



MANAGING NATURE-BASED LEARNING CENTERS TO FOSTER INDEPENDENT CHARACTER IN EARLY CHILDHOOD EDUCATION

Titin Kusayang¹, Rifyal Novalia², Tatia Yuliasti³, Nurliza⁴, Sri Afrianel⁵

^{1,2,3,4,5}Institut Agama Islam Negeri Kerinci

Email: titinkusayang93@gmail.com

Abstrak

Pengelolaan lingkungan belajar pada sentra bahan alam penting dikaji karena penelitian masih terbatas yang menempatkannya sebagai strategi pedagogis dalam pengembangan karakter mandiri anak usia dini. Tujuan penelitian ini adalah mendeskripsikan pengelolaan lingkungan belajar berbasis sentra bahan alam serta kontribusinya terhadap karakter mandiri anak di TK Lukmanul Hakim. Penelitian ini dilaksanakan dengan pendekatan kualitatif deskriptif dan melibatkan satu kepala sekolah, satu guru sentra bahan alam, serta 13 anak berusia 5-6 tahun sebagai subjek penelitian. Data penelitian diperoleh melalui observasi, wawancara semi-terstruktur, dan dokumentasi, selanjutnya dianalisis melalui proses reduksi data, penyajian data, serta penarikan kesimpulan. Temuan penelitian mengungkapkan bahwa pengelolaan pembelajaran pada sentra bahan alam diterapkan melalui 4 pijakan utama, yaitu pijakan lingkungan main, pijakan sebelum main, pijakan saat main, dan pijakan setelah main. Keempat pijakan tersebut berkontribusi dalam mengembangkan karakter mandiri anak, yang tampak pada kemampuan memilih bahan, menggunakan alat, mencoba menyelesaikan kegiatan, bertanya saat mengalami kesulitan, serta merapikan kembali alat dan bahan setelah digunakan. Temuan tersebut memperkuat pemahaman bahwa sentra bahan alam bukan hanya diposisikan sebagai ruang bermain, melainkan juga sebagai lingkungan belajar yang mendukung kemandirian anak melalui pengalaman konkret, pembiasaan, dan kesempatan untuk bertindak secara mandiri.

Kata kunci: Anak Usia Dini; Karakter Mandiri; Lingkungan Belajar; Sentra Bahan Alam.

Abstract

The management of the learning environment in the natural materials center is important to examine, as studies positioning it as a pedagogical strategy for developing independent character in early childhood remain limited. This study aimed to describe the management of a learning environment based on the natural materials center and its contribution to children's independent character at Lukmanul Hakim Kindergarten. This research employed a descriptive qualitative approach and involved one principal, one natural materials center teacher, and 13 children aged 5-6 years as research subjects. Data were collected through observation, semi-structured interviews, and documentation, then analyzed through the stages of data reduction, data display, and conclusion drawing. The findings revealed that learning management in the natural materials center was implemented through four main scaffolding stages: environmental scaffolding for play, pre-play scaffolding, during-play scaffolding, and post-play scaffolding. These four stages contributed to the development of children's independent character, as reflected in their ability to choose materials, use tools, attempt to complete activities, ask questions when encountering difficulties, and tidy up tools and materials after use. These findings reinforce the understanding that the natural materials center is not merely a play space but also a

learning environment that supports children's independence through concrete experiences, habituation, and opportunities to act independently.

Keywords: Early Childhood; Independent Character; Learning Environment; Natural-Material Center.

Corresponding author:

Email Address: titinkusyang93@gmail.com

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A. INTRODUCTION

The learning environment in Early Childhood Education (ECE) plays a pivotal role in supporting child development, as it serves as a space for children to experience, interact, and construct knowledge firsthand. In early childhood, learning emphasizes concrete experiences involving physical, sensory, emotional, and social aspects. Therefore, the optimal management of the learning environment has a strategic role in supporting academic progress, shaping children's character, and determining the overall quality of educational services¹.

Early Childhood Education (ECE) is an educational service that provides

stimulation to support both the physical growth and mental development of children, ensuring their readiness for subsequent educational levels. Consequently, the learning process in ECE must be designed in a comprehensive and integrated manner. Such instruction is directed not only at enhancing cognitive abilities but also at instilling character values, with independent character being a primary focus².

Independence in early childhood is manifested in the ability to initiate activities, select appropriate tasks, utilize tools effectively, and complete simple assignments without depending on others for assistance³. This character

¹ Michael Yogman and others, 'The Power of Play: A Pediatric Role in Enhancing Development in Young Children', *Pediatrics*, 142.3 (2018), e20182058 <<https://doi.org/10.1542/peds.2018-2058>>.

