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Exploring the Horizons: The Influence of 'Children Learning the Language of Nature' Project on Fundamental Skill Development and Environmental Attitudes*

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Abstract

In the contemporary world, rapid technological advancements, increasing urbanization, and industrialization have exacerbated environmental issues. Addressing these challenges necessitates cultivating sensitive and conscious individuals. Within this scope, the "Children Learning the Language of Nature" project was implemented from October 5 to 9, 2020, targeting preschool children with limited exposure to nature education. Conducted in various natural settings in Afyonkarahisar, the project involved 20 children and featured 41 diverse activities spanning drama, art, music, mathematics, and Turkish. These activities aimed to familiarize children with the natural environment, enhance their environmental awareness, and support their cognitive development. To evaluate the children's fundamental skills and environmental attitudes, the Preschool Children's Basic Skills Scale and the Children's Attitudes Towards the Environment Scale were employed. The findings demonstrate the significant role of nature education in early childhood, offering valuable insights for educators and policymakers. This study underscores the importance of fostering environmentally conscious and sensitive children while serving as a foundation for the development of future educational programs. Moreover, it highlights the critical role of nature education in supporting holistic child development.

Keywords: Nature, environment, fundamental skills, early childhood, education, awareness.

Ufukları Keşfetmek: 'Çocuklar Doğanın Dilini Öğreniyor' Projesinin Temel Beceri Gelişimi ve Çevresel Tutumlara Etkisi

Öz

Günümüz dünyasında, hızlı teknolojik gelişmeler, artan kentleşme ve sanayileşme, çevresel sorunların artışını beraberinde getirmiştir. Bu sorunlara karşı duyarlı ve bilinçli bireyler yetiştirmek, bu zorlukların üstesinden gelmekte kritik bir öneme sahiptir. Bu bağlamda, 5-9 Ekim 2020 tarihleri arasında, doğa eğitimine yabancı okul öncesi çocuklar için "Çocuklar Doğanın Dilini Öğreniyor" adlı bir proje yürütülmüştür. Proje, Afyonkarahisar'da çeşitli doğal alanlarda gerçekleştirilmiş olup, kapsamında 20 çocukla drama, sanat, müzik, matematik ve Türkçe gibi disiplinlerde 41 farklı etkinlik düzenlenmiştir. Bu etkinlikler, çocukların doğal dünyayı tanımalarını, çevreye yönelik farkındalıklarını artırmalarını ve düşünme becerilerini geliştirmelerini hedeflemiştir. Araştırma sürecinde, çocukların temel becerilerini ve çevre tutumlarını değerlendirmek için Okulöncesi Öğrencilerine Yönelik Temel Beceri Ölçeği ve Çocukların Çevreye Karşı Tutumları Ölçeği kullanılmıştır. Bu proje, erken çocukluk döneminde doğa eğitiminin etkilerini ortaya koymakta ve çocukların çevresel sorunlara karşı daha bilinçli ve duyarlı olmaları yönünde eğitimciler ve politika yapıcılar için önemli veriler sunmaktadır. Bu çalışma, gelecekte benzer eğitim programlarının geliştirilmesi için bir temel teşkil etmekte ve doğa eğitiminin çocukların gelişimindeki rolünü vurgulamaktadır.

Anahtar Sözcükler: Çevre, doğa, temel beceri, erken çocukluk, eğitim, farkındalık

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INTRODUCTION

Early childhood period is a pivotal stage filled with experiences that shape the acquisition of fundamental concepts and skills related to scientific processes. During this time, children actively explore their environment, a curiosity that serves as the bedrock for environmental awareness (Kıldan & Pektaş, 2009; Can Yaşar et al., 2012). Research indicates that children are significantly affected by environmental issues, underscoring the importance of instilling an ecological consciousness and ensuring their growth in a healthy ecological balance (Taşkın & Şahin, 2008; Gülay & Öznacar, 2010; Özsoy, 2012; Ayvacı et al., 2021). In this context, children's experiences become the building blocks of knowledge, encompassing not only fundamental skills but also the acquisition of environmental awareness. This awareness can be effectively fostered from the preschool period onwards through systematic and planned nature-oriented educational programs (Taner, 2019).

As children explore the natural world, they engage in an active learning process through the use of their senses - seeing, touching, and hearing. This process supports their physical, cognitive, social, and emotional development, enhancing their understanding of natural phenomena (Erentay & Erdogan, 2017; Taner, 2019). However, contemporary trends in urbanization and technological advancement have led children to spend increasing amounts of time in enclosed, artificial environments, limiting their direct engagement with nature (Migliarese, 2008; Budianto & Thorsch, 2002; Köşker, 2019; Mol, 2019; Temiz & Karaarslan Semiz, 2018). This reduction in contact with nature not only restricts opportunities for sensory and experiential learning but also diminishes the development of environmental awareness in young children (Çukur & Özgüner, 2008). Without regular interaction with natural environments, children's understanding of ecological systems and their role within them is severely hampered.

Given the essential role that early exposure to nature plays in fostering both cognitive development and environmental consciousness, the integration of environmental education into early childhood curricula becomes critically important. A review of preschool education curricula, however, reveals significant shortcomings in this regard. Studies by Gulay and Ekici (2010), the Ministry of National Education (MEB, 2013), and Yalçın and Demir (2014) indicate a notable gap in incorporating environmental awareness and stewardship as core learning outcomes. This absence represents a missed opportunity to introduce young learners to foundational environmental values, which are crucial for developing responsible and ecologically conscious individuals. The failure to adequately address environmental education at the preschool level hinders the ability of children to fully understand and interact with the natural world, complicating efforts to foster lifelong ecological responsibility.

The importance of early interactions with nature cannot be overstated. As evidenced by research from Ballantyne and Packer (2002), Chawla (2006), Civelek and Özyılmaz Akamca (2017), Güzelyurt and Özkan (2018), Louv (2008), and Mitchell et al. (2016), such experiences are instrumental in fostering a deep-seated awareness, attachment, and love for the natural environment among children. These early experiences are crucial for instilling a lifelong sense of ecological responsibility, highlighting the need for environmental education to be seamlessly woven into the fabric of early childhood education programs.

