Journal of Education Method and Learning Strategy
E-ISSN 2986-9129 P-ISSN 3031-9250
Volume 3 Issue 01, January 2025, Pp. 76.-86
DOI: https://doi.org/10.59653/jemls.v3i01.1371

Application of *Loose Part* Media to Improve Numeracy Development of Children Aged 5-6 Years

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Received: 25-12-2024 *Reviewed: 10-01-2025* *Accepted: 26-01-2025*

Abstract

The lack of motivation of children to learn numeracy is due to the tools used in delivering material that are not interesting, teachers always use worksheets, the methods used by teachers are less varied, teachers' creativity in utilizing the materials around them is still lacking so that children feel bored and tend to play alone without paying attention to the material presented by the teacher. Therefore, researchers will use loosepart media to improve children's numeracy development. This study uses a qualitative method with a descriptive approach that aims to determine the level of numeracy development through loose part media in children aged 5-6 years in kindergarten. The subjects of this study are teachers and students of class B6 and the informants of this research are principals and teachers. Data collection techniques use observation, interviews, and documentation. The data validity technique uses source triangulation and triangulation techniques. Data analysis techniques use data reduction, data presentation and conclusion drawn. The results of the study show that the application of loose part media to improve the numeracy development of children aged 5-6 years in kindergarten has been carried out through learning activities. Factors that support the application of loosepart media to improve children's numeracy development include natural factors, cognitive development factors, social background factors, learning motivation factors, teacher development factors, facilities and infrastructure factors, while the factors that hinder are environmental factors and teacher development factors.

Keywords: *Loose part*, numeracy, children aged 5-6 years

Introduction

Regulation of the Minister of Education and Culture Number 146 of 2014 states that Early Childhood Education (PAUD) is a coaching effort aimed at children from birth to the age of 6 years which is carried out through the provision of educational stimuli to help physical

and spiritual growth and development so that children have readiness to enter the world of further education. This study aims to determine the level of numeracy development through *loose part media* in children aged 5-6 years in kindergarten. (Ren et al., 2024)

Loose part media is a creative and interesting media that is very influential in finding solutions according to children's creative ideas, where the use of worksheets does not involve all five senses of children so that learning using worksheets cannot develop all aspects of child development (Ma et al., 2024). Meanwhile, to develop all aspects of child development requires something that involves all five senses, the child will be interesting for the child because it will be easier for the child to learn to use concrete materials to be touched directly using his fingers, observed, explored, so that the child can build his own knowledge (Müller et al., 2024). One way to develop a love of numeracy in early childhood is to prepare for learning using interesting media that are easy for children in the surrounding environment, for that in order to improve the development of numeracy literacy, the use of *loose part* media is an option used in preparing interesting and fun learning (Warning & Muhajir, 2024), which the learning activity process can be in the form of introducing number symbols, Introducing the concept of numbers, counting the number of objects, and making one of the shapes of numbers on paper, tables, and also on the floor using *loose parts* according to the child's choice. Therefore, the above explanation is interesting for the author to carry out research on numeracy learning with the help of *loose part media.*(Calthorpe et al., 2024)

Literature Review

Media Loose Part

Loose part media is a material that can be manipulated, changed, and created that allows children to explore the environment freely so that they can develop creativity, cognitive, social, and emotional (Putri, 2021). Putri (2021) loose *part media* is an educational toy material, which is a material that has the property of being easy to change according to the child's wishes, easy to be shaped into various works, dismantled and installed in developing their creativity and used to exploit freely (Tajqiyah et al., 2024). *Loose Parts* are materials that can be moved, carried, combined, aligned, moved, and used alone or combined with other materials that can be natural or synthetic, redesigned, separated and reunited in various ways. When children play with *loose parts,* children can play *loose parts* according to their wishes. Children easily shift objects that they have placed somewhere as components of a certain shape. Once the child spontaneously shifts one of these objects, the structure of the work can change, especially when several other items are added, it can change the entire child's work. (Ayunda Putri & Eliza, 2023)