² Faizatul Faridy and Dewi Fitriani, 'Analysis Of Mindful Parenting In Fostering Children's Independence In

South Aceh', *Bunayya: Jurnal Pendidikan Anak*, 12.1 (2026), 44-55 <<https://doi.org/http://dx.doi.org/10.22373/bunayya.v12i1.33109>>.

³ Maria Cerlina Isa Kajo and others, 'Implementasi Parenting Terhadap Kemandirian Anak Usia Dini 4-6 Tahun Di Tk Satu Atap Lebijaga', *Bunayya: Jurnal Pendidikan Anak*, 12.1 (2026), 140-52

is highly crucial as it relates to children's confidence in public speaking, self-regulation abilities, and resilience in facing challenges.

Independence in early childhood is not formed instantaneously; rather, it is cultivated through authentic experiences and a supportive learning environment. Verbal instructions alone are insufficient; children must be granted the opportunity to experiment, make choices, rectify mistakes, and complete activities autonomously⁴. Learning experiences that provide space for children to be actively engaged, explore, play, and complete tasks through hands-on participation can strengthen self-regulation and a sense of self-efficacy. Consequently, the management of the learning environment in ECE must be designed not only to deliver enjoyable learning experiences but also to cultivate a child's responsibility and independence.

<<https://doi.org/http://dx.doi.org/10.22373/bunayya.v12i1.34340>>.

⁴ Ifeoma M Ogbemudia, Victor Mafone Alasa, and Joseph C Ikenyiri, 'The Montessori Pedagogy: A Multi-Sensory Approach to Childhood Education', *Jurnal Pendidikan Abad Ke-21*, 2.2 (2024), 53-65 <<https://doi.org/https://doi.org/10.53889/jpak.v2i2.505>>.

One potential learning environment for fostering independence is the nature-based center. This center provides space for children to engage in direct exploration with a variety of materials sourced from the surrounding environment, such as soil, sand, stones, leaves, wood, and water. Through these activities, children are granted opportunities to explore, experiment, make simple decisions, solve problems, and cultivate a sense of responsibility in utilizing tools and materials.

Various research findings reveal that learning experiences utilizing the natural environment contribute positively to children's development, encompassing physical, cognitive, and social aspects. A study by Dankiw et al. explains that unstructured outdoor play provides opportunities for children to move, explore, and actively engage in activities that support both physical and social development.⁵

⁵ Kylie A Dankiw and others, 'The Impacts of Unstructured Nature Play on Health in Early Childhood Development: A Systematic Review', *PLOS ONE*, 15.2 (2020), e0229006 <<https://doi.org/10.1371/journal.pone.0229006>>.

Furthermore, Johnstone demonstrates that nature-based education is highly relevant to children's social and emotional development⁶. Meanwhile, Priyanti and Warmansyah (2021) indicate that materials sourced from the child's immediate environment can strengthen their naturalist intelligence⁷. Nevertheless, limited research has directly linked the management of nature-based learning centers specifically to the enhancement of children's independent character.

However, most previous studies have emphasized the influence of nature-based learning on creativity, naturalist intelligence, cognitive abilities, motor skills, and social-emotional development. Studies specifically addressing the management of nature-based learning centers as a strategy to develop children's independent character remain limited. Furthermore, there is a

lack of research examining the specific correlations between each stage of center-based learning and indicators of independence, such as selecting activities, using tools independently, completing tasks, making simple decisions, and tidying up materials afterward. Consequently, the research gap addressed by this study lies in the limited analysis of how the management of nature-based centers develops children's independent character.

Based on preliminary observations at TK Lukmanul Hakim, although learning activities have utilized nature-based centers, children's independent behavior has not yet been consistently demonstrated. Some children were still found waiting for the teacher's instructions before starting activities, were unaccustomed to selecting their own tools and materials, and had not fully demonstrated responsibility in

⁶ Avril Johnstone and others, 'Nature-Based Early Childhood Education and Children's Social, Emotional and Cognitive Development: A Mixed-Methods Systematic Review', *International Journal of Environmental Research and Public Health*, 19.10 (2022), 5967

<<https://www.mdpi.com/1660-4601/19/10/5967>>.

