

Harnessing Loose Part Media for Cognitive Development: Evaluating Its Effects on Early Mathematics Play Activities in Early Childhood Education

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Abstract

The implementation of Loose Part media has proven to enhance various aspects of children's development, particularly in cognitive development. This study aims to evaluate the impact of implementing Loose Part media in early mathematics play activities on the cognitive development of early childhood at 'Aisyiyah Bustanul Athfal (ABA) Simangambat Mandailing Natal Kindergarten. The research adopts the Classroom Action Research (CAR) method, utilizing a quantitative approach to measure the success rate of the children and a qualitative approach to observe advanced development and decision-making. Loose Part media is applied to stimulate the cognitive development of early childhood through early mathematics play activities. The research population involves early childhood subjects in Group B, aged 5-6 years, at 'Aisyiyah Bustanul Athfal (ABA) Simangambat Mandailing Natal Kindergarten, totaling 22 children. The research findings indicate that the implementation of Loose Part media significantly improves the cognitive development of early childhood. Before the intervention, the average score was 30%, which increased to 62.68% after Cycle I and reached 85.20% after Cycle II. Consequently, learning through Loose Part media in play activities proves to be an effective choice for enhancing the cognitive development of early childhood. The interpretation of the research results reveals a significant enhancement in children's cognitive abilities through interaction with Loose Part media. The substantial improvement, reflected in the average score progression from Cycle I to Cycle II (85.20%), indicates the positive contribution of Loose Part media in early mathematics play activities to the cognitive development of early childhood.

Keywords: classroom action research, cognitive development, early childhood, early mathematics, loose part media

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1. Introduction

Children at an early age have a strong capacity for absorbing education. They tend to be naturally curious and observant (Aziz et al., 2022). Early childhood competency standards encompass various developmental aspects, including Religious and Moral Values (NAM), Social Emotional (SOSEM), Language, Cognitive, Physical Motor, and Art. The cognitive behavioral counseling

approach aims to alter the problematic relationship between situations and habitual reactions to problems (Syah, 2019). Cognitive development is a crucial aspect that needs nurturing. According to competency standards, kindergarten teachers must focus on fostering cognitive development among children. Understanding the cognitive aspect is particularly significant when dealing with the development of

elementary-aged children. It involves a broad spectrum of abilities related to thinking, such as reasoning, memory, problem-solving, generating ideas, and creativity (Bujuri, 2018).

Early Childhood metacognitive learning involves exploring the thoughts of Early Childhood Education students in the form of their perceptions as prospective Early Childhood Education teachers, as well as the expression of their thoughts (Fadillah, 2020). According to the results of an interview conducted with a kindergarten teacher named Mrs. Sri Wahyuni on March 6, 2023, she observed that "children's cognitive development is still underdeveloped, especially in counting activities. Most children struggle with addition and subtraction, with only about 6 out of 22 students able to count without teacher assistance." In other words, children's cognitive development is not optimal. Cognitive processes encompass changes in human thinking, intelligence, and language (Yusnita, 2020).

The cognitive development theory holds significant influence in understanding how students acquire and utilize knowledge (Istiqomah & Maemonah, 2021). This understanding can be shaped by the media employed to stimulate children's cognitive development. Previous research underscores the importance of employing diverse media and activities to stimulate children's cognitive growth. However, observations reveal that Kindergarten practices often rely on finished materials, such as origami paper, templates, drawings, colored pencils, crayons, etc., with limited incorporation of varied media. This practice contrasts with the need for diverse stimuli, as previously emphasized in provided book packages.

Based on observations conducted at TK 'Aisyiyah Bustanul Athfal (ABA)

Simangambat Mandailing Natal, researchers observed that children's cognitive development, particularly in early mathematics learning, specifically simple addition and subtraction, had not progressed as expected. Children were not accustomed to using objects around them for play activities, despite the availability of cheap, safe, and comfortable materials (Loose Parts) readily found in the area, derived from natural resources. Instead, children tended to focus more on teacher explanations, indicating a teacher-centered (monotonous) approach to learning. Furthermore, activities lacked variety, particularly in terms of Student Worksheets (LKS), resulting in decreased interest and passive engagement among children. Consequently, children displayed limited creativity in utilizing their surroundings for learning activities.

