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The Potential of Natural Materials as Learning Resources for Children Aged 4–6 Years in Kindergartens in Buton Regency

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Abstrak

This study aims to explore the potential of natural materials as learning resources for children aged 4–6 years at TK Negeri 19 Buton. Using a qualitative approach, data were collected through observation, interviews, and document analysis. The findings reveal that natural materials such as stones, tamarind seeds, banana midribs, and banana leaves can serve as effective tools to enhance children's creativity, environmental understanding, and fine motor skills. The use of these materials not only stimulates children's imagination but also encourages them to actively engage with their immediate environment. Through hands-on activities, children are able to construct knowledge while developing problem-solving abilities and social interactions with peers. Furthermore, integrating natural materials into classroom activities supports experiential learning and provides meaningful connections between abstract concepts and real-life experiences. The study highlights the importance of utilizing locally available resources, which are accessible, cost-effective, and culturally relevant to the community. In addition, it offers insights for teachers and parents on how to incorporate these materials into daily learning practices. Overall, the research suggests that natural materials have strong potential to enrich early childhood education, making the learning process more interactive, enjoyable, and closely related to children's everyday lives.

1. Introduction

Early Childhood Education (ECE) holds a vital role in supporting the overall development of children, particularly during the age range of 4–6 years. At this stage, children are in a critical period of growth, characterized by heightened curiosity, active exploration, and a strong desire to understand their surrounding environment.

According to Law Number 20 of 2003 on the National Education System, the main objective of early childhood education is to develop children's potential in a holistic and optimal manner, covering physical, cognitive, social, emotional, and moral aspects. Therefore, it is essential to provide meaningful learning experiences that correspond to children's developmental needs.

One effective approach in achieving this goal is the integration of natural materials as learning resources in the classroom. The use of natural objects, such as stones, leaves, seeds, or branches, not only provides accessible and cost-effective media but also encourages experiential learning. By engaging directly with nature, children can develop creativity, critical thinking, and fine motor skills, while simultaneously building a sense of environmental awareness. This approach also supports active participation and interaction, allowing children to connect abstract concepts with real-life experiences, making the learning process more engaging, relevant, and impactful.

Natural materials, which include elements such as plants, animals, soil, and water, hold great potential to be utilized in the learning process. The integration of natural resources into education can enhance children's engagement and motivation in learning activities. This aligns with constructivist theory, which emphasizes that children learn most effectively through direct experiences and active interaction with their environment. By handling and exploring natural objects, children not only gain knowledge but also develop critical thinking, problem-solving, and creativity in ways that are meaningful to their everyday lives (Piaget, 1976; Fosnot, 2013). At TK Negeri 19 Buton, the use of natural materials as learning resources remains relatively limited, despite the abundance of natural resources available in the region. This underutilization highlights the need for educators to optimize local potentials as effective, low-cost, and culturally relevant teaching media. Employing natural resources in classroom practices can support holistic child development by fostering fine motor skills, social interaction, and environmental awareness. Such an approach has been shown to enrich early childhood education and strengthen connections between children and their natural surroundings (Supriyadi, 2020; Edwards, Cutter-Mackenzie, & Hunt, 2010).

This study aims to identify and analyze the potential of natural materials available around TK Negeri 19 as effective learning resources for children aged 4–6 years. The research focuses on how local natural elements such as stones, tamarind seeds, banana midribs, and banana leaves can be incorporated into daily classroom activities to stimulate children's learning experiences. By integrating these materials into structured play and guided exploration, the study seeks to highlight their contribution to children's cognitive, social, emotional, and motor development. Such an approach is expected to demonstrate the relevance of contextual and environmentally based learning in early childhood education. In addition, this study explores the challenges faced by educators in implementing natural material-based learning methods. These challenges may include limited teacher knowledge of innovative strategies, insufficient training in utilizing local resources, and the lack of supporting policies that encourage the use of nature as a primary learning medium. By examining both the potential benefits and the barriers, the research intends to provide practical recommendations for teachers, parents, and policymakers. Ultimately, the findings are expected to contribute to the development of sustainable

and culturally relevant learning practices that maximize the richness of local natural resources while supporting holistic child development.

