

Nature Exploration in the Schoolyard: Creating a Play Environment that Teaches Environmental Care to Young Children

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Abstract

Early environmental education is important for developing an environmentally conscious character. This study aims to describe the implementation of nature exploration in the schoolyard in developing environmental awareness in early childhood at RA Nawa Kartika VIII Sidolaju Widodaren Ngawi. Using a qualitative approach with a case study design, data were collected through observation, interviews, and documentation. The results of this study found that nature exploration activities in the schoolyard can increase environmental awareness and develop children's cognitive, socio-emotional, and motor skills. Direct involvement in activities such as planting, cleaning the environment, and making compost fosters a sense of responsibility from an early age. Obstacles faced can be overcome through collaboration and training. This study recommends optimal use of the schoolyard as an environment-based learning medium.

Keywords: Early childhood, nature exploration, schoolyard, environmental awareness, play-based learning.

Abstract

Environmental education from an early age is important for shaping environmentally conscious character. This research aims to describe the implementation of nature exploration in the school yard in building environmental awareness among early childhood at RA Nawa Kartika VIII Sidolaju Widodaren Ngawi. Using a qualitative approach with a case study design, data was collected through observation, interviews, and documentation. The results of this study found that nature exploration activities in the school yard were able to increase environmental awareness and develop children's cognitive, social-emotional, and motor aspects. Direct involvement in activities such as planting, cleaning the environment, and making compost fosters a sense of responsibility from an early age. The obstacles encountered can be overcome through cooperation and training. This research recommends optimal utilization of the school yard as an environment-based learning medium.

Keyword: early childhood; nature exploration; school yard; environmental awareness; play-based learning.

A. Introduction

Early childhood education has unique characteristics that distinguish it from other levels of education. At this stage, children experience rapid and fundamental development. Children's unique characteristics, such as egocentrism and intense curiosity, require special attention from teachers to effectively develop their potential (Nurmadijah 2016). Play activities are a crucial element in children's education, with an emphasis on developing language, social-emotional, physical-motor, and cognitive skills (Fitriyah et al. 2021). Suitable learning tools include audio, visual, or both, as well as media from the surrounding environment (Nurmadijah 2016).

Based on a preliminary study conducted at RA Nawa Kartika VIII Sidolaju Widodaren Ngawi, it was found that outdoor learning, particularly nature exploration in the schoolyard, is still rarely utilized optimally. Yet, the natural environment is an effective medium for instilling environmental awareness in early childhood through play-based learning (Fitriyah et al. 2021). Facing the tendency for children to easily get bored with the same play equipment for extended periods, the school environment can be utilized as a fun and educational place for nature exploration (Saraswati and Mahmudah 2018). A well-designed schoolyard functions as a living laboratory where children interact directly with nature and gain a deeper understanding of the environment (Kahar and Fadhilah 2019).

Schoolyards have great potential as open-air natural laboratories that can be integrated into the educational curriculum to foster environmental awareness in early childhood (Maulana et al. 2025). Developing natural schoolyards allows children to interact directly with various natural elements such as plants, soil, water, insects, and small animals. This learning approach develops physical and motor skills through drawing, coloring, cutting, pasting, and collage activities. Direct interaction with the natural environment helps children gain a deeper understanding of ecological concepts, life cycles, and the interrelationships between living things and their environment (Fitriyah et al. 2021).

Schoolyards can be optimized as project-based learning spaces through activities such as planting plants, making compost, and building habitats for small animals. This approach provides the dual benefits of practical and meaningful learning experiences and the development of social, collaborative, and problem-solving skills in children. Implementing nature exploration in schoolyards requires careful planning and the active participation of the entire school community, including teachers, students, parents, and staff. An important initial step is to analyze the condition of the schoolyard to identify potential and existing constraints. This analysis includes an inventory of plant and animal species, an evaluation of soil conditions and water sources, and a mapping of available facilities and infrastructure.

Based on the analysis, formulate learning objectives and measurable success indicators aligned with the curriculum and early childhood developmental needs. Design engaging, challenging, and meaningful activities by applying child-centered learning principles. To ensure the program's success, providing adequate training and guidance to teachers to effectively implement nature exploration activities is crucial. Involving parents through workshops, seminars, or field trips is also necessary to strengthen collaboration between schools and families in supporting children's learning.