Teachers play a crucial role in fostering children's cognitive abilities during preschool years. The teacher's role as a stimulus significantly influences the attainment of optimal child growth and development (Khulusinniyah, 2016). Providing children with appropriate and effective stimulation is essential for maximizing their development. Utilizing these levels can facilitate PAUD teachers in establishing their learning objectives. The use of operational verbs simplifies comprehension, organization, and implementation of learning goals (Rabitah Hanum Hasibuan, 2021). One crucial consideration is the selection of learning support media. Inappropriate media usage may hinder the achievement of learning goals. Media encompass more than just Student Worksheets (LKS), expensive materials, or tools; it also involves ensuring children's safety and comfort during activities. Effective learning media need not incur significant expenses; they can be

sourced from readily available resources, commonly referred to as Loose Parts. Loose Parts are versatile teaching materials with limitless potential in children's learning experiences.

Apart from media selection, the choice of play activities must also align with the developmental aspects to be addressed, acknowledging the interconnectedness of the six developmental domains. While language development often involves storytelling and audio-visual listening activities, cognitive development in early childhood emphasizes mathematical-logical intelligence, which necessitates activities utilizing concrete objects.

Mathematical-logical intelligence encompasses the capacity to handle numbers, calculations, patterns, and engage in logical and scientific thinking. Mathematics and logic share foundational principles, demonstrating consistency in logical reasoning. The Greek philosopher Aristotle was the first to formalize the laws of logic.

Children with mathematical intelligence typically exhibit early interest in numbers and patterns, demonstrating enthusiasm for counting, addition, subtraction, multiplication, and division. Conversely, deficiencies in mathematical-logical intelligence can lead to individual and cultural challenges. Without a grasp of numerical concepts, individuals may fall prey to unrealistic expectations or make poor financial decisions. The relationship between mathematical intelligence and Piaget's stages of cognitive development further reinforces its significance.

Hence, researchers are motivated to employ Loose Part media to enhance early childhood cognitive development through mathematical play activities in 'Aisyiyah Bustanul Athfal (ABA) Simangambat Mandailing Natal kindergarten. Situated in a rural area surrounded by rice fields, trees, and pristine rivers, this kindergarten offers an ideal environment for accessing Loose Parts, such as river stones, sand, gravel, seeds, tree branches, and coconut shells, fostering safe and nature-based play experiences for children.

2. Method

Training ideally commences with clear directions and explanations (Siregar, 2023). This study adopts the Classroom Action Research (CAR) approach, recognized for its pivotal role in enhancing learning quality when executed effectively (Salim, 2017). Quantitative data is employed to assess children's success rates, while qualitative data delves into advanced development and decision-making processes. The study utilizes Loose Part media to bolster early childhood cognitive development through mathematical play activities.

Research procedures encompass operational steps concerning planning, implementation, observation/evaluation, and reflection, as outlined below:

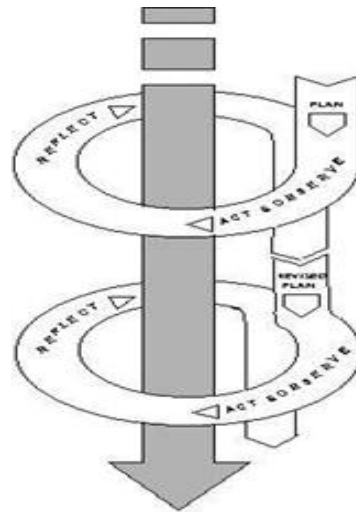


Figure. 1 PTK Model Design Kemmis dan Mc. Taggart

In interpreting the data in this research, two distinct approaches are utilized: qualitative data analysis and quantitative analysis. The qualitative data analysis approach follows the interactive model proposed by Miles and Huberman, comprising a series of steps: (1) data sorting, (2) data display, and (3) conclusion drawing and verification (Wardani, 2019).

3. Results and Discussion

The results of observations on the implementation of Loose Part media to enhance early childhood cognitive development through pre-action play activities in Group B of Kindergarten 'Aisyiyah Bustanul Athfal (ABA) Simangambat, Siabu District, Mandailing Natal Regency on March 6, 2023, using a checklist instrument, are presented in the table below:

Table 1. Ability Aspect

No	Ability Aspect	Percentage
1	Children are able to know the number of objects by counting	33,70%
2	Children can arrange objects according to the number of numbers	37,26%
3	Children can name the number of objects from the least to the most	35,25%
4	Children are able to name the number symbols for the number of objects that have been counted	27,56%
5	Children are able to use symbols of numbers to count objects	30,12%
6	Children are able to match the number of numbers with the number symbols	37,41%
7	Children are able to present various kinds of objects in the form of pictures and writing (there are pictures of objects followed by the number of objects written)	30,22%
8	Children are able to show the forms of number symbols (pre writing)	22,25%
9	Children are able to say numbers when shown the symbol of the number	25,35%
10	Children are able to use the concept of addition and subtraction when given objects	20,88%
Average		30%
Success Indicator		85 %

Based on the data obtained from the pre-action phase, it is evident that the cognitive development of young children in addition and subtraction materials is still suboptimal, indicating a beginning stage of development.