Although natural materials are widely recognized as valuable learning resources in early childhood education, their use in kindergartens remains relatively underdeveloped. At TK Negeri 19 Buton, for instance, there is a noticeable gap between the availability of abundant natural resources in the surrounding environment and their actual application in classroom learning. While children could benefit greatly from contextual and experiential learning opportunities, the current practice tends to rely more heavily on conventional and purchased learning media, limiting exposure to real-life materials that are both accessible and cost-effective. The main challenges faced by educators in implementing natural material-based learning include a lack of knowledge and training on innovative teaching strategies, as well as limited institutional support. Teachers often perceive the integration of natural resources as time-consuming or less structured compared to conventional methods. In addition, inadequate learning facilities and an absence of standardized guidelines further discourage the adoption of this approach. These issues may result in missed opportunities for children to develop critical life skills such as creativity, problem-solving, and environmental awareness.

Addressing these challenges requires comprehensive solutions. Professional development programs for teachers should emphasize creative methods for utilizing natural resources in learning activities. Collaboration between schools, parents, and local communities can also foster a culture of resource-sharing and innovation in early childhood education. Furthermore, policy interventions are needed to provide clear frameworks and incentives for the sustainable integration of natural materials into the curriculum. By bridging the gap between potential and practice, such solutions can create more meaningful, engaging, and culturally relevant learning experiences for young children. Through this study, it is expected that appropriate strategies can be identified to integrate natural materials into the early childhood education curriculum. In doing so, not only will children benefit from more meaningful learning experiences, but educators and parents will also gain a deeper understanding of the importance of the environment as a valuable learning resource. The findings of this research are anticipated to contribute to the advancement of early childhood education in Indonesia, particularly in the Buton region.

2. Methods

This research applies a qualitative case study approach conducted at TK Negeri 19 Buton, involving 30 children aged 4–6 years and five teachers as key participants. Data were collected through observation, interviews, and documentation to obtain a comprehensive understanding of the learning process. Observation was used to capture how children interact with natural materials during various classroom and outdoor activities, including how they explore textures, shapes, and functions of objects found in their environment. Interviews were carried out with teachers to examine their perspectives, teaching strategies, and level of understanding regarding the integration of natural materials into early childhood learning. These interviews also aimed to identify challenges and opportunities faced by teachers when implementing nature-based learning. Documentation techniques were employed to gather curriculum-related materials, activity records, and photos or notes from previous learning sessions. Altogether, these methods provided rich

and contextual data to analyze the role and effectiveness of natural materials in supporting children's learning experiences.