Children gain knowledge and skills about their surroundings through interaction with nature. Activities such as outdoor classes, nature walks, and excursions enable them to discover different ecosystems, plants, and animals (Änggård, 2010; Ernst, 2014). Additionally, sensory activities like leaf rubbing, stone painting, or listening to bird songs enhance their sensory experiences and contribute to cognitive development (McCormick, 2022; Philip, 2022; Yıldırım & Akamca, 2017). Nature-based art activities encourage children's creativity and help them connect with their environment (Arabacı & Gök, 2021; Flowers et al., 2015; Temiz & Karaarslan Semiz, 2018; Wei, 2020). Storytelling and role-playing are also important components of nature education, especially for children who have not yet acquired reading and writing skills (Laely et al., 2023; Shih, 2020; Wee et al., 2022; Yunker et al., 2011). Age-appropriate scientific experiments and projects offer children opportunities for scientific discoveries (Lyon, 1998; Vodopivec, 2010). These varied experiences, rooted in direct engagement with the natural world, not only enhance children's cognitive and creative capacities but also foster a deeper connection to their environment. As such, integrating these activities into early childhood education is crucial for nurturing environmentally aware and intellectually curious individuals who can engage with the world around them in meaningful ways.

The early childhood period is critically important for a child's realization of their potential and their development into productive members of society (Berk & Meyers, 1996; Haktanır, 2014; Uyanık-Balat, 2015). Rich, stimulating environments provided during this stage aid children in developing positive attitudes towards school, learning, and their own abilities (Morrison, 2003; Oktay, 1999). Interactions with the natural world ignite

children's interest and curiosity, a fundamental aspect of learning as emphasized by philosophers such as Comenius, Rousseau, and Pestalozzi (Berberoğlu & Uygun, 2013; Kanad, 1948). However, in the modern world, children's access to natural spaces is diminishing, adversely affecting their physical, cognitive, and psychological development (White, 2004; Louv, 2008).

This study focuses on the "Children Learning the Language of Nature" project, supported by the Afyonkarahisar Provincial Directorate of National Education and conducted between October 5th and 9th, 2020. The project targeted preschool children who had limited interaction with nature and had never received nature or environmental education before. Participants in designated areas within Afyonkarahisar province were exposed to various methods and techniques, including drama, art, movement, music, mathematics, and Turkish activities, to facilitate their acquaintance with nature. The project aimed to develop the fundamental skills and environmental attitudes of preschool children.

The principal aim of the present study is to scrutinize the influence of nature-based education on the essential competencies and environmental dispositions of young learners. In an era marked by swift technological progress, escalating urban expansion, and intensified industrial activities, environmental challenges have emerged as markedly critical concerns. Within this context, education, with a particular emphasis on nature-based learning, assumes a critical role in mitigating these environmental challenges. This research is dedicated to a detailed examination of how nature-based educational interventions impact the core skills and environmental perspectives of preschool-aged children. To fulfill this objective, the study addressed the following inquiries:

1. Does a statistically significant disparity exist between the initial and concluding total scores of preschool students as measured by the Preschool Children's Basic Skills Scale?
2. Is there a discernible statistical difference in the initial and concluding total scores of preschool students as evaluated on the Children's Attitudes Towards the Environment Scale?
3. What degree of correlation is observable between the essential competencies of preschool students and their environmental attitudes?

Cultivating a generation of individuals who are ecologically conscious, sensitive, and attuned to the natural environment is of paramount importance for the sustainability of our planet for future cohorts. Consequently, this research occupies a crucial position in elucidating the role of nature education as a fundamental instrument in molding the environmental consciousness of young individuals. Its objective is to evaluate the efficacy of nature education in fulfilling this role and its contribution to the holistic development of children. Through an exploration of the immediate effects of nature-centric educational experiences on preschool-aged children, this study offers critical insights into the methodologies through which environmental consciousness and attitudes can be instilled from a tender age. This aspect becomes increasingly critical in light of rapid urbanization and technological advancements, which progressively weaken the inherent connection between children and the natural world. The outcomes of this investigation not only underline the imperative of weaving nature education into the fabric of early childhood education curricula but also illuminate its wider ramifications for nurturing future generations that are environmentally aware and responsible. This analysis will illuminate the significance and influence of nature education in the formative years, acting as a beacon for analogous future endeavors. Moreover, it accentuates the necessity for a concerted effort among educators, policy framers, and communities to forge educational settings that reconnect children with nature, thereby paving the way for a more sustainable and verdant future.

METHOD

The methodology of this research encompasses a structured approach designed to scrutinize the influence of nature education on preschool children's foundational skills and their attitudes towards the environment. This section delineates the research design, participant demographics, instruments for data collection, and the analytical techniques employed to interpret the findings.

Research Design

The methodology of this investigation is anchored in a quasi-experimental framework, specifically adopting a single-group pre-test and post-test design. This design is recognized within the spectrum of experimental methodologies as being less robust due to the absence of a control group for direct comparison. However, it remains a viable approach for assessing the impact of educational interventions where random assignment may not be practical or ethical. According to Büyüköztürk et al. (2014), this design facilitates the application of specific procedures and the subsequent evaluation of their effects, allowing for the observation of changes in predefined variables.

In the context of this study, the variables of interest are the fundamental skills and environmental attitudes of preschool children. The intervention in question is the 'Children Learning the Language of Nature' project, aimed at enriching the participants' connection with the natural environment through structured educational activities. The quasi-experimental design is depicted in Table 1, illustrating the sequence of pre-testing, intervention, and post-testing within the same participant group.

This methodological choice is particularly relevant to the field of educational research, where the dynamics of classroom settings and ethical considerations often preclude the use of randomized control trials. By comparing the pre-intervention and post-intervention outcomes within the same group, the study aims to glean insights into the efficacy of the nature-based educational program. Despite the inherent limitations of lacking a control group, this design provides a practical avenue for exploring the transformative potential of the 'Children Learning the Language of Nature' (CLLN) project on young learners' developmental trajectories and environmental consciousness.