This forms the basis for researchers to enhance the cognitive development of early childhood children in Group B through play activities utilizing Loose Part Kindergarten

media at 'Aisyiyah Bustanul Athfal (ABA) Simangambat Mandailing Natal.

Observations highlight the challenge of suboptimal cognitive development, prompting researchers to design interventions and adjustments in the learning approach to foster improved cognitive development. This entails introducing Loose Part media in play activities with the goal of stimulating and accelerating cognitive progress among young children in Group B. The primary objective is to create engaging and profound learning experiences, enabling children to grasp basic mathematical concepts through creative and interactive play activities.

These intervention steps will be evaluated during the action cycle implementation, and outcomes will be observed to assess improvements in the cognitive development of young children. Subsequent action cycles are anticipated to yield a deeper understanding of how Loose Part media can influence and support the learning process of young children. Therefore, this research aims to optimize the cognitive development of young children through a responsive and innovative learning approach using Loose Part media.

The utilization of Loose Part media is anticipated to enhance and nurture children's creativity, enabling them to express their ideas and opinions, think creatively, produce works, and articulate themselves effectively, thereby cultivating a generation whose development is optimal for the demands of the current era (Oktavia Lestari & Karim Halim, 2022). Researchers aim to achieve an 85% success rate in the application of Loose Part media to improve the cognitive development of early childhood through Group B play activities.

The selection of Loose Part media is grounded in the immediate environment of

the child, as supported by research conducted by Nurjanah (2019). This concept is reinforced by the understanding that loose parts, defined as open-ended loose objects, are readily available in the natural environment at no additional cost. This affords children the opportunity to express their creativity using freely available materials, granting them the autonomy to experiment and explore.

The theory of loose parts was initially developed by Nicholson in 1971 with the objective of providing children with a framework for unleashing creativity using manipulable, scannable, and recreatable natural materials. This concept encompasses objects or items easily found in the environment. According to Gull, as cited in Nurjanah (2019), and Casey & Robertson (2016), loose parts create enriching environments for children's play, furnishing the resources necessary for fulfilling their inherent right to play.

Children's need to play is fundamental, crucial for their health, well-being, and the promotion of creativity, imagination, self-confidence, self-advancement, as well as physical, social, cognitive, and emotional strength and skills. This underscores the primary reason for choosing the media to be used in fostering children's creativity. The loose parts approach not only aligns with the natural inclination of children to explore and experiment but also adheres to the principle that play is an essential aspect of a child's rights, contributing significantly to their holistic development.

The investigation into the "Application of Loose Part Media in Improving Early Childhood Cognitive Development Through Play Activities" gains additional depth when juxtaposed with the comprehensive study conducted by Nur and colleagues in 2022. Their research delves into a fundamental

aspect of early childhood development – fine motor skills. This intricate facet holds paramount importance in the holistic development of an individual, as a child's motor skills not only contribute to physical dexterity but also play a pivotal role in bolstering self-confidence, enabling them to navigate and interact effectively within their surroundings.

In the context of early childhood development, the dual role of parents and educational institutions becomes pivotal. Parents are essential contributors to a child's growth, ensuring that their nutritional needs are met to provide the necessary energy for physical development. Concurrently, educational institutions, represented by schools, are instrumental in creating an environment that fosters various activities aimed at refining and enhancing motor development in young learners.

The introduction of "Loose Part" plastic-based learning media adds a nuanced layer to this multifaceted educational approach. Particularly captivating is the application of this media in an animal-themed context, which proves to be not only educational but also highly engaging for young children. The intent is to stimulate the imaginative faculties of children, encouraging them to explore and understand the diverse array of animal species indigenous to Indonesia.

Upon field observation, the research by Nur et al. underscores the tangible impact of incorporating plastic-based "Loose Part" learning media on the physical motor development of children in Group B within the Sidoarjo District of Sidoarjo Regency. Notably, the acceptance of the second hypothesis in the study is evident through the discerned difference in average scores for Physical Motor Development. The control group reflects a score of 2.9891, indicating development as expected, while the

experimental group boasts an average score of 3.4752, signifying a commendable "Developing Very Well" status. This disparity substantiates the significant positive influence of using plastic-based "Loose Part" learning media on both language and physical motor development among 5-6-year-old children at TK. Dharma Wanita Persatuan Suko.