Successful implementation of nature exploration activities in schoolyards requires adequate resources, including budget, equipment, and learning support materials. Picture storybooks based on crafts from plastic waste are a learning medium that provides environmental understanding while fostering children's creativity and fine motor skills. This medium was developed using an experimental and exploratory approach through interactive "touch and feel" elements and busy books with simple craft patterns that involve cutting, folding, and arranging plastic waste (ABDUH n.d.).

The implementation of nature exploration activities in school areas often faces various obstacles. One of the main challenges is limited resources, both in terms of teaching staff, budget, and available facilities (Mustika et al. 2023). Other obstacles include a lack of understanding among teachers and parents about the importance of nature-based learning. As a solution, schools can collaborate with the government, non-governmental organizations, and the private sector to support nature exploration programs. Obstacles such as a lack of understanding among teachers and parents can be overcome through outreach and training. A communicative and participatory approach is also important to ensure all parties are involved and support the program (Setiawan 2019). To address this issue, schools can collaborate with the government, non-governmental organizations, and the private sector to support nature exploration programs. Obstacles such as a lack of understanding among teachers and parents can be overcome through outreach and training. A communicative and participatory approach is also important to ensure all parties are involved and support the program (Setiawan 2019).

Careful planning is essential for effective implementation and alignment with the school's vision and mission. A school culture that supports environmental values plays a significant role in shaping students' character. Nature exploration activities in the schoolyard can introduce environmental concepts such as recycling, water conservation, and biodiversity (Nugroho and Muhroji 2022). This approach aims to transform the schoolyard into a natural laboratory that supports learning and fosters environmental awareness in preschool children through direct interaction with nature (Simatupang, Veronika, and Irfandi 2021).

Based on these problems, this study aims to describe and analyze the implementation of nature exploration activities in the schoolyard in building environmental awareness in early childhood at RA Nawa Kartika VIII Sidolaju Widodaren Ngawi. This study also aims to formulate an effective activity implementation model, involving all school elements, and identifying relevant obstacles and solutions. This study is expected to contribute to the development of an environment-based PAUD curriculum at RA Nawa Kartika VIII and other institutions, while increasing the school community's awareness of the importance of early environmental education. Thus, this study not only provides theoretical contributions but also practical solutions to improve the quality of early childhood education through the creative and meaningful use of the schoolyard.

B. Library Review

1. Characteristics of early childhood and the importance of play in learning

Early childhood is in a period of very rapid and fundamental development, so they require a different learning approach compared to other levels of education. According to Nurmadiyah (2016), early childhood has characteristics such as egocentric, active, and have a high curiosity about the surrounding environment. The learning process in early childhood occurs through direct interaction with the environment, and these experiences will strengthen their understanding of various basic concepts. Therefore, learning based on real experiences is highly recommended at this stage.

Play is an important part of early childhood learning because it is their natural way of understanding the world. Fitriyah et al. (2021) state that play activities can develop language, social-emotional, motor, and cognitive skills in a balanced manner. The use of engaging learning media such as visual, audio-visual, or materials from the surrounding environment also supports a fun and meaningful learning process (Nurmadiyah, 2016). This is important to prevent children from feeling bored and to maintain enthusiasm for learning activities.

Early childhood educators need to understand that play is not just entertainment, but

also part of a deeper learning strategy. Activities such as drawing, building blocks, or role-playing can stimulate children's mental and social development. By understanding children's characteristics and the importance of play, teachers can design more effective learning activities that are developmentally appropriate. This understanding forms the basis for designing nature exploration as part of a fun learning strategy.

2. Nature exploration as an approach to early childhood learning

Nature exploration is a learning method that allows children to interact directly with their surroundings, particularly natural elements such as soil, water, plants, and small animals. Fitriyah et al. (2021) stated that nature-based learning can foster environmental awareness and strengthen children's understanding of ecosystems. Learning through direct experience is an essential principle in early childhood education. As stated by Nurmadiyah (2016), children's understanding grows when they are actively engaged with real objects and events around them. Therefore, nature exploration provides meaningful experiences that strengthen curiosity, responsibility, and environmental awareness.

Through activities like planting, watering, or observing insects, children can learn about life processes, cause-and-effect relationships, and natural cycles. These activities strengthen children's critical thinking and observation skills. Saraswati & Mahmudah (2018) add that nature exploration activities can also be a solution to children's boredom with monotonous play equipment. Children will be more enthusiastic and motivated when learning directly in the open air.