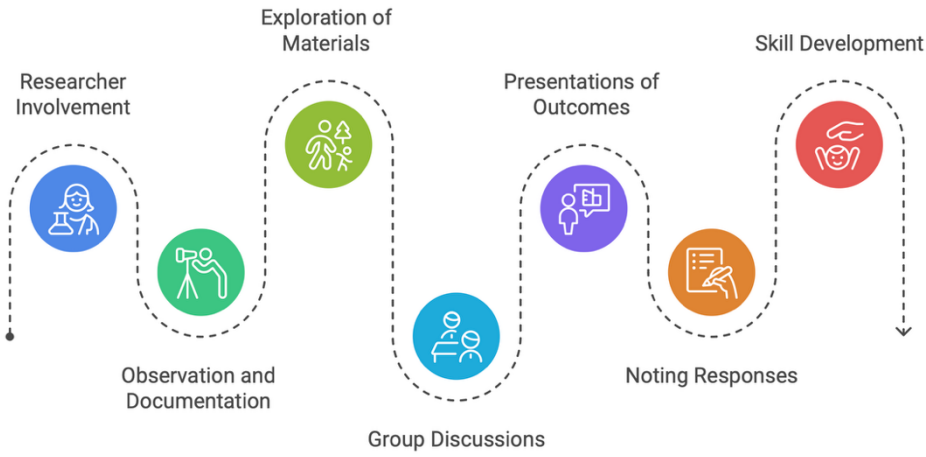

Figure 1. Data Collection Process in Children's Learning

The data collection process was carried out over a period of six weeks, during which the researcher was directly involved in classroom learning activities. Throughout this period, the researcher carefully observed and documented various activities performed by the children, including their exploration of natural materials, participation in group discussions, and presentations of the outcomes of their explorations. This immersive involvement allowed the researcher to capture detailed insights into how children engaged with natural resources as part of their daily learning experiences. In addition to documenting classroom activities, the researcher also noted children's responses to the learning experiences, such as their levels of enthusiasm, participation, and interaction with peers and teachers. Particular attention was given to the development of children's skills in understanding the concepts being introduced, including creativity, problem-solving, and fine motor abilities. These records provided a comprehensive picture of how natural materials contributed to the learning process, as well as the ways in which children's knowledge and abilities evolved throughout the study.

The data analysis in this study was conducted using the interactive model developed by Miles and Huberman, which involves three main stages: data reduction, data display, and conclusion drawing/verification. In the data reduction stage, the researcher organized and categorized the raw data obtained from observations, interviews, and documentation to identify recurring patterns and themes related to the use of natural materials in the learning process. This step was crucial to simplify the vast amount of information while maintaining its relevance to the research objectives. In the data display stage, the processed information was presented in descriptive form, supported by tables and thematic narratives, to illustrate children's interactions with natural materials and teachers' perspectives on their use in classroom activities. Finally, the researcher engaged in conclusion drawing and verification, which involved interpreting the findings, comparing them with existing theories, and conducting triangulation across different data sources to ensure validity. This systematic process allowed the study to produce credible insights into the potential of natural materials as effective learning resources for early childhood education.

3. Findings and Discussions

To facilitate understanding and reading, the research results are described first, followed by the discussion section. Result subtitles and discussion subtitles are presented separately. This section should be the largest part, at least 60% of the article's entire body.

3.1 Findings

The results of this study reveal significant insights into the use of natural materials as learning resources for early childhood education at TK Negeri 19 Buton. Through six weeks of observation, interviews with teachers, and analysis of curriculum documentation, it became evident that natural elements available in the local environment hold considerable potential to enrich the learning process for children aged 4–6 years. The findings highlight not only the educational benefits that arise from integrating natural materials into daily activities but also the challenges that hinder their consistent application in classroom practices. These outcomes are summarized in the following key points:

Enhancement of Creativity and Engagement

The use of natural materials such as stones, tamarind seeds, banana midribs, and banana leaves was found to stimulate children's creativity and imagination. Children actively engaged in exploratory activities, which increased their enthusiasm and motivation for learning.