In a broader context, this research not only reaffirms the positive influence of "Loose Part" learning media on motor development but also sheds light on its applicability in addressing specific developmental aspects within the realm of early childhood education. The plastic-based learning materials, when thematically applied, prove to be effective tools in not only stimulating cognitive engagement but also in enhancing physical motor skills. This aligns seamlessly with the overarching theme of contemporary research, emphasizing the multifaceted benefits of integrating innovative learning media, such as "Loose Part," in early childhood education settings. As the educational landscape continues to evolve, incorporating dynamic and engaging methodologies becomes imperative for shaping a generation that is not only cognitively adept but also physically proficient and creatively stimulated.

a. Cycle I

Fine motor skills, involving the use of small muscles or specific body parts, constitute a series of movements that require opportunities for learning and practice. In children's development, both fine motor skills and manipulative skills play crucial roles. Fine motor skills encompass various activities such as writing, drawing, cutting, throwing and catching balls, as well as playing with objects or toys (Fatmawati, 2020).

It is essential to acknowledge that fine motor skills are not only related to physical aspects but also encompass cognitive and psychosocial elements in a child's development. The Dynamic System Theory, developed by Thelen and Whitenyerr, as articulated by Fatmawati (2020), provides a detailed overview of the child's motor system. This theory emphasizes that to develop motor abilities, children need to perceive something in their environment that motivates them to engage in specific activities, utilizing these perceptions as a basis for movement. Therefore, a child's motor abilities reflect their impulses and desires.

In addition to the close association with physical and intellectual aspects, fine motor skills also significantly impact the psychological dimension of a child. This includes the development of observational skills, problem-solving abilities, and even a child's level of self-confidence in exploring their world. Thus, the development of fine motor skills not only forms the foundation for future academic achievement but also influences a child's emotional and social development.

In this research, attention is directed towards understanding the extent to which children's motor skills can be enhanced using the "Loose Part" learning approach. The study consists of two cycles, namely Cycle 1 and Cycle 2. By comprehending the essence of fine motor skills and manipulative skills and leveraging innovative learning media like "Loose Part," this research aims to delve into how this approach can enrich children's learning experiences and comprehensively improve the development of their fine motor skills. Through this understanding, the roles of teachers, parents, and the school environment become crucial in creating an atmosphere that supports and stimulates the

holistic development of children's fine motor skills as they grow.

"Loose Parts" learning media has succeeded in improving children's cognitive abilities in both learning and problem-solving aspects, logical thinking, and symbolic thinking. This shows that the existence of learning media is a very important element in the teaching and learning process (Valentina Dewi, 2023). The implementation of Cycle I was held in three meetings, namely on Wednesday, August 9, 2023, Thursday, August 10, 2023, and Saturday, August 12, 2023. At each meeting, children were introduced to Loose Part media through play activities with the theme "My Motherland" with the sub-themes "My Country" and "Independence Day". Previously, teachers and researchers prepared what would be carried out in the activity, namely applying the materials and tools that would be used, determining the preparation plan that would be carried out in the activity.

At the first meeting on Monday, August 9, 2023, each group consisted of 7 children, forming 3 groups in total: the red, blue, and yellow groups. The materials and tools provided by teachers and researchers included flag drawing materials, crayons, stones, bottle caps, rubber seeds, charcoal, HVS paper, and pencils. The concept of Loose Parts is founded on the principle that it allows for unlimited play activities, as emphasized by Hadiyanti in 2021. This notion underscores the idea that loose parts, defined as open-ended and versatile objects, offer children an expansive and boundless realm of possibilities for play. Unlike specific or single-purpose toys, loose parts can be manipulated, combined, and repurposed in myriad ways, providing children with the freedom to engage in diverse and imaginative play activities. In the

context of play activities with Loose Parts, children are assigned specific duties or responsibilities according to mutually agreed-upon rules. These rules serve as guidelines that govern the interactions and engagements of children during play. By having designated roles, children not only understand their individual responsibilities but also contribute to the collaborative and cooperative nature of play. These agreed-upon rules foster a sense of structure and order within the play environment, ensuring that children interact in a manner that is both enjoyable and conducive to their development. The diverse and open-ended nature of Loose Parts, coupled with defined roles, encourages creativity, problem-solving, and social skills among children. Each child's unique duty contributes to the overall dynamic of the play, creating a rich and interactive experience that aligns with the principles of Loose Parts play philosophy. The second meeting was held on Thursday, August 10, 2023, with the theme "My Motherland," the sub-theme "My Country," and the specific theme of the National Symbol. Aspects of cognitive development with the application of Loose Part media through play activities. What was carried out at the second meeting was to count the parts of the feathers on the eagle. After completion, children were given the opportunity to communicate all the activities that had been carried out by examining the completed work.