⁷ Nita Priyanti and Jhoni Warmansyah, 'The Effect of Loose Parts Media on Early Childhood Naturalist Intelligence', *JPUD: Jurnal Pendidikan Usia Dini*, 15.2 (2021) <<https://doi.org/https://doi.org/10.21009/JPUD.152.03>>.

returning equipment to its original place after the session ended. Conversely, the children appeared highly engaged when interacting with natural materials, suggesting that nature-based centers have significant potential to foster initiative, responsibility, and independence. These findings indicate that the management of nature-based learning environments must be more purposefully structured to effectively support the development of independent character.

This study aims to obtain a profound understanding and analyze the management of nature-based learning environments in fostering independent character at TK Lukmanul Hakim. This research holds both theoretical and practical significance. Theoretically, it is expected to broaden the discourse on learning environment management in ECE, particularly concerning nature-based centers and independent character building. Practically, the findings of this study are intended to serve as a reference for educators in designing more effective and innovative nature-based lesson plans that are capable of stimulating

B. METHODOLOGY

This study employs a qualitative approach with a descriptive research design. The research was conducted at TK Lukmanul Hakim, involving the school principal, a nature-based center teacher, and 13 students aged 5–6 years who participated in nature-based center activities. Informants were selected through purposive sampling based on their direct involvement in the nature-based instructional process. Data were gathered through observation, semi-structured interviews, and documentation. Data analysis was performed interactively through the stages of data reduction, data display, and conclusion drawing. Furthermore, data validity was ensured through source triangulation, technical triangulation, and member checking to maintain the credibility of the research findings. The focus of this inquiry encompasses the planning, implementation, and evaluation of nature-based learning environment management, as well as the manifestations of independent

character developed throughout the learning process.

C. FINDINGS AND DISCUSSION

The research findings indicate that the management of the nature-based learning environment at TK Lukmanul Hakim is implemented through four distinct scaffolds of play (*pijakan main*). These four scaffolds form a systematic instructional flow, providing children with structured opportunities to select their own materials, attempt to complete activities, seek guidance when encountering difficulties, and restore the tools and materials to their original places after use. This systematic approach ensures that the learning process is not merely transactional but rather a deliberate pedagogical sequence designed to facilitate autonomous engagement.

1. The Environmental Play Scaffold

The management of the learning environment within the nature-based center commences with the strategic arrangement of space, tools, and play materials tailored to the specific learning theme. The educator prepares a

diverse array of natural media—including sand, water, leaves, stones, seeds, twigs, plants, and soil—all positioned to be easily accessible to the children. This open-access arrangement of materials is a deliberate pedagogical design that enables children to identify, select, and use resources autonomously. By ensuring that these natural elements are within reach, the environment functions as a catalyst for independent decision-making, allowing children to take initiative in their exploration without excessive teacher intervention.

The school principal explained that the management of the nature-based center is carried out by optimizing the school's surrounding environment as a learning resource. "We strive to provide an environment that supports children to be active and independent through play activities using natural materials that are easily found around the school" (Interview with the School Principal, October 16, 2025).

In addition to the indoor classroom arrangement, the nature-based center activities also utilize the outdoor area as a learning resource. The use of the yard beside the classroom is implemented because the indoor space is relatively limited for activities involving natural materials such as sand, water, leaves, and soil. The teacher stated, "It is somewhat cramped inside the classroom, so for nature-based activities, we usually utilize the side yard so that the children have more freedom to move and play" (Interview with the Teacher, October 16, 2025).

The teacher also mentioned that the play environment is intentionally designed to be open so that children have the space to choose and explore. "We usually prepare several choices of natural materials. The children are allowed to choose the materials they want to use themselves, but we still direct them to ensure the usage is safe and orderly" (Interview with the Teacher, October 16, 2025). Obstacles arising at this stage relate to limited classroom space, the

availability of certain natural materials, and the teacher's need to ensure the safety of materials before use.

2. Pre-Play Scaffold

The pre-play scaffold is implemented through several stages, including the opening, apperception, introduction of tools and materials, communication of play rules, and explanations regarding the activities the children will participate in. The teacher invites the children to sit in a circle, engages them in a dialogue about the learning theme, and subsequently introduces the available natural materials.

Observation results indicate that several children are able to answer the teacher's questions, identify the names of materials, and express ideas regarding the objects they wish to create. The teacher also reinforces the play rules, such as taking turns using materials, not throwing sand, not spilling water carelessly, and tidying up the tools upon completion. The teacher stated, "Before playing, we invite the children to first identify the

available materials. We also remind them of the play rules as a form of guidance so that children are able to recognize appropriate and inappropriate behavior during the activity” (Interview with the Nature-Based Center Teacher, October 16, 2025).

