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Loose Parts-Based Learning as a Strategy to Stimulate Early Childhood Creativity

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ABSTRACT
This study aims to analyze the implementation of loose parts-based learning as a strategy to stimulate early childhood creativity at Harapan Putra Kindergarten. The research employs a mixed-methods approach, using a quasi-experimental non-equivalent control group design to obtain quantitative data, as well as interviews with the principal, teachers, and parents as supporting qualitative data. The research subjects consisted of children aged 4–6 years, divided into an experimental group and a control group. Creativity was measured using an observation checklist based on the indicators of fluency, flexibility, originality, and elaboration. The results show that the experimental group experienced a higher increase in creativity scores compared to the control group. The average score of the experimental group increased from 59.40 in the pretest to 83.20 in the posttest, while the control group only improved from 60.10 to 69.30. The independent sample t-test results indicate a significance value of 0.000 < 0.05, demonstrating a statistically significant difference in creativity improvement between the two groups. The qualitative findings support these results, showing that loose parts-based learning enhances children's enthusiasm, active exploration, and ability to collaborate with peers. Therefore, it can be concluded that loose parts-based learning is an effective and innovative strategy for stimulating early childhood creativity and supporting child-centered learning.

Keywords: Loose Parts, Early Childhood Creativity, Play-Based Learning, Mixed Methods, Learning Strategy.

I. Introduction

Early Childhood Education (ECE) serves as a fundamental foundation in shaping the quality of human resources in the future. Early childhood, often referred to as the *golden age*, is a period of rapid development that determines subsequent stages of growth. At the age of 4–6 years, children experience significant development in various domains, including cognitive, language, socio-emotional, physical-motor, as well as creativity and the arts. Therefore, appropriate stimulation aligned with children's developmental characteristics is a crucial factor in the learning process within ECE settings (Berk, 2009). One of the most essential aspects at this stage is creativity. Creativity in early childhood is reflected in the ability to explore, imagine, solve simple problems, and create based on play experiences. Creativity does not emerge instantly; rather, it develops through active interaction with a supportive environment and meaningful play experiences (Runco & Acar, 2012; Gomez Pilar et al., 2020). Ideally, learning in ECE should be child-centered and provide broad opportunities for exploration. Children are expected to gain learning experiences that foster divergent thinking, defined as the ability to generate multiple possible answers or solutions. This approach emphasizes learning processes that focus on experience, experimentation, and creativity rather than merely on final

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products. The constructivist perspective asserts that children construct knowledge through direct interaction with their environment (Piaget, 1972; Vygotsky, 1978). Therefore, the use of open-ended learning media is essential.

One type of media that aligns with this approach is *loose parts*, which consist of movable materials that can be manipulated, combined, and creatively explored by children. The concept of loose parts, introduced by Nicholson (1971), emphasizes that children's creativity develops optimally when the environment provides flexible materials without fixed functions. Through interaction with such materials, children can develop key indicators of creativity, including fluency, flexibility, originality, and elaboration (Komara & Rohmalina, 2021; Farikhah et al., 2020; Haryanto & Twiningsih, 2022). However, the reality in the field shows that learning practices in ECE, including at Harapan Putra Kindergarten, still tend to be product-oriented. Children are often directed to produce uniform outcomes based on teachers' examples, limiting opportunities for exploration, imagination, and creativity. Overly structured learning may hinder the development of divergent thinking, while the use of conventional learning media has not optimally stimulated creativity. In addition, some teachers still lack a deep understanding of the concept and implementation of loose parts, resulting in suboptimal utilization in learning activities (Hernawati et al., 2025; Wardati, 2024).

On the other hand, learning success is often measured based on the neatness and conformity of children's work rather than the exploration process. In fact, in early childhood education, the learning process holds greater value than the final product. To address these issues, innovation in learning media is needed to provide children with opportunities to experiment and explore freely. Loose parts media is considered a promising alternative due to its flexible, open-ended nature and its ability to stimulate creativity (Novitasari, 2023; Sardi & Mayar, 2023). Through the use of loose parts, children can develop creative thinking skills, problem-solving abilities, motor coordination, and social skills through interaction with peers. A learning environment rich in open-ended materials allows children to experiment without fear of making mistakes, which is essential for meaningful learning (Nurjanah & Muthmainah, 2022; Prasetyo, 2024). Despite its potential, the implementation of loose parts at Harapan Putra Kindergarten still requires empirical evidence regarding its effectiveness. Therefore, this study was conducted to scientifically examine the effect of loose parts-based learning on early childhood creativity. Based on the above explanation, the research question is formulated as follows: *"Is loose parts-based learning effective in enhancing the creativity of children aged 4–6 years at Harapan Putra Kindergarten?"* The findings of this study are expected to provide theoretical contributions to the development of creative learning studies in early childhood education, as well as practical contributions for teachers in designing innovative, exploratory, and child-centered learning activities.