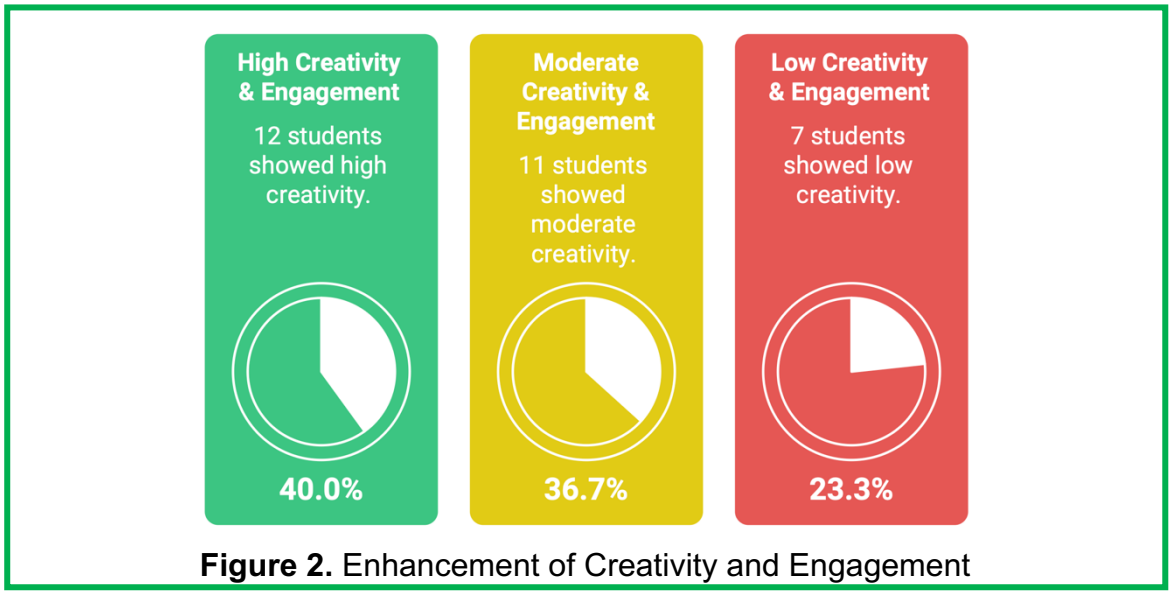

Figure 2. Enhancement of Creativity and Engagement

The results presented in the table show that a significant proportion of students demonstrated a high level of creativity and engagement when natural materials were integrated into learning activities. Out of the 30 students, 12 (40%) were categorized as having high creativity and engagement. These students were observed to be highly enthusiastic in exploring natural resources such as stones, tamarind seeds, banana midribs, and banana leaves. They actively participated in group discussions and confidently presented their findings, which indicates that natural materials effectively stimulated their imagination and motivation to learn. A slightly smaller group of 11 students (36.7%) displayed a moderate level of creativity and

engagement. This group showed interest in the activities and interacted with the materials, though their level of participation was not as consistent or as deep as those in the high category. For example, some students were more comfortable observing rather than leading activities, while others needed additional encouragement from teachers to remain focused. This suggests that, although natural materials can spark interest, variations in personality and learning styles influenced the extent of students' involvement. Meanwhile, 7 students (23.3%) fell into the low creativity and engagement category. These students were less responsive to exploratory activities and often required teacher guidance to stay involved. Their limited engagement highlights potential barriers such as lack of prior exposure to natural materials, lower confidence, or limited fine motor skills that made them hesitant to participate fully. This finding underscores the importance of differentiated strategies, where teachers provide scaffolding and additional support to ensure that all students can benefit equally from natural material-based learning.

Development of Cognitive and Motor Skills

Natural materials provided opportunities for children to develop fine motor skills through activities like sorting, arranging, and manipulating objects. At the same time, these materials helped children build early cognitive skills, including classification, problem-solving, and environmental awareness.