Interaction with nature can also strengthen children's gross and fine motor skills, such as through activities such as digging, running, or touching natural textures. Furthermore, children learn life values such as responsibility and caring. By integrating nature exploration into the curriculum, educators can provide holistic and life-relevant learning experiences for children, which is crucial for developing a caring attitude toward the environment from an early age (Maulana et al. 2025).

3. Benefits of nature exploration for child development

Nature exploration in the schoolyard provides comprehensive benefits for early childhood development. Through activities such as planting, observing insects, and making compost, children improve their ability to observe, classify, and draw conclusions based on real experiences. These activities also stimulate imagination and creativity (Rosdiana & Amrullah, 2021). At the same time, children develop cooperation, confidence, independence, and environmental responsibility through group play and shared tasks (Fitriyah et al., 2021). Physical activities like digging, running, and watering plants enhance coordination and strengthen muscles, creating a holistic learning process that supports balanced cognitive, socio-emotional, and motor growth.

Exploratory activities also provide opportunities for children to build self-confidence, as they are given direct responsibility for real-world tasks. This fosters independence and a sense of responsibility from an early age. In terms of physical-motor skills, nature exploration provides children with various opportunities for active movement, such as climbing, jumping, watering plants, or stacking stones. These activities strengthen their muscle coordination and balance. Therefore, nature exploration is not only a fun activity but also a comprehensive learning strategy that supports children's overall development.

4. Obstacles in implementation and their solutions

Despite its many benefits, implementing nature exploration activities in schools often

faces technical and non-technical obstacles. Mustika et al. (2023) noted that limited teaching staff, budget, and facilities are often the main obstacles. Furthermore, a lack of understanding among teachers and parents regarding the importance of nature-based learning prevents these exploration activities from receiving optimal support (Setiawan, 2019). As a solution, training and mentoring are needed for teachers to develop the competency to design and implement exploration activities effectively. Schools can also hold workshops or seminars for parents.

Collaboration between stakeholders, including government, community organizations, and the private sector, is crucial to support the facilities and resources of nature exploration programs (Nugroho & Muhroji, 2022). Support from the school community through an environmentally conscious learning culture can also strengthen the program's sustainability. For example, involving parents in group planting activities or creating school gardens is crucial. Careful planning and a participatory approach are key to the successful implementation of nature exploration activities in schools, especially for early childhood education (PAUD) programs, which face unique challenges in environmentally-based learning.

5. Supporting media for nature exploration and curriculum integration

To support nature exploration, creative and contextual learning media are needed. One example is a picture storybook based on crafts from plastic waste designed with a "touch and feel" approach (ABDUH n.d.). This media not only supports children's understanding of environmental concepts but also trains fine motor skills through activities such as cutting, folding, and gluing recycled materials. Integrating this media into the curriculum makes learning more meaningful, as children are directly involved in the process of making learning tools from waste they find in their surroundings.

This approach also forms part of character education, introducing children to values such as recycling, water conservation, and biodiversity conservation (Simatupang et al. 2021). Furthermore, this activity can be directed as a joint project involving teachers, parents, and students, making learning more collaborative and child-centered. Integrating nature exploration-based learning media into the Early Childhood Education (PAUD) curriculum will transform the schoolyard into an effective living laboratory for shaping children's character from an early age.

C. Research methods

This research uses a qualitative approach with a case study type, aiming to deeply understand the implementation of nature-based learning among early childhood children. The research location is RA Nawa Kartika VIII Sidolaju, Widodaren, Ngawi, utilizing the schoolyard as the primary learning resource (Ismawati and Iisnawati 2019). The qualitative approach was chosen because it allows for holistic exploration of phenomena and explores in-depth questions such as "how" and "why" related to children's experiences in the context of nature-based learning (Anon n.d.). The collected data is narrative in nature, allowing researchers to capture the complexity of children's interactions with their environment and understand the impact of nature-based learning on child development (Rosdiana and Amrullah 2021).

The research participants included: Early childhood children at RA Nawa Kartika VIII Sidolaju, class teachers, and other supporting informants such as the principal or parents. The characteristics of the participants were early childhood children who actively participated in nature exploration activities at school. Data collection techniques included: Direct observation of learning activities in the school yard, In-depth interviews with teachers, children, and related

informants. Documentation in the form of photos, videos, and field notes during the exploration process (Maulana et al. 2025).