The obstacles observed at this stage include some children remaining unfocused while the teacher explains the rules. Several children appeared eager to begin playing before the explanation was completed. The teacher addressed this situation by using simple language, providing direct examples, and briefly repeating the rules.

3. During-Play Scaffold

The during-play scaffold is the most prominent stage in developing children's independent character. At this stage, children are given the opportunity to choose materials, determine how to use tools, attempt to create works, collaborate with peers, and complete activities according to their respective abilities.

Observation results show that most children begin to exhibit independent behavior, such as taking materials on their own, pouring water carefully, mixing sand and soil, selecting leaves for pasting, and attempting to fix their work when it does not yet meet their expectations. One form of independence is evident when children choose materials without constantly waiting for teacher direction. Several children also take the initiative to ask questions when encountering difficulties, rather than immediately handing the task over to the teacher.

The teacher stated, “During play, we do not provide immediate assistance. Usually, we give the children a chance to try first. If they are truly struggling, only then do we provide a little guidance” (Interview with the Nature-Based Center Teacher, October 16, 2025). Obstacles that arise during the activity include children who still ask for help, scramble for materials with peers, or are not yet able to complete the activity until the end. The teacher addresses this by

providing verbal reinforcement, directing children to take turns, and encouraging children to complete tasks step by step.

4. Post-Play Scaffold

The post-play scaffold is implemented through activities such as tidying up tools and materials, cleaning the play area, sharing about their creations, and conducting a simple reflection with the teacher. At this stage, children are encouraged to complete the activity to the end by returning tools, disposing of any remaining materials in their proper place, and helping clean the play area.

The teacher explained that post-play activities are an essential part of habituating children to completing activities independently. "After playing, we habituate the children to tidying up the tools themselves. Sometimes they still need to be reminded, but over time they realize that after playing, they must put things back in order" (Interview with the Nature-Based Center Teacher, October 16, 2025).

In addition to tidying up tools, children are also given the opportunity to share about their work. Several children are able to communicate the materials used, the creation process, and the reasons for choosing specific materials. Obstacles at this stage are evident in children who are not yet consistent in tidying up tools without reminders and still require assistance to complete their responsibilities after playing.

The research results indicate that the management of a learning environment based on a nature-based center is not only related to the arrangement of space and play materials, but also serves as a pedagogical strategy to foster children's independence gradually. The visible indicators of independence include the children's ability to choose materials, use tools, attempt to complete activities, ask questions when encountering difficulties, and tidy up tools and materials after use. Thus, children's independence develops through concrete

experiences, habituation, and proportional teacher assistance.

Within the play environment scaffold, the arrangement of easily accessible natural materials and the utilization of the yard beside the classroom provide space for children to choose, take, and use materials more freely. This condition indicates that space limitations do not become a major obstacle when the teacher adapts the learning environment to the needs of the activity. A flexible environment allows children to move, explore, and attempt to use materials according to their choices. Learning in the nature-based center provides space for children to develop independence through concrete, explorative, and meaningful experiences. A flexible learning environment that provides space for exploration can also strengthen children's ability to act

independently⁸. Therefore, the management of the play environment in this study demonstrates that the arrangement of space and materials contributes to the emergence of children's initiative to try and use materials independently.

In the pre-play scaffold, the introduction of materials and the communication of rules serve as the foundation for children to understand material choices, how to use tools, and behavioral boundaries during play. This stage is crucial because early childhood students require initial guidance before being given the opportunity to explore. The teacher's direction is not intended to restrict the children's freedom but to help them understand the flow of activities and use materials safely. Learning through play becomes meaningful when children are actively involved and obtain the opportunity to regulate their actions⁹. Play-based learning also requires teacher support that provides space for children to be actively

⁸ Danang Prastyo and others, 'Differentiated Learning Strategies for Enhancing Early Childhood Independence: A Case Study', *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, 10.4 (2025), 639-52

<<https://doi.org/https://doi.org/10.14421/jga.2025.104-01>>.

⁹ Jennifer M Zosh and others, *Learning through Play: A Review of the Evidence*, 2017 <<https://learningthroughplay.com/explore-the-research/the-role-of-play-in-child-development>>.

engaged according to their needs.¹⁰. Thus, the pre-play scaffold plays a vital role in preparing children to be more focused in choosing, using materials, and completing activities independently.