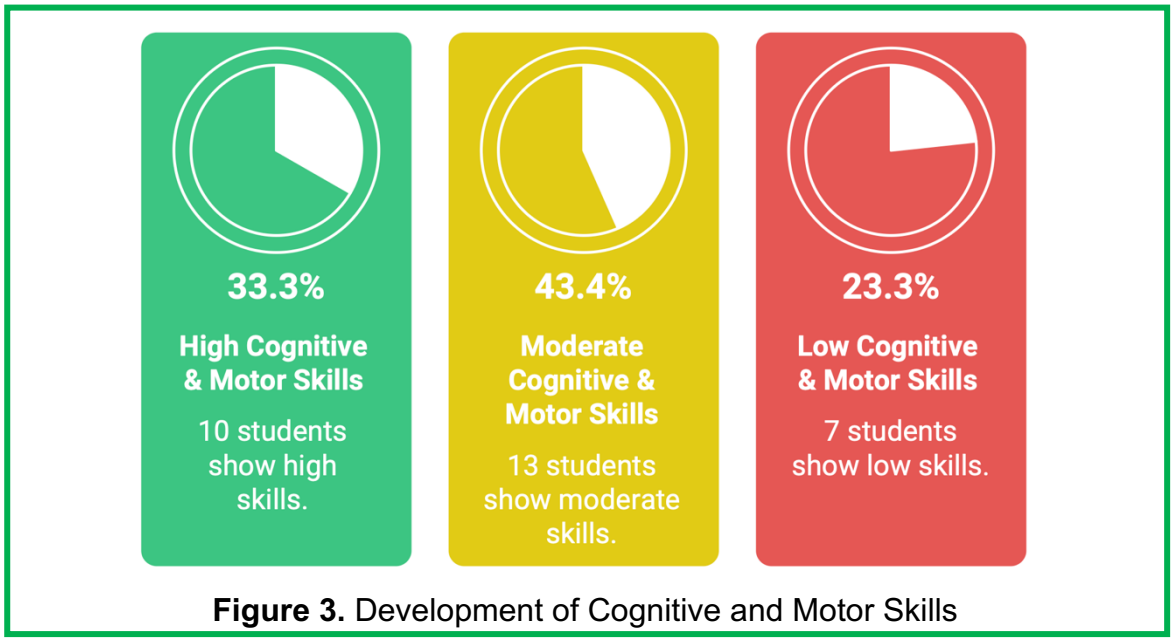

Figure 3. Development of Cognitive and Motor Skills

The findings in the table indicate that natural materials significantly contributed to the development of children's cognitive and motor skills. A total of 10 students, representing 33.3% of the sample, demonstrated high levels of development in this area. These students showed strong abilities in sorting, arranging, and manipulating objects, such as stones, tamarind seeds, and banana midribs. They also exhibited advanced cognitive skills, including classification, problem-solving, and making connections between learning activities and their natural environment. Their consistent engagement highlights the potential of natural materials to nurture higher-order thinking alongside fine motor coordination.

The majority of students, 13 out of 30 (43.4%), were categorized in the moderate level of cognitive and motor skills development. This group showed steady

progress in performing tasks with natural materials but sometimes required additional guidance from teachers. For example, while they could sort and arrange objects, their problem-solving strategies were less systematic compared to those in the high category. This suggests that natural materials provided meaningful opportunities for learning, but scaffolding and structured instruction were still necessary to help students maximize their learning outcomes. Meanwhile, 7 students (23.3%) were identified as having low development in cognitive and motor skills. These children often faced challenges in handling small objects or performing tasks that required precision and coordination. They also demonstrated limited ability in abstract thinking, such as classification and problem-solving. This finding indicates the need for targeted interventions, such as more frequent practice, differentiated activities, and individualized support. By providing these students with tailored guidance, educators can gradually enhance both their motor abilities and cognitive growth, ensuring that no child is left behind in the learning process.

Positive Teacher Perceptions with Limited Application

Teachers acknowledged the potential of natural materials as effective learning resources, noting their accessibility and cultural relevance. However, their actual implementation in classroom practices remained limited due to a lack of structured strategies and training.