To ensure data validity, source triangulation and technique triangulation were conducted. The researcher also conducted member checking with the teacher to check the validity of the information obtained. The instruments used were: Observation guide, Interview guide, Activity documentation format. The instruments were validated by experts before use to ensure suitability with the research objectives. The presence of the researcher was the main instrument in this qualitative research, with an active role in observations, interviews, and reflection of findings in the field. The duration of the research was estimated to last for 2 months with the intensity of data collection once a week. The data analysis technique used the Miles & Huberman model, namely: Data reduction, Data presentation, and Conclusion drawing/verification.

D. Results and Discussion

Nature-Based Exploration Learning in Schoolyards Increases Children's Awareness and Engagement

Environmental education for early childhood faces quite complex challenges. One major challenge is how to convey complex concepts to children in a way that is easy to understand (ABDUH n.d.). Another equally important challenge is the tendency for children to quickly become bored if they repeatedly use the same play equipment or monotonous learning methods. This requires educators to seek more innovative and engaging approaches. To address this issue, a learning approach that combines educational and recreational elements is needed. The school environment, especially the yard, has great potential to be utilized as an interactive, engaging, and dynamic learning medium. The schoolyard can serve as a natural laboratory that allows children to learn through direct experience.

This research was conducted at RA Nawa Kartika VIII Sidolaju Widodaren Ngawi to assess the effectiveness of utilizing the schoolyard as a learning medium based on nature exploration. The results showed that this approach had a significant positive impact on increasing environmental awareness in early childhood. Outdoor learning activities successfully encouraged children to actively engage in various fun and meaningful exploration activities. Early childhood has unique characteristics that differ from other age groups. They are naturally active and enjoy exploring their surroundings (Suwatra, Magta, & Christiani 2019). Other characteristics of early childhood are a tendency towards egocentrism and a very high level of curiosity.

These characteristics require special attention from educators to ensure children's potential can develop optimally (Hadi 2009). A nature-based exploration learning approach aligns perfectly with children's active and inquisitive nature. By leveraging these characteristics, educators can create more effective and meaningful learning experiences. Children absorb information more easily when they can interact directly with learning objects and their surroundings. Play is a child's world and plays a crucial role in their development. Play activities are not only for entertainment but also serve as effective learning media to support the development of various aspects of children.

Through play, children can simultaneously develop language, social-emotional, motor, and cognitive skills (Rosdiana and Amrullah 2021). This finding is reinforced by research (Nurmadijah 2016), which confirms that a play-based learning approach can encourage optimal development in early childhood. Furthermore, play provides children with the opportunity to explore their world in a safe and enjoyable way. Through play, children can build confidence in facing challenges and develop creativity (Salsabila, Hj, and Agung 2024). Social interactions also develop naturally when children play with their peers. Through both verbal and nonverbal communication, play provides opportunities for children to practice social skills that are essential

for their lives.

Selecting the right learning media is crucial for the success of the teaching and learning process in early childhood. Ideal learning media for this age group include audio, visual, or a combination of both. Equally important is the ability to utilize resources available in the surrounding environment. Visual media-based learning models, such as the use of images or real objects, provide ample space for children to interpret and construct their own understanding. This approach has proven effective in various learning topics, including introducing the concepts of waste management and environmental awareness (ABDUH n.d.). Learning media derived from the surrounding environment have the advantage of being closer to children's daily lives. This makes the learning process more contextual and meaningful for them. Children can easily connect the concepts learned to their real-life experiences.

The implementation of nature exploration-based learning at RA Nawa Kartika VIII is carried out through various activities that directly engage children with their surroundings. These activities are designed to provide real-life experiences that can strengthen children's understanding of environmental concepts. Some of the activities carried out include planting trees, cleaning the environment, and making compost. During the observation, children were seen showing initiative, such as asking questions about plant growth and reminding friends not to litter. Teachers also noted that children became more cooperative and responsible after participating in these outdoor activities. These findings indicate that nature exploration supports behavioral changes that reflect environmental care and self-discipline. These activities not only provide theoretical knowledge but also provide practical experience that can be applied in everyday life. Research shows that involving children in real-life activities like this effectively instills environmental awareness. This finding aligns with research (Oktafiolita et al. 2024) which shows that experiential learning can improve children's understanding of basic scientific concepts and social values.