The third meeting was held on Saturday, August 12, 2023, with the theme "My Homeland." Based on the existing problems, assistance is needed in making and using learning media (Muryaningsih, 2021). The sub-theme was "My Country," and the specific theme was "My Flag." During the third meeting, the children matched the flag pictures with the corresponding number of

pictures, arranged the number of flags from least to most, and matched the number of flags with the corresponding number symbol. Children completed tasks together under the direction of the teacher. At the end of the cycle, there was a children's worksheet combining the work carried out from Independence Day, the national symbol, and "My Flag".

Based on observations during the application of Loose Part media in Cycle I, it was noted that initially, the children did not fully comprehend the activities. Consequently, the implementation of Loose Part Media activities faced some challenges, as some children considered loose part items unclean and hesitated to use them, viewing them as unsuitable for learning tools. As a result of this misunderstanding, the teacher must consistently provide clarification whenever introducing loose part materials for use.

Observation results indicate that learning activities were conducted in accordance with the Learning Implementation Plan (RPPH). At the end of the lesson, an evaluation was conducted to assess the increase in early childhood cognitive development through playing activities with the application of loose part media.

During the implementation of activities in Cycle I, it was revealed that students were not fully able to concentrate optimally while playing with loose parts media. Observations showed challenges in maintaining focus and activity levels among the students during these activities. Therefore, to enhance the quality of interaction and student participation in play activities, an adjustment to the approach will be made in Cycle II.

In Cycle II, the research is designed to introduce the addition of singing as a supportive element in playing with loose parts media. This approach is based on the

understanding that singing can create a more enjoyable and joyful atmosphere for children. Additionally, singing is considered to have the potential to strengthen children's memory, in line with the findings of Sujiono (2013).

The addition of singing aims to create a more dynamic and profound play experience, stimulating all the senses of the children, and enriching emotional and social aspects in the context of learning activities. Music has a universal appeal that can evoke joy and enthusiasm in children, creating a more positive atmosphere and supporting their engagement in the learning process.

It is important to note that the effectiveness of adding singing as a method is assessed based on positive changes in the level of participation, involvement, and emotional response of the children. Observations show an increase in enthusiasm

and joy among the children during play activities with loose parts when accompanied by music. This phenomenon indicates that singing can be an effective approach to improve the quality of children's learning in the context of creativity and exploration using loose parts media (Mubarokah, 2021).

Thus, the results of the adjustment in Cycle II provide valuable insights into teaching strategies that are more responsive to the characteristics and preferences of children in the development of creativity through loose parts media. This research opens the door for further exploration of the integration of singing as an enrichment tool in children's learning activities.

From these results, the researcher has not reached the criteria limit of 85%. From the data in the table in the form of observations of the first cycle of cognitive development in Group B early childhood, it can be clarified through the following graph:

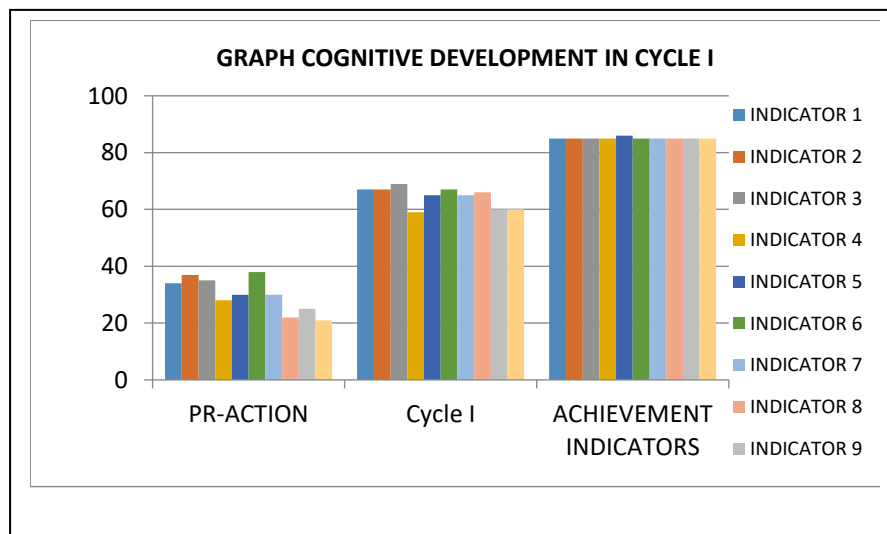


Figure 2. Graph of the Percentage of Increased Cognitive Development in Group B Early Children with the application of loose part media in cycle

b. Cycle II

In implementing the second cycle of action research, researchers continued to collaborate with teachers. The first meeting of Cycle II was held on Tuesday, August 15,