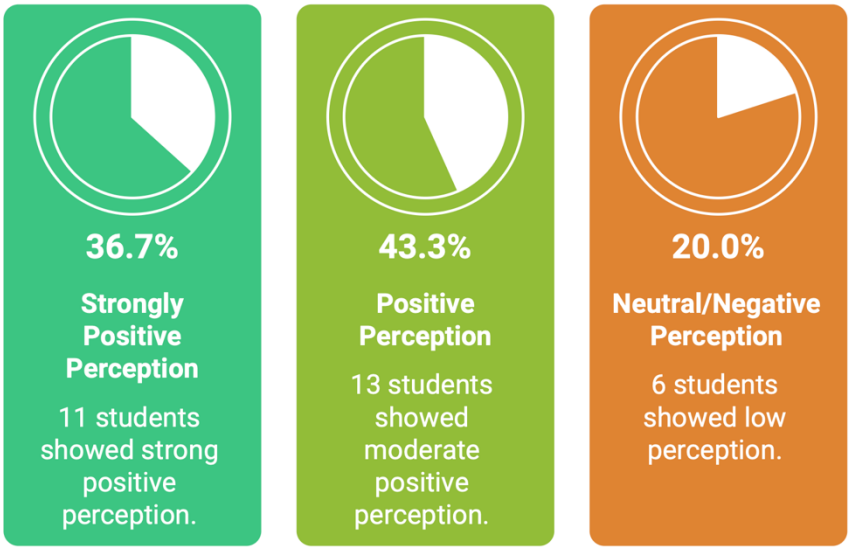

Figure 4. Positive Teacher Perceptions with Limited Application

The figure illustrates that the majority of students responded positively to the use of natural materials as learning resources. A total of 11 students (36.7%) demonstrated a strongly positive perception, reflected in their enthusiasm, active participation, and eagerness to explore natural objects during classroom activities. These students were quick to engage in tasks such as sorting, arranging, and presenting their work, showing that natural materials successfully encouraged both motivation and creativity. Their responses indicate that natural resources can act as highly effective media for stimulating meaningful learning experiences. Meanwhile, 13 students (43.3%) expressed moderate but positive perceptions toward the use of natural materials. This group displayed interest in the activities, though their participation tended to vary depending on the type of task and level of guidance

provided by the teacher. For instance, some students actively participated in group discussions but were less confident when asked to present individually. This suggests that while they valued the activities, additional scaffolding and encouragement were necessary to fully engage them in the learning process. On the other hand, 6 students (20.0%) showed neutral or less favorable perceptions of natural material-based learning. These students were often hesitant to explore materials independently, required frequent teacher support, and sometimes preferred conventional learning tools. Their limited engagement may be linked to differences in learning styles, prior exposure, or lower levels of confidence. These findings highlight the importance of differentiated instructional strategies, where teachers provide targeted interventions to ensure that all students—regardless of their initial perceptions—can benefit from the use of natural materials in early childhood education.

3.2 Discussions

The findings indicate that the integration of natural materials into classroom activities successfully enhanced children's creativity and engagement. Teachers observed that students became more curious and imaginative when they were allowed to explore objects such as stones, tamarind seeds, banana midribs, and banana leaves. These materials encouraged children to experiment, create patterns, and tell stories about their findings. According to teachers, this process not only motivated students to participate actively but also provided them with opportunities to express their ideas in unique ways. Such outcomes support the idea that authentic and hands-on learning experiences play a key role in fostering early creativity. During interviews, teachers highlighted that students who were naturally confident tended to take initiative in group work, leading discussions and sharing results with enthusiasm. Meanwhile, other students, though interested, were more reserved and required encouragement to remain focused. Teachers explained that the variation in children's responses was influenced by personality differences and prior learning experiences. This underscores the importance of differentiated teaching strategies, where educators must balance between providing freedom for exploration and offering guidance to students who need additional support. The teachers emphasized that even students who were initially hesitant showed gradual improvement when given consistent motivation.

Another important point raised by teachers is that the use of natural materials helped students connect learning with their daily lives. Children were more engaged because the objects were familiar, accessible, and culturally relevant, making the learning process feel meaningful and enjoyable. However, teachers also acknowledged that integrating natural materials requires careful planning and creativity from educators, particularly in designing structured activities that maximize both engagement and learning outcomes. This finding suggests that professional development for teachers is necessary to equip them with innovative strategies to utilize natural resources more effectively in early childhood education.