A well-designed schoolyard can be a vibrant and dynamic learning space for children. Unlike conventional classrooms, a schoolyard offers greater freedom of movement and exploration. Using a schoolyard as a learning tool is a highly effective approach to actively engaging students in the learning process. Through this approach, students are not merely passive listeners but also active participants, directly involved in various learning activities (Sar baitinil et al. 2024). Another advantage of utilizing a schoolyard is its ability to increase student interest in learning. This occurs because this approach successfully incorporates elements of play, which are highly favored by children (Saodah 2019). When children learn in a schoolyard, they feel more motivated and enthusiastic. They feel a real role and responsibility in the learning process, which ultimately improves their engagement and learning outcomes.

Utilizing schoolyards as educational resources provides a significant opportunity to foster a sense of environmental responsibility from an early age. This is crucial considering that children are the next generation who will inherit the environment. Instilling awareness of the importance of maintaining environmental cleanliness and sustainability needs to be done from an early age (ABDUH n.d.). During this time, children are still in the process of forming character and developing core values that they will carry throughout their lives. Education about the importance of maintaining a clean environment free from the negative impacts of human activity is crucial (Raudah et al. 2021). In this context, schoolyards can be an effective medium for instilling values of environmental care and responsibility. Through direct interaction with nature, children can experience and understand the importance of maintaining a balanced ecosystem. They learn that every action they take has an impact on the surrounding environment.

Quality early childhood education not only focuses on current learning needs but also builds a solid foundation for a brighter future. Providing appropriate stimulation during this period

is crucial to support optimal child growth and development (Nurmadiyah 2016). This stimulation can be provided through education that emphasizes play-based learning and hands-on exploration (Fitriyah et al. 2021). Activities in the schoolyard provide diverse stimulation for various aspects of child development. Exploratory activities in the school environment can be designed to foster children's curiosity and interest in learning. Through these activities, children can discover new things, ask questions, and seek answers independently. This process of discovery and exploration ultimately increases children's engagement and interest in learning. They become more active and motivated to learn because they feel directly involved in the process of discovering knowledge.

Outdoor Learning Activities Support Children's Holistic Development.

Outdoor learning activities provide invaluable opportunities for children to move freely. Unlike classroom learning, which tends to restrict movement, activities in the schoolyard allow children to develop their gross motor skills. Beyond motor development, outdoor activities also provide greater opportunities for interaction with peers. This social interaction is crucial for the development of children's social and emotional skills. By incorporating outdoor activities into the curriculum, children's developmental needs can be met more comprehensively. This is especially important in supporting gross motor development, social skills, and understanding basic scientific concepts.

The experience of interacting directly with nature can also foster curiosity, creativity, and an appreciation for its beauty (Qomariyah, Anjarwati, and Ardiansari n.d.). Schoolyards support environmental literacy learning because children can directly learn to recognize various types of plants, animals, life cycles, and other natural processes. Integrating schoolyards into the curriculum requires careful and systematic planning. This process can be carried out through various activities tailored to learning objectives and child characteristics. Some activities that can be integrated include plant observation, insect exploration, creating mini gardens, and simple research activities. Each activity is designed to achieve specific competencies while maintaining elements of fun and exploration.

Schoolyards can also be developed into more engaging and interactive learning environments. This can be achieved by adding elements such as flower gardens, vegetable gardens, or natural play areas tailored to learning needs. A curriculum integrated with nature provides invaluable opportunities for children to learn through direct and contextual experiences. Integrating the context of pollution and environmental management into various learning topics is crucial for building environmental awareness from an early age (Gusti et al. 2022). In today's digital era, the use of technology in learning is increasingly important. However, in the context of nature-based learning, technology plays a supporting role, not a substitute for direct experience. Teachers can utilize various learning media such as images, videos, and props to help explain difficult concepts. The use of these media not only enhances understanding but also stimulates enthusiasm for learning and has a positive psychological impact (Rohani 2015).

Today's educators are expected to utilize modern technology to support the teaching process and improve the quality of learning (Pubian and Herpratiwi 2022). However, the use of technology must be balanced with direct experiences in nature. Visual media, such as activity documentation or learning videos, are highly effective in capturing children's attention. They also help facilitate understanding of abstract concepts and improve retention of learned information. Each region has unique local potential that can be utilized to support learning. Utilizing local potential is a crucial aspect in developing relevant and contextual learning media. When local potential is integrated into learning materials, children will feel closer to the material being studied. This increases their motivation to understand their surroundings and fosters a love for their region. Environmental awareness can be fostered through the use of interactive media that

address local issues. For example, the use of fun and effective picture books can introduce the concept of waste management based on local conditions (Suwandi, Marlina, and Said 2022); (ABDUH n.d.).