2023, with the theme "My Motherland/My Country/Indonesian Independence Day." The statement "How quickly individuals solve problems depends greatly on their cognitive development (Veronica, 2018)" underscores

the significant relationship between problem-solving abilities and cognitive development. Cognitive development refers to the progression of mental processes, including perception, memory, language, and problem-solving, that occur over the course of an individual's life. This developmental aspect plays a crucial role in shaping how efficiently and effectively individuals approach and resolve problems.

Veronica (2018) emphasizes that the pace at which individuals tackle problems is intricately linked to the level of their cognitive development. Cognitive development encompasses various stages, starting from infancy and extending throughout adulthood. During this developmental journey, individuals acquire and refine cognitive skills that contribute to their problem-solving capacity.

Problem-solving is the process used in solving problems (Darmawan & Suparman, 2019). Problem-solving involves the ability to analyze situations, identify relevant information, formulate solutions, and make decisions. Problem solving is also beneficial for teachers, where teachers are able to provide good stimulus to students (Silwana et al., 2021). As cognitive abilities mature, individuals become more adept at processing information, considering multiple perspectives, and employing critical thinking skills. This, in turn, influences the speed and efficacy with which they navigate and resolve challenges. Are two aspects that influence problem-solving, namely the use of complete metacognitive skills and external representation (Ijirana et al., 2021).

For example, in early childhood, cognitive development is marked by the acquisition of basic cognitive functions, such as object permanence and symbolic thought. As individuals progress through adolescence and adulthood, higher-order cognitive skills, including abstract reasoning and metacognition, further enhance problem-solving capabilities.

Veronica's assertion suggests that interventions or educational approaches aimed at promoting cognitive development

can potentially have a positive impact on an individual's problem-solving proficiency. Understanding the intricate connection between cognitive development and problem-solving lays the groundwork for designing strategies and interventions that nurture these cognitive abilities at different stages of life. This holistic perspective is vital for educators, psychologists, and parents seeking to support individuals in developing robust problem-solving skills aligned with their cognitive capacities (Veronica, 2018).

Kusmadewi's research (2019) also states the main thing to remember is that every individual must develop their own cognitive structure. For students to develop their cognitive structure, they must form their own patterns and relationships (connection abilities).

During the session, the children are invited to sing independence songs while engaging in various movements as an icebreaking activity. Following this, the lesson proceeds according to the school's standard operating procedures (SOP). Subsequently, the children are divided into three groups, namely the red, blue, and yellow groups, each consisting of 7 students. The teacher has prepared complete equipment and play materials in advance for three play activities. Later, the children are given the freedom to choose the play activities they will engage in. It is emphasized that each play activity must be completed before transitioning to the next, adhering to mutually agreed-upon rules of the game.

The second meeting will be held on Wednesday, August 16, 2023, with the theme "My Motherland/My Country/National Symbols." During this meeting, the children displayed enthusiasm for participating in learning using loose part media. They eagerly awaited the play activities and enthusiastically completed each task provided by the teachers and researchers. For instance, when directed to count the feathers on the Garuda bird, match them with number symbols, and identify the

parts with the most numbers, the children happily followed the instructions. This had a very positive impact on their cognitive development.

The third meeting took place on Saturday, August 19, 2023, with the theme "My Homeland/My Country/My Flag." During this meeting, the teacher adopted a more relaxed approach to providing instruction as the children demonstrated readiness and eagerness to engage in the learning activities. Their enthusiasm was evident as they eagerly requested to begin the learning through play. The teacher only needed to prepare the materials and tools for the three planned activities, establish the rules of the games, provide directions for the activities, supervise the children during the

activities, and guide them through completing the tasks. This activity, along with the last meeting between the researcher and the students, took place outside the classroom, specifically in the schoolyard.