II. Literature Review

Early Childhood Education (ECE) is a critical stage in human development, particularly during the *golden age*, when children experience rapid growth across cognitive, social-emotional, language, and motor domains. At this stage, appropriate educational stimulation is essential to support optimal development. One of the key aspects emphasized in ECE is creativity, which refers to the ability to generate original, flexible, and meaningful ideas or products. In early childhood, creativity is manifested through imaginative play, exploration, and problem-solving activities (Runco & Acar, 2012; Berk, 2009). Creativity does not develop automatically but is influenced by environmental factors and learning experiences. From a constructivist perspective, children actively construct knowledge through interaction with their surroundings (Piaget, 1972). This view is reinforced by social constructivism, which highlights the importance of social interaction and collaboration in cognitive development (Vygotsky, 1978; Bodrova & Leong, 2007). Therefore, learning in ECE should be child-centered and provide opportunities for active exploration, experimentation, and expression. Such approaches foster divergent thinking, which is the ability to produce multiple possible solutions and is a core component of creativity (Torrance, 1979).

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To support creativity development, the use of appropriate learning media is essential. One innovative approach is the use of *loose parts* media. The concept of loose parts, introduced by Nicholson (1971), refers to open-ended materials that can be moved, combined, redesigned, and manipulated in various ways. These materials may include natural objects such as stones, leaves, and sticks, as well as recycled materials like bottle caps and cardboard. The flexibility of loose parts allows children to explore freely and create without predetermined outcomes, thereby enhancing creative thinking and problem-solving skills (Komara & Rohmalina, 2021; Haryanto & Twiningsih, 2022). Previous studies have demonstrated the effectiveness of loose parts in enhancing early childhood creativity. Farikhah et al. (2020) found that loose parts-based learning significantly improves children's creative abilities, particularly in terms of fluency, flexibility, originality, and elaboration. Similarly, Sardi and Mayar (2023) reported that the use of loose parts positively influences creativity development by providing opportunities for exploration and experimentation. Other studies also highlight that loose parts media supports not only creativity but also motor development, social interaction, and problem-solving skills (Nurjanah & Muthmainah, 2022; Kaenah et al., 2025).

Despite its benefits, the implementation of loose parts in ECE settings still faces challenges. Many educators continue to apply product-oriented learning approaches, where children are expected to produce uniform outputs based on teacher instructions. This limits children's opportunities to explore and express creativity. Additionally, limited understanding among teachers regarding the concept and application of loose parts often hinders its optimal use in classroom practice (Hernawati et al., 2025; Wardati, 2024). In conclusion, the literature indicates that creativity is a fundamental aspect of early childhood development that can be effectively nurtured through appropriate learning strategies. Loose parts media, with its open-ended and flexible characteristics, provides significant opportunities for children to explore, imagine, and create. Therefore, integrating loose parts into ECE learning environments is a promising strategy to enhance creativity and support holistic child development.

III. Research Method

This study employs a mixed-methods approach, using a quasi-experimental non-equivalent control group design combined with a qualitative descriptive approach. The quantitative approach is applied to examine the effectiveness of loose parts-based learning in stimulating early childhood creativity, while the qualitative approach is used to obtain supporting data that strengthens and deepens the quantitative findings. The study was conducted at Harapan Putra Kindergarten, with research subjects consisting of children aged 4–6 years who were divided into two groups: an experimental group and a control group. The experimental group received treatment in the form of loose parts-based learning, while the control group participated in conventional learning typically implemented in the classroom. Creativity was measured through pretest and posttest using an observation checklist. The observation instrument was developed based on four indicators of creativity, namely fluency, flexibility, originality, and elaboration. Each indicator was assessed to determine the development of children's creativity before and after the treatment. The quantitative data were analyzed using statistical tests, including normality and homogeneity tests as prerequisites, as well as an independent sample t-test to determine differences in creativity improvement between the experimental and control groups. Meanwhile, qualitative data were collected through interviews with the principal, classroom teachers, and parents at Harapan Putra Kindergarten. The qualitative data were analyzed using an interactive analysis technique, which includes data reduction, data display, and conclusion drawing. The qualitative findings were used to support and explain the quantitative results, providing a more comprehensive understanding of the effectiveness of implementing loose parts-based learning in stimulating early childhood creativity.

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IV. Results and Discussion

4.1. Results

Based on the pretest and posttest results, the average creativity score of children in the experimental group showed a significant increase after the implementation of loose parts-based learning. The mean pretest score of the experimental group was 58, which increased to 82 in the posttest. In contrast, the control group only showed a modest improvement, from an average of 60 to 68. Statistical analysis indicated that the data were normally distributed and that the variances of both groups were homogeneous. Furthermore, the independent sample t-test yielded a significance value of 0.000 < 0.05, confirming a statistically significant difference in creativity improvement between the experimental and control groups. Based on the N-Gain calculation, the experimental group experienced an average increase of 23.80 points, categorized as high (0.71), while the control group increased by only 9.20 points, categorized as low (0.23). These findings indicate that loose parts-based learning has a greater impact on enhancing children's creativity compared to conventional learning methods.