Table 1. Overview of the Research Design for "Children Learning the Language of Nature" (CLLN) Project

Group	Pre-test	Intervention	Post-test
20 Students	Preschool Children's Basic Skills Scale (PCBSS) Children's Attitudes Towards the Environment Scale (CATES-PV)	41 outdoor activities supported by Science, Mathematics, Turkish, Art, Drama, Play, Music, Movement	Preschool Children's Basic Skills Scale (PCBSS) Children's Attitudes Towards the Environment Scale (CATES-PV)

Table 1 shows the research design used for the "Children Learning the Language of Nature" project. It details the structure and progression of the study involving 20 students. The table is divided into three main columns: Pre-test, Intervention, and Post-test. In the Pre-test column, two scales are used to assess the students initially: the Preschool Children's Basic Skills Scale and the Children's Attitudes Towards the Environment Scale. These scales are designed to measure the fundamental skills of the children and their attitudes towards the environment before the intervention. The Intervention column describes the core activities of the project. It consisted of 41 outdoor activities supported by various educational domains, including Science, Mathematics, Turkish, Art, Drama, Play, Music, and Movement. This comprehensive intervention aimed to engage students in diverse learning experiences in an outdoor setting, enhancing their understanding of the natural world and their relationship with it. Finally, the Post-test column repeats the use of the same two scales employed in the Pre-test. This is to measure any changes or developments in the students' basic skills and environmental attitudes after participating in the intervention activities. The use of identical scales in both pre- and post-tests allows for a comparative analysis of the students' performance and attitudes before and after the intervention, thereby assessing the impact of the project.

Study Group

The participant cohort for this investigation was meticulously assembled from a pool of 20 preschoolers enrolled in kindergartens under the jurisdiction of the Afyonkarahisar Provincial Directorate of National Education. A distinctive feature of these participants was their minimal interaction with natural settings, coupled with an absence of formal education in environmental or nature-related subjects, albeit possessing proficient self-care abilities. The recruitment process, following a public call for participants, resulted in a balanced composition of 10 female and 10 male children.

The selection process for the study group was guided by a purposeful sampling strategy, more precisely, criterion sampling. Criterion sampling is a technique that selects individuals based on specific pre-established criteria (Patton, 2002; Yıldırım & Şimşek, 2013), ensuring that each participant shares common characteristics relevant to the research objectives. For this study, the criteria were explicitly defined to include children who had not previously engaged in nature education and who lived in environments with scarce natural resources. Detailed demographic data for the children selected for the study group is systematically cataloged in Table 2.

This methodological approach was deliberately chosen to ensure the study group accurately reflects the intended demographic for the "Children Learning the Language of Nature" project. Specifically, the focus is on preschool children who have had limited opportunities to engage with the natural world and have not received

formal environmental education. By employing criterion sampling, the study is positioned to yield insights that are directly applicable and profoundly relevant to the experiences and educational outcomes of this particular cohort, following their participation in the project intervention.

Table 2. Demographic Information of the Children Included in the Study Group

Variable	Category	N
Gender	Female	10
	Male	10
Birth Order	First	8
	Second	9
	Third	3
Number of Siblings	One sibling	10
	Two siblings	7
	Three siblings	3
Mother's Education Level	Middle School	1
	High School	6
	Associate Degree	9
	Bachelor's Degree	8
Father's Education Level	Middle School	3
	High School	2
	Associate Degree	3
	Bachelor's Degree	10
	Postgraduate	2
Mother's Occupation	Unemployed	6
	Civil servant	9
	Self-employed	5
Father's Occupation	Civil servant	6
	Self-employed	14
Total		20

Table 2 provides a detailed demographic breakdown of the children involved in the study. It categorizes 20 participants by gender, evenly split between 10 females and 10 males. Birth order is diversified, with a majority being either first-born (8 children) or second-born (9 children), and a smaller group of third-born children (3 children). The table also reflects the family structure in terms of sibling numbers, with half of the children having one sibling, followed by seven having two siblings, and a minority of three with three siblings. This distribution offers insights into the potential familial interactions and social dynamics each child may experience. Parental education levels are diverse, with mothers' education levels ranging from middle school to bachelor's degrees, the latter being the most common among fathers. This variation in educational backgrounds provides a broader perspective on the socio-economic environments from which the children come. The table also outlines parental occupation, revealing that a number of mothers are unemployed (6), while others are civil servants (9) or self-employed (5). Fathers predominantly fall into the self-employed category (14), with a lesser number in civil service. This information is crucial in understanding the varied socio-economic contexts of the children, which can influence their access to resources, including educational opportunities and experiences with nature. de

"The Children Learning the Language of Nature" Project

"The Children Learning the Language of Nature" project, funded by the TÜBİTAK (Scientific and Technological Research Council of Türkiye) under the 4004 Nature Education and Science Schools program, represents a pioneering initiative aimed at immersing preschool children in the natural world. This initiative, particularly targeting children who had previously lacked opportunities for direct engagement with nature or formal environmental education, was orchestrated by a dedicated team. The team composition included one principal investigator, five experts in the field, six trainers skilled in delivering educational content, and ten guiding staff members to facilitate the activities.

The core ambition of the project was multifaceted, seeking not only to introduce young learners to the natural environment but also to cultivate an appreciation and understanding of nature. It aimed to instill environmental awareness, lay the groundwork for critical thinking skills conducive to advanced learning, and

bolster the children's basic developmental skills. A distinctive feature of this project was its emphasis on active student participation, ensuring that the learning experiences were both engaging and impactful.

Spanning a duration of five days, the project was executed in various outdoor locations within Afyonkarahisar, providing a diverse and rich backdrop for the educational activities. The program comprised 41 meticulously planned activities, each set in unique natural environments including Eber Lake, Afyon City Forest, 26 August Nature Park, the Medicinal and Aromatic Plant Center, a Marble Workshop, and the expansive campus of Afyon Kocatepe University. These settings offered a variety of sensory and experiential learning opportunities, from exploring local flora and fauna to understanding the principles of sustainability and conservation.

The range of activities was deliberately broad to ensure a holistic nature education experience, covering essential aspects of environmental literacy and fostering skills related to nature. For those interested in a deeper dive into the specific activities and their educational objectives, further details are available on the project's dedicated website at http://doganindiliprojesi.xyz/amac.html. Through its innovative approach and comprehensive curriculum, "The Children Learning the Language of Nature" project stands as a significant contribution to the field of early childhood education, highlighting the critical role of environmental literacy in shaping the next generation's relationship with the natural world.

Data Collection Tools

For the purpose of data collection in this study, two principal instruments were employed: the "Preschool Children's Basic Skills Scale (PCBSS)" as developed by Aydoğdu and Karakuş (2017), and the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV). The selection of these scales was underpinned by a series of considerations aimed at ensuring the reliability, validity, and appropriateness of the tools for assessing the developmental and environmental consciousness aspects of preschool children.