Through this initiative, students are encouraged to actively participate in various activities related to local environmental preservation. These activities can include waste management, planting native trees, and conserving water sources around the school. Motivation is a key factor in successful learning, especially in early childhood. An appropriate reward and recognition system can be a highly effective motivator for children to care more about the environment. Rewards don't always have to be material, but can also include recognition, praise, or the opportunity to lead certain activities (Adawiah 2020). The important thing is that the reward system motivates children to continue taking positive actions for the environment. It is crucial to instill awareness of environmental cleanliness in children from an early age through a positive and consistent reward system. This system should be designed in such a way that children feel motivated to actively participate in environmental conservation activities.

The availability of adequate resources and facilities is crucial to support the implementation of nature-based learning. These resources do not have to be expensive or complex, but they must be functional and appropriate to learning needs. Some necessary resources include separate trash bins, simple recycling facilities, gardening tools, and composting areas. Providing these facilities is essential to support environmentally friendly behavior in children (Adawiah 2020). Programs like Adiwiyata have significant potential to increase understanding of the importance of environmental protection (Wahyuni 2021). Schools can adopt the principles of these programs in developing environmentally-based learning facilities and activities. Attractive and accessible learning resources play a crucial role in encouraging students to learn independently. These resources enable children to explore the environment and construct knowledge through direct interaction with various sources of information (Pubian and Herpratiwi 2022).

The success of nature-based learning implementation depends heavily on the quality of planning and preparation. Thorough planning will ensure that learning objectives are achieved optimally and safely. Teachers must design learning activities that align with educational goals and children's characteristics. Furthermore, safety and security must be a top priority in all activities conducted outside the classroom. Planning must also consider factors such as weather, environmental conditions, and resource availability. Flexibility in planning is crucial to anticipate various potential situations. Teachers who understand the function of media in learning will be able to establish more effective and efficient learning communication (Mujib and Erawati 2022). This understanding is crucial for creating meaningful learning experiences for children. Utilizing schoolyards as a learning medium based on nature exploration has been shown to have a significant positive impact on creating meaningful learning experiences for early childhood. This approach not only enhances conceptual understanding but also develops environmental awareness and various other important skills.

A well-designed and utilized schoolyard can be an extension of the classroom, supporting holistic learning. Through various exploratory activities within the school environment, children can simultaneously develop cognitive, motor, social, and emotional skills. Implementing nature-based learning requires careful planning, adequate facilities, and commitment from all educational stakeholders. With proper preparation, this approach can create more meaningful learning experiences and encourage children's active engagement in the learning process.

Through this approach, educators can help children reach their maximum learning potential (Sarbaitynil et al. 2024). The school yard that is used as a learning medium is not just an ordinary open space, but an environment rich in potential to support the overall growth of children. Children who are interested and feel happy about the learning process tend to understand and

remember the information learned more easily. Therefore, the integration of the school yard in learning is a very effective strategy to achieve optimal educational goals in early childhood. This approach not only prepares children for a better future, but also forms a generation that cares and is responsible for the environment.

The findings of this study indicate that the implementation of nature exploration in the schoolyard follows three key stages. The first is planning, which involves identifying the potential of the schoolyard and preparing learning tools. The second is implementation, emphasizing children's active involvement through planting, observing, and cleaning activities. The third is reflection, in which teachers and children discuss their experiences and what they learned about caring for the environment. This three-stage pattern forms a simple and effective model that can be adapted in other early childhood education institutions.

E. Conclusion

The study concludes that utilizing the schoolyard as a learning medium through nature exploration effectively enhances children's environmental awareness while supporting cognitive, social-emotional, and motor development. These findings also highlight that schoolyards can serve as living laboratories that promote responsibility and creativity through play-based learning. Practically, this approach provides a model that can be implemented by early childhood teachers using existing natural resources in their school environment.

Furthermore, this approach is an effective means of instilling values of love and responsibility for the environment from an early age. Children learn to appreciate nature through real-life experiences, not just theory. This forms a crucial foundation for developing a child's character that cares about environmental sustainability. Therefore, nature exploration-based learning in the school environment not only supports the achievement of early childhood education goals but also represents a long-term investment in developing a generation that is intelligent, creative, and has character, and is highly aware of the importance of environmental sustainability.

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