In the during-play scaffold, children's independence is most strongly evident through activities such as choosing materials, attempting to create work, refining results, and asking questions when encountering difficulties. The teacher does not immediately take over the child's task but instead provides an opportunity for the child to try first. This strategy is essential because premature assistance can diminish a child's opportunity to learn independently. Play activities provide space for children to develop initiative and problem-solving skills¹¹. Play-based learning also supports children's independence when teachers

provide gradual assistance tailored to the child's needs.¹²

Independence during the play stage is also reinforced by the open-ended and flexible nature of natural materials. Materials such as sand, water, leaves, stones, soil, twigs, and seeds do not have a single, fixed use. Children can arrange, mix, shape, paste, or combine materials according to their own ideas. This flexibility provides space for children to make simple decisions and learn from the results of their actions. In this context, natural materials serve as a medium that supports exploration while simultaneously training children not to always depend on the teacher's instructions.

In the post-play scaffold, children's independence is evident in activities such as tidying up tools, cleaning the play area, and sharing about their creations. This

¹⁰ Erica Danniels and Angela Pyle, 'Inclusive Play-Based Learning: Approaches from Enacting Kindergarten Teachers', *Early Childhood Education Journal*, 51 (2023), 1163-72 <<https://doi.org/10.1007/s10643-022-01369-4>>.

¹¹ Yogman and others.

¹² Aisyah Aisyah and Arif Rahman Hakim, 'Implementation of Play-Based Learning in Developing Social-Emotional Skills of 5-6-Year-Old Children in Integrated Islamic Kindergarten', *Generasi*, 3.2 (2025), 119-48 <<https://doi.org/https://doi.org/10.59784/generasi.v3i2.317>>.

stage demonstrates that independence not only emerges while a child is creating work, but also when they complete the entire sequence of activities until the end. Children learn that after using tools and materials, there is a responsibility to return and organize them. A child's independence is reflected in their ability to perform simple activities without always relying on adult assistance¹³. Consistent habituation can also help foster independence in early childhood.¹⁴

The post-play scaffold also serves a reflective function, as it gives children the opportunity to re-identify the processes they have carried out. When children share their creations, they learn to recall the materials chosen, how tools were used, and the steps taken during the activity. This simple reflection helps children understand the relationship

between actions, results, and responsibility. Thus, post-play habituation strengthens the children's ability to manage their learning activities more independently.

Overall, the management of a nature-based learning environment plays a role in developing children's independent character through four interconnected scaffolds. The nature-based center functions not only as a play space but also as a conducive learning environment that enables children to engage in simple decision-making, attempt to complete activities, and manage their own learning needs. The contribution of this research lies in affirming that learning environment management can be understood as a pedagogical strategy for fostering early childhood independence through

¹³ Mira Wida Wulan and Leli Kurniawati, 'The Independence of Young Children in the Care of Working Mothers', in *5th International Conference on Early Childhood Education (ICECE 2020)* (Atlantis Press, 2021), pp. 293-96

<<https://doi.org/https://doi.org/10.2991/assehr.k.210322.062>>.

¹⁴ Irhamna Irhamna and others, 'Forming Independence in Young Children Through The Habituation Method', *JOYCED: Journal of Early Childhood Education*, 2.2 (2022), 176-85.

the use of natural materials and flexible learning spaces.

D. CONCLUSION

Based on the research results, the management of the learning environment centered on nature at TK Lukmanul Hakim plays a role in the development of early childhood's independent character. This role is evident through the implementation of four scaffolds: the play environment scaffold, the pre-play scaffold, the during-play scaffold, and the post-play scaffold. These four scaffolds serve as learning stages that facilitate children in choosing materials, using tools, attempting to complete activities, asking questions when encountering difficulties, tidying up tools and materials, and performing learning activities with gradually decreasing teacher assistance.

The main findings of this research confirm that learning environment management is not only related to the arrangement of space and play materials but also serves as a pedagogical strategy to gradually foster children's independence. An environment that provides concrete experiences, consistent habituation,

and opportunities for children to act independently supports the development of children's abilities to make simple decisions, complete activities, and manage their learning needs. Thus, the nature-based center makes a contextual contribution to the development of children's independent character through a learning process that is structured, active, and grounded in direct experience.

The implications of this study suggest that teachers need to manage nature-based centers in a planned manner by selecting materials that are safe, accessible, and aligned with children's developmental needs. Early childhood education (PAUD) institutions should also support the provision of flexible learning spaces, including the utilization of outdoor areas when classroom space is limited. Future research could examine the development of children's independent character in other types of centers or compare the management of nature-based centers across various PAUD institutions to obtain a broader perspective.

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