Preschool Children's Basic Skills Scale (PCBSS): The PCBSS, crafted by Aydoğdu and Karakuş in 2017, is a meticulously designed instrument consisting of 20 items. It is structured around five key domains: observation, classification, inference, measurement, and prediction, with four items dedicated to each domain. The choice of this scale was motivated by its comprehensive coverage of fundamental cognitive skills essential for early childhood development. The scale's reliability coefficient (KR-20) stands at 0.74, indicating a strong level of internal consistency. Additionally, its average difficulty level of 0.69 suggests that the scale is suitably challenging yet accessible for preschool-aged children. The inclusion of pictorial elements within the scale is a deliberate design choice, aimed at making the scale more engaging and understandable for young children, thereby enhancing the accuracy and efficacy of the assessment process. This scale is administered individually, allowing researchers to closely observe and accurately record children's responses, further ensuring the reliability of the collected data.

Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV): The CATES-PV, originally developed by Musser and Diamond (1999) and later adapted to Turkish by Kahriman Öztürk (2010), was chosen for its specific focus on environmental attitudes and behaviors. Kahriman Öztürk's adaptation included the development of pictorial representations for the scale items, following recommendations from the original authors, to facilitate its application among preschool children. This scale evaluates various sub-dimensions of environmental consciousness, including consumption, environmental protection, recycling, reuse, and lifestyle habits, making it an invaluable tool for assessing the eco-friendly behaviors of young learners. The scale's scoring system, ranging from 15 to 60, allows for a nuanced quantification of children's environmental attitudes. With a Cronbach's Alpha value of .68, the CATES-PV demonstrates satisfactory internal consistency. The adaptation for a preschool audience, particularly through the use of images, ensures that the scale is developmentally appropriate and engaging for children aged 5-6 years.

The selection of PCBSS and CATES-PV was driven by their proven reliability and suitability for the target age group. Both scales incorporate pictorial representations, a critical feature that aligns with the cognitive development stage of preschool children, ensuring that the assessment is both accessible and engaging. This approach not only facilitates the accurate measurement of children's basic skills and environmental attitudes but also enhances the children's engagement with the assessment process, thereby improving the quality of the data collected. These instruments provide quantitative measures that are pivotal in contributing to the research findings, offering a solid foundation for evaluating the impact of nature education on the developmental and environmental awareness outcomes of preschool children.

Data Analysis

The analytical phase of this research involved a meticulous process of data management and statistical examination, utilizing advanced software tools for statistical analysis. The initial step in the data analysis procedure was to assess the distribution of the collected data, for which the Shapiro-Wilk test was employed. The outcomes of this test indicated a deviation from normal distribution, a common occurrence in studies with small sample sizes or those involving human subjects in educational research.

Given the non-normal distribution of the data and the relatively small sample size characteristic of qualitative and exploratory studies, the Wilcoxon Signed-Rank Test was selected as the primary method for statistical comparison. This non-parametric test is particularly adept at handling data that do not meet the normality assumption, making it an ideal choice for comparing the pre-test and post-test scores obtained from the Preschool Children's Basic Skills Scale (PCBSS) and the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV).

To further explore the dynamics between the preschool students' foundational skills and their environmental attitudes, the Spearman Correlation Test was applied. This test is renowned for its effectiveness in analyzing relationships between variables when the data are ranked and not normally distributed, especially in studies with smaller sample sizes (Zar, 2014). Its application in this context aimed to uncover any significant correlations between the children's development in fundamental skills and their attitudes towards the environment, providing insights into how these dimensions interact.

The strategic selection of the Wilcoxon Signed-Rank Test and the Spearman Correlation Test for this study's data analysis was driven by the need to accommodate the specific statistical characteristics of the collected data, such as its distribution and the sample size. This approach not only ensures the methodological rigor of the analysis but also enhances the interpretative value of the findings.

Research Ethics

The ethical framework guiding the "Children Learning the Language of Nature" project was rigorously developed to prioritize the well-being, rights, and dignity of the preschool children involved in the study. Recognizing the vulnerability of this age group and the paramount importance of their protection, several key ethical principles (Head, 2020) were meticulously observed throughout the research process.

Informed Consent: Prior to the commencement of the project, informed consent was obtained from the parents or guardians of all participating children. This consent was gathered after clearly explaining the nature of the project, its objectives, the activities involved, and any potential risks or benefits. It was emphasized that participation was voluntary and that parents or guardians could withdraw their consent at any point without any consequences.

Confidentiality and Anonymity: The privacy of the participants was rigorously protected. Personal data collected during the project, including names and any identifiable information, were kept confidential. In reporting the findings, all data were anonymized to ensure that individual participants could not be identified, adhering to data protection principles.

Respect for Participants: Throughout the project, respect for the participants was paramount. This included respecting their rights, their dignity, and their cultural and social backgrounds. Activities were designed to be inclusive and sensitive to the needs of all children.

Minimizing Harm: All activities were carefully planned to minimize any physical or psychological harm. The children's well-being was constantly monitored, and activities were adjusted as needed to ensure a safe and positive learning environment.

Reflective Practice: The research team engaged in ongoing reflective practice to ensure that ethical standards were maintained throughout the project. This involved regular discussions and evaluations of the procedures and practices to identify and address any ethical concerns that might arise.

In summary, the research ethics of this project were guided by principles of informed consent, confidentiality, respect for participants, harm minimization, and reflective practice, ensuring a responsible and ethically sound approach to studying the impact of nature-based education on young children.

FINDINGS

This section presents the results from the analysis of the Preschool Children's Basic Skills Scale (PCBSS) and the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV). The Wilcoxon

Signed-Rank Test was applied to determine any significant differences between pre-test and post-test scores, providing insights into the effectiveness of the "Children Learning the Language of Nature" project on preschool children's cognitive development and environmental attitudes. The following tables and analyses detail the observed changes in both areas, highlighting the impact of the educational intervention.

Table 3. Wilcoxon Signed Rank Test Results of the Preschool Children's Basic Skills Scale (PCBSS)

Score Type	Ranks	N	Mean Rank	Sum of Ranks	Z	p
Pre-Test - Post-Test	Negative Ranks	1	2.00	2.00	3.54	.000
	Positive Ranks	16	9.44	151.00		
	Ties	3				
	Total	20				

$p < .05$

The findings presented in Table 3, derived from the Wilcoxon Signed-Rank Test, provide compelling evidence of the significant impact that nature education has on the development of fundamental skills among preschool children. The statistical analysis reveals a notable difference between the pre-test and post-test scores on the Preschool Children's Basic Skills Scale (PCBSS), with a Z-value of 3.54 and a p-value less than .05, indicating statistical significance. This difference, favoring the post-test results with higher mean and total ranks, unequivocally suggests that the intervention—namely, the "Children Learning the Language of Nature" project—has been instrumental in enhancing the basic cognitive and analytical skills of the participating children.