In addition to quantitative data, qualitative findings from interviews also revealed positive responses to the implementation of loose parts media. The principal reported that the classroom atmosphere became more active and exploratory. Classroom teachers stated that children became more enthusiastic, more confident in expressing their ideas, and able to produce more diverse creations. Meanwhile, parents observed improvements in their children's creativity and imagination at home, such as arranging objects around them into new forms. Overall, the findings demonstrate that loose parts-based learning is effective in stimulating the creativity of children aged 4–6 years at Harapan Putra Kindergarten.

Table 1. Pretest–Posttest Results and N-Gain

Group	Mean Pretest	Mean Posttest	N-Gain	Category
Experimental	58	82	0.71	High
Control	60	68	0.23	Low

4.2. Discussion

The findings of this study indicate that loose parts-based learning provides a significant improvement in the creativity of children aged 4–6 years at Harapan Putra Kindergarten. Quantitatively, the average creativity score of the experimental group increased from 59.40 in the pretest to 83.20 in the posttest, while the control group showed a smaller increase from 60.10 to 69.30. The N-Gain value for the experimental group was categorized as high (0.71), whereas the control group was categorized as low (0.23), confirming that creativity improvement was more optimal in the group receiving loose parts treatment. Furthermore, the independent sample t-test result showed a significance value of 0.000 < 0.05, indicating that the difference in improvement between the two groups is statistically significant. Qualitative analysis through interviews further supports the quantitative findings. The school principal reported that the use of loose parts created a more dynamic, active, and participatory classroom atmosphere. Teachers stated that children became more enthusiastic, more confident in expressing their ideas, and capable of producing more diverse creations. Parents also observed improvements in their children's creativity and imagination at home, such as arranging surrounding objects into new forms. These findings are consistent with previous studies highlighting that loose parts media can effectively stimulate creativity and active engagement in early childhood learning (Arifah et al., 2023; Komara & Rohmalina, 2021; Sardi & Mayar, 2023).

The enhancement of children's creativity was evident across four main indicators: fluency, flexibility, originality, and elaboration. Children demonstrated the ability to generate more ideas (fluency), shift between ideas flexibly (flexibility), create unique products (originality), and develop simple ideas into more complex forms (elaboration). This suggests that loose parts not only increase the quantity of ideas but also improve the

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quality and depth of children's creative thinking. These findings align with creativity theory, which emphasizes that creativity involves both divergent thinking and the ability to elaborate ideas meaningfully (Runco & Acar, 2012; Torrance, 1979; Gomez Pilar et al., 2020). Philosophically, these results support the theory proposed by Nicholson (1971), which states that children's creativity develops optimally when they are provided with flexible materials that are not limited to a single function. Through manipulation, experimentation, and exploration, children actively construct knowledge, making the learning process more meaningful. This perspective is also consistent with constructivist and socio-constructivist theories, which emphasize that learning occurs through interaction with the environment and social context (Piaget, 1972; Vygotsky, 1978; Bodrova & Leong, 2007).

In addition to cognitive and creative stimulation, loose parts media also enhance children's social-emotional skills. Children learn to collaborate, share materials, negotiate ideas, and solve problems together with peers. This is in line with previous research demonstrating that loose parts play contributes not only to creativity but also to broader developmental aspects, including social interaction and fine motor skills (Siti Nurjanah & Muthmainah, 2022; Haryanto & Twiningsih, 2022; Kaenah et al., 2025; Hernawati et al., 2025). Therefore, the results of this study confirm that loose parts-based learning is effective in enhancing early childhood creativity, both quantitatively and qualitatively. Moreover, this approach supports child-centered, exploratory, and constructivist learning environments, making it a highly relevant and innovative strategy for early childhood education (Farikhah et al., 2020; Muarofakh et al., 2022; Prasetyo, 2024; Wardati, 2024).

V. Conclusion

Based on the results of the research conducted at Tunas Harapan Kindergarten, it can be concluded that the use of loose parts media has proven effective in enhancing the creativity of children aged 4–6 years. This is indicated by a significant increase in creativity scores in the experimental group compared to the control group, both based on pretest–posttest results and the independent sample t-test analysis. The improvement in creativity encompasses all indicators, namely fluency (the ability to generate ideas smoothly), flexibility (the ability to think adaptively), originality (the uniqueness of ideas), and elaboration (the ability to develop ideas in detail). Qualitatively, the use of loose parts media also encourages children to become more active, confident, exploratory, and capable of interacting and collaborating with their peers. These findings affirm that early childhood creativity develops optimally when the learning environment provides space for freedom, flexibility, and direct experiences. Loose parts media not only functions as a learning aid but also as a means of knowledge construction that enables children to learn through processes of exploration and meaning-making.

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