Reflection activities in Cycle II were primarily focused on evaluating the process and implementation of each action. Overall, the implementation of Cycle II proceeded smoothly. Based on the observations of researchers and teachers, it can be concluded that the application of loose part media in improving the cognitive development of early childhood through play activities was successful, achieving 85.20% of the targeted success indicator of 85%. This is illustrated in the graph below:

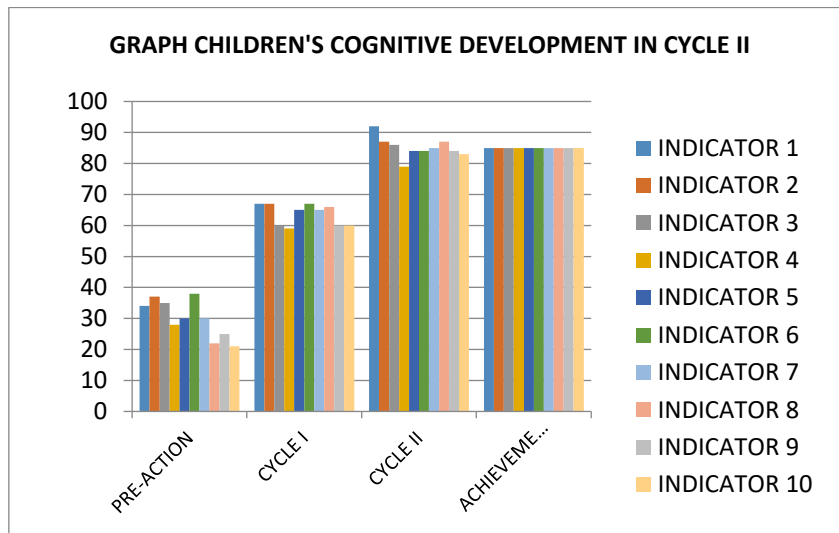


Figure 3. Children's Cognitive Development in Cycle II

Based on the graph above, it can be observed that there is an increase in cognitive development in each cycle, with cycle II achieving a successful indicator of 85.20%. The results from cycle II demonstrate an improvement compared to cycle I, as the percentage in cycle II is higher than that of cycle I.

Improvements made in cycle II to achieve these indicators include providing designated areas for play activities and granting children the freedom to choose which games to play, with full responsibility. The ability of children to coordinate various approaches to problem-solving can be

considered as a measure of intelligence growth (Bermain & Madura, 2022).

The results confirm that the application of loose part media can enhance the cognitive development of early childhood through play activities. Consequently, the cognitive development of early childhood children, particularly those in Group B1 of Kindergarten 'Aisyiyah Bustanul Athfal (ABA) Simangambat, can progress to the "Very Well Developing" (BSB) category.

This finding is consistent with the research conducted by Asih et al. (2022). Their study on the implementation of the center-based learning model supported by

loose parts media provides valuable insights into enhancing creativity and pedagogical competence among teachers in Group B Kindergartens, serving children aged 5-6 in the Ngaliyan sub-district of Semarang city.

The research findings reveal that through the implementation of the center-based learning model aided by loose parts media, teachers have the opportunity to sharpen their creative skills by utilizing simple objects within the classroom environment. The creativity stemming from this approach enriches not only the teachers' learning experiences but also generates innovative ideas applicable in the teaching process, thereby bringing significant positive impacts on the creativity of the students. The center-based learning model aided by loose parts media not only benefits teacher development but can also be considered a highly relevant learning media facility aligned with the needs of teachers and the developmental stages of children. Teachers proficient in this model have the potential to enhance their creativity and pedagogical competence, thereby creating a learning environment that supports the growth of positive character traits and the potential of children.

This article details that the utilization of the center-based learning model aided by loose parts media is not merely a teaching strategy but can be viewed as an investment in teacher capacity development and child growth. Teachers who understand and master this model can provide a superior learning experience, empower children's creativity, and contribute positively to the formation of resilient character.

Through the integration of this technique, early childhood education becomes more than just a formal education process; it becomes a solid foundation for future development. By cultivating a generation that is creative, innovative, and full of potential, this approach stimulates the holistic growth of children, delivering profound positive impacts on education and the shaping of a high-quality society. Thus, the results of this research reinforce the

urgency and relevance of applying the center-based learning model aided by loose parts media in enhancing the quality of early childhood education.

Through the implementation of a center-based learning model assisted by loose parts media, early childhood education transcends mere formal routines. It evolves into a sturdy foundation that significantly contributes to the holistic growth and development of children. This approach establishes a learning environment that goes beyond the transmission of academic concepts; it fosters the development of social skills, creativity, and critical thinking abilities from an early age.