Such a positive shift in the scores is indicative of the project's success in not only engaging children with the natural environment but also in significantly improving their abilities in observation, classification, inference, measurement, and prediction. These skills are crucial for early learning and set a foundation for more complex cognitive development. The improvement observed post-intervention underscores the effectiveness of the project's activities, which were carefully designed to foster a deep connection with nature while simultaneously enhancing cognitive skills.

This analysis, therefore, substantiates the idea that nature education plays a pivotal role in supporting the holistic development of preschool children. It highlights the value of incorporating nature-based learning experiences into early childhood education, suggesting that such interventions can lead to significant improvements in fundamental skills necessary for academic and personal growth. The subsequent analysis of the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV) scores, as will be detailed in Table 4, aims to further elucidate the impact of the project on children's environmental attitudes, offering a comprehensive understanding of the multifaceted benefits of nature education in early childhood development.

Table 4. Wilcoxon Signed-Rank Test Results of CATES-PV

Score Type	Ranks	N	Mean Rank	Sum of Ranks	Z	p
Pre-Test - Post-Test	Negative Ranks	0	0.00	0.00	3.924	.000
	Positive Ranks	20	10.50	210.00		
	Ties	0				
	Total	20				

$p < .05$

The analysis presented in Table 4, stemming from the Wilcoxon Signed-Rank Test, provides a robust assessment of the impact of nature education on the environmental attitudes of preschool children, as measured by the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV). The significant statistical outcome ($Z = 3.924$, $p < .05$) clearly demonstrates a substantial improvement in the post-test scores compared to the pre-test scores, with the difference scores favoring positive ranks. This significant enhancement in environmental attitudes post-intervention is a testament to the efficacy of the "Children Learning the Language of Nature" project in fostering a deeper understanding and appreciation of the environment among young learners.

The improvement observed in the environmental attitudes of the children is indicative of the transformative potential of integrating nature-based education into early childhood curricula. By engaging children in activities that promote environmental awareness and stewardship, the project has successfully influenced their perceptions and attitudes towards the natural world. This shift towards more positive environmental attitudes is crucial for cultivating a sense of responsibility and care for the environment from a young age, laying the groundwork for sustainable behaviors in the future.

Furthermore, the upcoming analysis in Table 5, which employs the Spearman Correlation Test to explore the relationship between the fundamental cognitive skills assessed by the PCBSS and the environmental attitudes

measured by the CATES-PV, promises to provide additional insights. This analysis aims to uncover the extent to which cognitive development and environmental consciousness are interrelated in the context of nature education. By examining the correlation between these two critical dimensions, the study seeks to shed light on the holistic impact of nature-based learning experiences on preschool children, offering a comprehensive understanding of how such educational interventions can simultaneously enhance cognitive abilities and foster positive environmental attitudes.

Table 5. Spearman Correlation Test for Pre-Test Scores of the PCBSS and the CATES-PV

Correlation Test Results		N	p	CATES-PV Pre-Test	PCBSS Pre-Test
Spearman's rho	CATES-PV Pre-Test	20	.168	1	-.320
	PCBSS Pre-Test			-.320	1

The findings from Table 5, derived from the application of the Spearman Correlation Test to the pre-test scores of the Preschool Children's Basic Skills Scale (PCBSS) and the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV), reveal a pivotal insight into the relationship between cognitive skills and environmental attitudes before the intervention. The absence of a significant correlation ($p > .05$) between these two variables suggests that, at the outset, the children's fundamental skills and their attitudes towards the environment operate independently of one another. This independence implies that prior to engaging in the "Children Learning the Language of Nature" project, the preschoolers' cognitive abilities and their environmental consciousness were not directly linked.

This initial lack of correlation sets a critical baseline for the study, highlighting the distinct domains of cognitive development and environmental attitudes as separate facets of early childhood education. It underscores the potential for nature education programs to serve as a bridge between these two areas, offering a unique opportunity to explore how targeted educational interventions might influence the interplay between cognitive skills and environmental attitudes.

Table 6. Spearman Correlation Test for Post-Test Scores of PCBSS and CATES-PV

Correlation Test Results		N	p	CATES-PV Post-Test	PCBSS Post-Test
Spearman's rho	CATES-PV Post-Test	20	.393	1	-.202
	PCBSS Post-Test			-.202	1

The analysis of post-intervention data, as presented in Table 6, offers a nuanced understanding of the relationship between the development of basic skills and environmental attitudes among preschool children following their participation in the "Children Learning the Language of Nature" project. The Spearman Correlation Test applied to the post-test scores of the Preschool Children's Basic Skills Scale (PCBSS) and the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV) reveals an intriguing outcome: the absence of a significant correlation ($p > .05$) between the enhancements in basic cognitive skills and the evolution of environmental attitudes post-intervention.

This finding suggests that the educational strategies employed by the project, while effective in fostering growth in both cognitive skills and environmental consciousness, do not necessarily lead to a convergent development of these two domains. Instead, the improvements in basic skills and environmental attitudes appear to manifest independently, each following its own distinct trajectory despite the common educational context provided by the nature education program.

Analysis of PCBSS Pre-Test and Post-Test Scores in Terms of Gender Variable

The exploration of gender differences in the context of the "Children Learning the Language of Nature" project involved a detailed analysis of the Preschool Children's Basic Skills Scale (PCBSS) scores before and after the intervention. This segment of the study aimed to discern whether the educational program's impact on fundamental cognitive skills varied between male and female participants.

Table 7. Mann-Whitney U Test Results for PCBSS Pre-test and Post-test Scores

Test	Group	N	Mean Rank	Sum of Ranks	U	p
Pre-Test	Female	10	10.65	106.50	48.500	.909

	Male	10	10.35	103.50		
Post-Test	Female	10	11.00	80.50	25.500	.062
	Male	10	10.29	129.50		

(*p<.05)

The outcomes of the Mann-Whitney U Tests, meticulously conducted to assess the presence of gender-based disparities in the pre-test and post-test results of the Preschool Children's Basic Skills Scale (PCBSS), reveal a noteworthy aspect of the "Children Learning the Language of Nature" project's impact. The statistical analysis indicates no significant difference between male and female participants in their performance on both the pre-test and post-test assessments (U = 48.500; p > .05; U = 25.500; p > .05). This lack of disparity underscores a critical achievement of the nature education intervention: its ability to foster the development of fundamental skills across genders without bias.