The results demonstrate that the use of natural materials made a meaningful contribution to the development of children's cognitive and motor skills. Activities such as sorting stones, arranging tamarind seeds, or manipulating banana midribs and leaves encouraged children to practice precision and coordination, thereby strengthening their fine motor abilities. At the same time, these tasks nurtured cognitive skills, including classification, pattern recognition, and problem-solving.

Teachers noted during interviews that when children engaged directly with natural objects, they appeared more focused and attentive, showing curiosity in exploring new ways to use the materials in classroom tasks. Teachers also emphasized that while some children were able to perform these activities with confidence and creativity, others required closer guidance and encouragement. They explained that children with more advanced experiences at home or in prior learning settings tended to be more independent in handling objects, whereas those with limited exposure sometimes struggled with fine motor control or systematic thinking. This highlights the role of scaffolding in ensuring that all children can benefit from natural material-based learning. According to teachers, providing step-by-step instructions and modeling how to manipulate objects helped children who were less confident to gradually develop their skills.

Another important finding from the teacher interviews is that natural materials not only fostered skill development but also supported meaningful connections between learning and daily life. Children were able to relate the use of these objects to their environment, which strengthened both their understanding of nature and their problem-solving strategies. However, teachers acknowledged that challenges remained, particularly in designing structured activities that balance exploration with targeted learning outcomes. They suggested that professional support and training would help educators design more systematic approaches to maximize the potential of natural materials in enhancing both cognitive and motor development in early childhood education.

The findings show that students generally responded positively to the integration of natural materials in classroom learning. Many children expressed enthusiasm and motivation when engaging with activities involving stones, tamarind seeds, banana midribs, and banana leaves. Teachers explained in interviews that these materials sparked students' curiosity and encouraged them to participate more actively in exploratory tasks and group discussions. The familiarity of the objects also made children feel more comfortable and connected to their learning experiences, which supports the idea that local and accessible resources can serve as effective teaching media. At the same time, the study revealed that not all students showed the same level of engagement. Some participated consistently and confidently, while others were less active, particularly when asked to present their work individually or take initiative in group activities. Teachers acknowledged that these differences were influenced by children's personalities, learning preferences, and previous exposure to similar activities. They emphasized that while natural materials provided opportunities for active learning, additional encouragement and structured guidance were often necessary to ensure broader student participation. This highlights the importance of scaffolding strategies to help less confident children become more involved.

Teacher interviews also pointed out a significant challenge: despite their recognition of the benefits of natural materials, their application in classroom practices remained limited. Educators mentioned a lack of training and structured strategies to integrate these resources systematically into the curriculum. They suggested that professional development programs and collaborative planning could provide practical solutions for maximizing the use of natural materials. By addressing these gaps, teachers believe that natural resource-based learning could become a

more consistent and impactful approach, benefiting both student engagement and overall learning outcomes.

4. Conclusion

This study concludes that natural materials have significant potential as effective learning resources in early childhood education. Their use was shown to enhance children's creativity, imagination, cognitive abilities, and fine motor skills through hands-on exploration and active participation. The findings also revealed that students generally responded positively to activities involving natural objects, demonstrating increased enthusiasm and engagement when learning was connected to their immediate environment. These outcomes confirm that integrating natural resources into classroom practices provides meaningful, contextual, and enjoyable learning experiences for young children. At the same time, the research highlights several challenges that need to be addressed, particularly in relation to teacher capacity and systematic implementation. Although teachers acknowledged the accessibility and cultural relevance of natural materials, their application in daily classroom practices remained limited due to a lack of training and structured strategies. Therefore, this study recommends providing professional development programs for educators, strengthening collaboration between schools and communities, and designing policies that encourage the sustainable integration of natural materials into the curriculum. By bridging these gaps, early childhood education in Buton and beyond can be further enriched, ensuring that children, teachers, and parents alike benefit from a holistic and culturally grounded learning approach.

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