By instilling values such as creativity, innovation, and full potential in children from a young age, this approach has a profound impact on their holistic development. Children engaged in learning using loose parts media have the opportunity to experience, create, and explore their world in a deep and meaningful way.

Childhood is recognized as a critical period in shaping character and the foundational learning abilities of a child. Through an engaging and interactive learning environment, this learning model brings long-term benefits in preparing children to face diverse challenges in the future.

It is essential to note that the integration of loose parts media into this learning model does not only provide conventional education but creates a diverse and challenging learning atmosphere. Loose parts provide freedom for children to create and explore, sharpening their creativity and innovation from an early age. This establishes a robust foundation for critical thinking and creative solutions in the future.

In other words, the results of this research strengthen the urgency and relevance of this approach in building a solid foundation for the growth and development of children. Beyond being just a teaching strategy, this model is considered an investment in the capacity development of teachers and the growth of children. Through

the integration of this technique, early childhood education becomes more than a formal process; it becomes a solid foundation for future development.

The research focused on the application of Loose Part media in improving the cognitive development of early childhood through pre-action play activities in Group B Kindergarten 'Aisyiyah Bustanul Athfal (ABA) Simangambat, Siabu District, Mandailing Natal Regency. The observations, presented in the table, highlight various aspects of cognitive development, such as counting, arranging objects, naming numbers, and utilizing number symbols.

The data from the pre-action observations revealed that the cognitive development of young children, particularly in addition and subtraction material, was suboptimal. The subsequent implementation of Loose Part media aimed to enhance creativity, critical thinking, and expressive abilities in children, fostering optimal development aligned with the needs of the current era.

The choice of "Loose Part" media stemmed from its accessibility in the child's immediate environment, as emphasized by Nurjanah's research in 2019. Loose parts, defined as open-ended objects, are readily available in nature, providing a cost-effective platform for children to express their creativity. The theory of loose parts, introduced by Nicholson in 1971, underlines the importance of providing children with manipulable, scannable, and recreatable natural materials for creative expression.

Moreover, the study aligns with the idea that loose parts create richer environments for children to play, fulfilling their inherent right to play. Play is essential for a child's health, well-being, and the promotion of creativity, imagination, and various skills. The loose parts approach not only resonates with a child's natural inclination to explore but also upholds the principle that play is integral to a child's rights, significantly contributing to holistic development.

The research unfolds a nuanced perspective on the impact of "Loose Part"

media on cognitive development, reinforcing its positive influence on learning and problem-solving abilities. The introduction of this innovative learning media, especially in an animal-themed context, engages children effectively, stimulating their imaginative faculties and promoting an understanding of Indonesia's diverse animal species.

The investigation further delves into fine motor skills, emphasizing the dual role of parents and educational institutions in fostering motor development. The integration of "Loose Part" plastic-based learning media, particularly in an animal-themed context, proves to be a dynamic and engaging approach that positively influences language and physical motor development in young children.

The research's comprehensive nature explores the multifaceted benefits of incorporating innovative learning media like "Loose Part" in early childhood education. The tangible impact on physical motor development, language skills, and cognitive abilities establishes the relevance and urgency of integrating dynamic methodologies for shaping a generation that excels both cognitively and physically.

The subsequent implementation of two cycles of action research, marked by adjustments and enhancements, provides valuable insights. The addition of singing in Cycle II serves as a dynamic element, creating a more enjoyable and profound play experience. The positive changes observed in participation, involvement, and emotional response underscore the effectiveness of adding singing as a method in improving the quality of children's learning through loose parts media.

The results of Cycle II, with a success indicator of 85.20%, demonstrate a significant improvement in cognitive development compared to Cycle I. The adjustments made in providing areas for play activities and allowing children the freedom to choose games with responsibility contribute to increased cognitive development. The study not only validates

the success of the Loose Part media but also positions it as a powerful tool in enhancing cognitive development in early childhood.

The research aligns with previous studies, such as Asih et al.'s work, emphasizing the role of the center-based learning model aided by Looseparts media in fostering creativity and pedagogical competence among teachers. It showcases how this model benefits both teacher development and the growth of positive character traits in children.

In conclusion, the research underscores the significance of Loose Part media in early childhood education, portraying it not just as a teaching strategy but as an investment in teacher capacity development and child growth. Through the integration of this technique, early childhood education becomes a robust foundation for future development, cultivating a generation that is not only academically adept but also creatively stimulated and physically proficient.

4. **References**

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