environmentally literate educators, presented by Akdeniz University in Turkey in 2022. Her research covers interdisciplinary topics such as children, environment, and nature, learning approaches for children, and children's science education. Elif Öztürk, an academician with a strong belief in the significance of early childhood education, is steadfast in her commitment to furthering developments in this field.