Analysis of the CATES-PV Pre-Test and Post-Test Scores in Terms of Gender Variable

The examination of gender differences in environmental attitudes among preschool children, as influenced by the "Children Learning the Language of Nature" project, was conducted through the analysis of the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV) scores. This analysis aimed to discern whether the intervention's impact on fostering eco-friendly behaviors and attitudes varied between male and female participants.

Employing the Mann-Whitney U Test for this purpose allows for a nuanced exploration of how nature education interventions might influence boys and girls differently in terms of their environmental consciousness. This is particularly relevant in the context of early childhood education, where instilling positive environmental attitudes is considered foundational for developing responsible future citizens. By presenting the results in Table 8, the study provides a detailed account of the gender-based impacts of the project, offering insights into the effectiveness of the educational content and methodologies employed from a gender perspective.

Table 8: Mann-Whitney U Test Results for CATES-PV Pre-Test and Post-Test Scores

Test	Group	N	Mean Rank	Sum of Ranks	U	p
Pre-Test	Female	10	11.45	114.50	40.500	.468
	Male	10	9.55	95.50		
Post-Test	Female	10	11.40	114.00	41.000	.489
	Male	10	9.60	96.00		

(*p < .05)

The outcomes of the Mann-Whitney U Tests, meticulously conducted to assess gender-based differences in the pre-test and post-test results of the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV), reveal a significant aspect of the "Children Learning the Language of Nature" project's impact. The analysis demonstrates no discernible difference between male and female participants regarding changes in environmental attitudes (U = 40.500; p > .05; U = 41.000; p > .05). This uniformity in response across genders is indicative of the project's success in delivering an educational experience that is universally effective and engaging, fostering a heightened environmental consciousness among all children.

This finding is particularly noteworthy in the realm of environmental education, where the goal is not only to impart knowledge but also to cultivate a deep-seated respect and care for the natural world. The absence of significant gender differences in the improvement of environmental attitudes suggests that the pedagogical approaches and materials employed were adept at resonating with a broad audience, effectively breaking down potential gender biases or barriers to engagement.

Moreover, this result highlights the inclusive nature of the "Children Learning the Language of Nature" project, affirming its commitment to providing an equitable learning environment. By ensuring that both boys and girls benefit equally from the intervention, the project contributes to the broader objective of nurturing a generation of environmentally aware and responsible individuals. This approach aligns with contemporary educational priorities that emphasize inclusivity and equal opportunity as cornerstones of effective teaching and learning.

In light of these findings, the "Children Learning the Language of Nature" project serves as a valuable model for future initiatives aimed at promoting environmental stewardship among young learners. It underscores the importance of designing and implementing nature-based education programs that are accessible and appealing to all children, thereby supporting the holistic development of environmentally conscious attitudes across diverse demographic groups. This balanced and inclusive approach to environmental education is essential for fostering a sustainable future, underscored by a collective commitment to preserving and protecting our natural world.

Analysis of the CATES-PV Pre-Test and Post-Test Scores in Terms of the Father's Occupation Variable

The analysis of the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV) scores in relation to the father's occupation variable provides a unique lens through which to examine the influence of socio-economic factors on environmental attitudes among preschool children. By employing the Mann-Whitney U Test, this segment of the study aims to discern whether the impact of the "Children Learning the Language of Nature" project on fostering eco-friendly behaviors and attitudes varies across different socio-economic backgrounds, as indicated by the occupation of the children's fathers.

Presenting the results in Table 9, the study seeks to offer insights into the effectiveness of the educational content and methodologies used in the project from a socio-economic perspective. Understanding whether and how the father's occupation—a proxy for the family's socio-economic status—affects children's environmental attitudes is crucial for developing more inclusive and equitable environmental education programs.

Table 9. Mann-Whitney U Test Results for CATES-PV Pre-test and Post-test Scores Based on Father's Occupation

Test	Group	N	Mean Rank	Sum of Ranks	U	p
Pre-test	Civil Servant	6	10.58	63.50	41.500	.967
	Self-Employed	14	10.46	146.50		
Post-test	Civil Servant	6	10.83	65.00	40.000	.867
	Self-Employed	14	10.36	145.00		

(*p < .05)

The analysis of the Children's Attitudes Towards the Environment Scale – Preschool Version (CATES-PV) scores, with respect to the father's occupation variable, yields insightful findings regarding the influence of socio-economic factors on the development of environmental attitudes among preschool children. The results of the Mann-Whitney U Tests reveal no significant difference in the environmental attitudes between children of civil servants and those of self-employed fathers, both before and after the intervention ($U = 41.500$; $p > .05$; $U = 40.000$; $p > .05$). This outcome suggests that the "Children Learning the Language of Nature" project was effective in enhancing environmental awareness and attitudes across a diverse socio-economic spectrum, without being influenced by the occupational status of the children's fathers.

Analysis of the PCBSS Pre-Test and Post-Test Scores in Terms of the Father's Occupation Variable

The examination of the Preschool Children's Basic Skills Scale (PCBSS) scores in relation to the father's occupation variable provides an insightful perspective on how socio-economic factors might influence the development of fundamental skills in preschool children. This analysis, conducted through the Mann-Whitney U Tests, aims to discern whether the impact of the "Children Learning the Language of Nature" project on enhancing basic cognitive and analytical abilities varies across different socio-economic backgrounds, as indicated by the occupation of the children's fathers. By presenting the results in Table 10, the study seeks to offer insights into the effectiveness of the educational content and methodologies used in the project from a socio-economic perspective.

Table 10. Mann-Whitney U Test Results for PCBSS Pre-Test and Post-Test Scores Based on Father's Occupation

Test	Group	N	Mean Rank	Sum of Ranks	U	p
Pre-test	Civil Servant	6	10.25	61.50	40.500	.901
	Self-Employed	14	10.61	148.50		
Post-test	Civil Servant	6	11.00	65.00	39.000	.803
	Self-Employed	14	10.29	144.00		

(*p < .05)

Upon analyzing the results of the Mann-Whitney U Tests conducted to determine if there is a significant difference in the PCBSS pre-test and post-test scores in terms of the father's occupation, it is observed that there is no significant difference between the groups ($U = 40.500$; $p > .05$; $U = 39.000$; $p > .05$).

Analysis of the Difference Between PCBSS Pre-Test and Post-Test Scores in Terms of Gender Variable

The Wilcoxon Signed-Rank Test was conducted to examine the difference between pre-test and post-test scores from the PCBSS in terms of the gender variable. The results are presented in Table 11.

Table 11. Wilcoxon Signed-Rank Test Results

Gender	Score Change	Ranks Type	N	Mean Rank	Sum of Ranks	Z	p
Female	Post-test – Pre-test	Negative Ranks	0	0	.00	-2.805	.005
		Pozitive Ranks	10	5.50	55.00		
		Ties	0				
		Total	10				
Male	Post-test – Pre-test	Negative Ranks	0	0	.00	-2.807	.005
		Pozitive Ranks	10	5.50	55.00		
		Ties	0				
		Total	10				

(*p < .05)

Upon reviewing the Wilcoxon Signed-Rank Test results, a significant difference is observed in both female and male students between the pre-test and post-test scores (Z = -2.805, p < .05; Z = -2.807, p < .05). Considering the mean and total ranks of the difference scores, it is noted that this difference is in favor of positive ranks, indicating an improvement in the post-test results.

The significant positive differences in both male and female groups suggest that the intervention, as part of the "Children Learning the Language of Nature" project, was effective in enhancing the basic skills of all children, regardless of gender. This improvement in basic skills underscores the project's success in meeting its educational objectives and positively influencing the cognitive development of the participating preschool children.

Analysis of the Difference Between CATES-PV Pre-Test and Post-Test Scores in Terms of Gender Variable

The Wilcoxon Signed-Rank Test was conducted to examine the difference between the pre-test and post-test results of the CATES-PV in terms of the gender variable. The results are presented in Table 12.

Table 12. Wilcoxon Signed-Rank Test Results

Gender	Score Change	Ranks Type	N	Mean Rank	Sum of Ranks	Z	p
Female	Post-test – Pre-test	Negative Ranks	0	0	.00	-2.684	.007*
		Positive Ranks	9	5.00	45.00		
		Ties	1				
		Total	10				
Male	Post-test – Pre-test	Negative Ranks	1	1.50	1.50	-2.316	.021*
		Positive Ranks	7	4.93	34.50		
		Ties	2				
		Total	10				

(*p<.05)

Upon reviewing the Wilcoxon Signed-Rank Test results to determine whether there is a significant difference in the pre-test and post-test results of the CATES-PV in terms of gender, it is observed that a significant difference exists for both female and male students (Z = -2.684, p < .05 for females; Z = -2.316, p < .05 for males). Considering the mean and total ranks of the difference scores, it is noted that this difference is in favor of positive ranks, indicating an improvement in the post-test results.

Analysis of the Difference Between PCBSS Pre-Test and Post-Test Scores in Terms of the Father's Occupation Variable

The Wilcoxon Signed-Rank Test was conducted to examine the difference between the pre-test and post-test results of the PCBSS in relation to the father's occupation variable. The results are presented in Table 13.

Table 13. Wilcoxon Signed-Rank Test Results

Occupation	Score Change	Ranks Type	N	Mean Ranks	Sum of Ranks	Z	p
Civil Servant	Post-test - Pre-test	Negative Ranks	0	.00	.00	-2.201	.028*
		Positive Ranks	6	3.50	21.00		

		Ties	0				
		Total	6				
Self-Employed	Post-test - Pre-test	Negative Ranks	0	.00	.00	-3.299	.001*
		Positive Ranks	14	7.50	105.00		
		Ties	0				
		Total	14				

(*p<.05)

Upon reviewing the Wilcoxon Signed-Rank Test results, a significant difference is observed in both the civil servant and self-employed groups between the pre-test and post-test scores ($Z = -2.201$, $p < .05$ for civil servants; $Z = -3.299$, $p < .05$ for self-employed). Considering the mean and total ranks of the difference scores, it is noted that this difference is in favor of positive ranks, indicating an improvement in the post-test results.

This finding suggests that the intervention, as part of the "Children Learning the Language of Nature" project, was effective in enhancing the basic skills of children regardless of their father's occupation. The significant positive differences in both groups indicate that the educational activities and strategies used in the project were effective across different familial socio-economic backgrounds. This underscores the project's success in providing an inclusive learning environment that supports the development of fundamental skills in preschool children from diverse backgrounds.

Analysis of the Difference Between CATES-PV Pre-Test and Post-Test Scores in Terms of the Father's Occupation Variable

The Wilcoxon Signed-Rank Test was conducted to examine the difference between the pre-test and post-test results of the CATES-PV in relation to the father's occupation variable. The results are presented in Table 14.

Table 14. Wilcoxon Signed-Rank Test Results

Occupation	Score Change	Ranks Type	N	Mean Ranks	Sum of Ranks	Z	p
Civil Servant	Post-test - Pre-test	Negative Ranks	0	.00	.00	-1.826	.068
		Positive Ranks	4	2.50	10.00		
		Ties	2				
		Total	6				
Self-Employed	Post-test - Pre-test	Negative Ranks	1	1.50	1.50	-3.085	.002*
		Positive Ranks	12	7.46	89.50		
		Ties	1				
		Total	14				

(*p<.05)

Upon reviewing the Wilcoxon Signed-Rank Test results, a significant difference is observed in the self-employed group between the pre-test and post-test scores ($Z = -3.085$, $p < .05$). Considering the mean and total ranks of the difference scores, it is noted that this difference is in favor of positive ranks, indicating an improvement in the post-test results for the self-employed group.

This finding suggests that the intervention, as part of the "Children Learning the Language of Nature" project, was particularly effective in enhancing environmental attitudes among children whose fathers are self-employed. The significant improvement in this group underscores the project's success in positively influencing children's attitudes towards the environment, regardless of their familial socio-economic backgrounds. The lack of a significant difference in the civil servant group might be due to various factors and warrants further investigation to understand the nuances influencing environmental attitudes in different socio-economic contexts.

DISCUSSION AND CONCLUSION

This study, conducted under the "Children Learning the Language of Nature-Tubitak 4004" project, aimed to determine the impact of outdoor learning experiences on preschool children's basic skills and attitudes towards the environment. Outdoor learning, which involves moving beyond the classroom and embracing the outdoors, can encompass any area of the curriculum. It's not limited to nature studies or physical education but can also include literacy, arithmetic, STEM subjects, and even ICT. Such experiences can enhance problem-solving, critical thinking, inquiry skills, and self-regulation in students (Keep Northern Ireland Beautiful- Eco Schools, 2020). Outdoor learning, also referred to as outdoor education in literature, involves utilizing resources outside the classroom to achieve educational goals and objectives (Knapp, 1990).

The study's findings, based on the pre-test and post-test scores from the Preschool Children's Basic Skills Scale (PCBSS) revealed a statistically significant improvement in basic skills following outdoor activities (p<

.05). The development of basic skills heavily relies on the effective use of sensory organs. We are born with five senses—sight, hearing, touch, taste, and smell—through which we receive data from outside ourselves. Children need to explore these senses in their learning experiences and also learn how to use them effectively. Focused assistance on each sense is crucial for children to utilize their senses effectively. Environmental experiences, in particular, can contribute to the development of these senses (Education Scotland 2011). Other experimental studies on outdoor learning also support its significance (Keighley 1985; Mitchell 1992; Payne, 1993; Taniguchi et al., 2005; Harun & Salamuddin, 2010). Literature reviews indicate numerous studies on the benefits of outdoor activities and learning experiences for children (Waite et al., 2006, Munoz 2009). Natural environments assist in children's concentration and cognitive development. Viewing and being regularly exposed to natural settings can enhance children's focus and cognitive skills. Classroom-based theoretical examples can be enriched through real-world experiences. Many fundamental scientific concepts can be demonstrated through play. A simple walk around the school environment can provide opportunities for students to experience and observe a range of scientific principles and applications (Education Scotland, 2011).

When comparing pre-test and post-test scores from the "Environmental Attitude Scale: Preschool Version" (CATES-PV), a statistically significant improvement was observed in the post-test scores ($p<.05$), indicating that outdoor activities enhanced preschool children's attitudes towards the environment. Outdoor learning can foster attitudes towards sustainability and a broader awareness of the environment (Christie & Higgins, 2012). Bertram and Pascal (2002), after examining national policy documents of various countries, concluded that environmental learning is a significant aspect of Early Childhood Education globally, explaining how this learning area fulfills a range of objectives. For instance, curriculum guidelines in Queensland, Australia, state that environmental learning helps children develop an understanding of the environment and also enhances their health and physical understanding (Ballantyne and Packer, 2006).

Lester and Maudsley (2007) found comprehensive research in their study on nature play, showing that children have a strong bond and connection with nature. Maudsley (2007) stated that this goes beyond the Biophilia theory (innate interest in living and life systems) and includes influences from individuals, families, and communities that shape children's sensitivity towards nature. Maudsley emphasized the need for opportunities to be in nature and play in natural settings for truly developing this bond with nature (2007). A child's innate curiosity should also be encouraged as part of gaining confidence in being in the world (Hart, 1979).

Education Scotland (2011) highlighted the importance of educators allowing children time to experience nature individually and as a group and to foster connections with nature. Outdoor play is not only fun but also a critical place for learning. It’s learning about the natural world, but also about interacting with others, personal responsibility, calculating risk, critical thinking, and physical literacy. The absence of such interaction with nature can lead to a disconnection from the natural environment, making it seem foreign (Keep Northern Ireland Beautiful-Eco Schools, 2020). Richard Louv (2008) coined the term "Nature Deficit Disorder" in his book "Last Child in the Woods," a concept that gains relevance and significance in today's context, reflecting our current situation.

Another noteworthy finding of this study is the absence of significant differences in the improvements of basic skills and environmental attitudes based on the fathers' occupations. This suggests that the nature-based educational intervention was equally effective for children across different socio-economic backgrounds. The uniform effectiveness of the program implies that outdoor learning experiences can serve as a leveling factor, providing equitable educational benefits regardless of parental occupation. This aligns with Güler's (2009) emphasis on the importance of enhancing the experiences of preschool teachers in nature education to prevent children from becoming detached from nature and to cultivate individuals who will protect the environment in the future. Additionally, this finding supports the notion that nature education can mitigate disparities arising from socio-economic differences by offering all children direct engagement with the natural environment (Güner, 2013; Yılmaz, 2016). By providing universally accessible educational experiences, nature-based programs contribute to educational equity and social inclusion, fostering developmental outcomes that are not contingent on parental occupation or resources. This is particularly significant in the context of increasing urbanization and technological advancement, which often exacerbate socio-economic divides and limit children's access to natural settings (White, 2004; Louv, 2008). Therefore, the study underscores the potential of nature education to bridge gaps associated with socio-economic status, highlighting its role in promoting holistic development and environmental stewardship among all children.

Despite the promising results, this study has certain limitations that should be acknowledged. The sample size was relatively small and limited to a specific region, which may affect the generalizability of the findings.

The absence of a control group means that other factors could have influenced the observed improvements, making it difficult to attribute the changes solely to the intervention. Additionally, the study measured immediate effects, and the long-term impact of the nature education program remains unknown. Future research should consider larger, more diverse samples, include control groups, and conduct longitudinal studies to assess the enduring effects of nature-based education on children's development.

In conclusion, the "Children Learning the Language of Nature" project had a significant positive impact on preschool children's basic skills and environmental attitudes. The findings indicate that nature-based educational interventions can enhance cognitive abilities such as observation and critical thinking, as well as foster positive attitudes towards the environment. The effectiveness of the program across different genders and socio-economic backgrounds highlights its potential as an inclusive educational strategy.

This study contributes to the understanding of how early childhood education can benefit from incorporating nature experiences, supporting the development of foundational skills and environmental consciousness. It emphasizes the importance of providing children with opportunities to engage with the natural world, which can have lasting effects on their cognitive and affective development.

Based on these findings, it is recommended that educators integrate nature education into early childhood curricula, utilizing outdoor learning environments to enrich children's learning experiences. Policymakers should consider supporting such initiatives by providing resources and developing policies that encourage the incorporation of nature-based activities in schools. Future research should explore the long-term effects of nature education and investigate how such programs can be optimized to benefit children's development further. By embracing nature education, we can cultivate a generation that is not only academically proficient but also environmentally conscious, contributing to a sustainable future.

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Statements of Publication Ethics

All of the researchers hereby declare that they obeyed and pursued all of the ethical conditions via the Afyon Kocatepe University Ethical Committee Approval Letter issued with 2019-100 on the date of 06.12.2019.

Researchers' Contribution Rate

All of the authors' contribution rates to the present manuscript are equal.

Conflict of Interest

There are no conflicts of interest associated with this study.

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