Loose parts have open properties so that they are very flexible, easy to change, add, modify, etc. the nature of *loose parts* that are open causes children not to need to use glue or silver in playing which causes children's work to be permanent. The bond is only in the form of a series that can be assembled, removed, installed, or removed (Aulia et al., 2024). That is what causes *loose parts* to be used repeatedly indefinitely and can be used as anything

according to the user's wishes will never end, loose part teaching materials can be used in various aspects: for example problem solving, creativity, concentration, fine motoric, rough motoric, science (Science), Language Development (Literacy), Art (Art), Logic of thinking mathematics (Math), Engineering (Engineering), Technology (Technology), *loose part* is an open APE that can be separated, combined, mixed or used alone. Another definition of *loose parts* is open material materials, where children are free to combine these materials, both similar materials and different materials, in producing works that are free and open to children's imagination. (Rahma & Anggreani, 2024)

The use of *loose parts* can be moved, manipulated according to the child's wishes. According to (Ridwan et al., 2022) *loose parts* are media that can be moved and manipulated by themselves according to the user's wishes, and are in harmony with the characteristics of children. This is in line with the opinion (Hadiyanti et al., 2021) that loose part media is a material that is easily moved to all parts of the room, which makes it easier for children to be creative as they wish. Based on this description, it is concluded that *loose parts* are loose media that can be used in producing children's works whose use uses various ways, either using similar materials or combinations that can be put together or separated, lined up or put together and separated in various ways (Suraningsih & Widyasari, 2024). The materials used are various, both plastic waste, natural materials, used materials, metal, wood, and so on that can be shaped according to the child's imagination so that it can develop aspects of child development.(Hasanah, 2024)

Types of loose parts According to Damayanti (2020), the types of *loose parts* are divided into 7 varied parts that children can feel directly, including: 1) natural materials, 2) metal, 3) wood and bamboo, 4) used packaging, 5) plastic materials, 6) ceramics and glass, 7) yarn and fabric. Based on this, it is concluded that the type of madia *loose part* is materials that come from the surrounding environment, both in the form of wood branches, metal, used food wrapping materials, objects from plastic, ceramics, yarn, and so on. In addition to the type, loose part media has characteristics such as attractiveness and the ability to be moved or moved. According to (Ridwan, Azian, & Faniati, 2022) *loose parts* are materials that are easy to move or move, carry, combine, redesign, ratify, and put back together in various ways. (Efri Manda Sari Hasibuan, 2024)

The benefits of *loose part* media for children include: children become more creative and imaginative with the principle of using *loose part teaching materials.*Encouraging children to be more communicative when playing *loose parts*, especially if done in the outdoors, children are free to be creative in disassembling teaching materials according to their imagination. In addition, children will also learn to appreciate the materials or objects around them. Like natural *loose parts*, children can maintain the environment when they understand that used items can be recycled and used as materials for play, creativity when assembling them into useful items (Sholiha, 2022). Children prefer to do assignments that have a unique concept and are not monotonous. So that this can explore the potential of children to be able to provoke children to want to ask questions and explore the potential of children, Children can be explored their thinking potential so that they are free to express and imagine and explore, in addition to

supporting the development of children, loose part media *also* supports development that connects children with the surrounding natural environment. (Vrettos et al., 2024)

The physical benefits of using *loose part* media can be seen when using block media, which can strengthen the grip of children's fingers, in addition to improving coordination in the eyes and hands. Creative Benefits: The use of *loose parts* makes children creative because children can design their own games and design their own works that are considered fun for children. The social benefit of using *loose parts* is that it encourages children to cooperate and make friends to play and learn which can encourage children's imagination. Collaboration between creativity and activities is very important for children's social life. The intellectual benefit for children is that when children know various shapes, sizes, positions, which can develop the ability to speak, children can develop their thematic development or numeracy through grouping, subtraction, addition, geometric shapes.

The advantages of using *loose part* media include the fact that children are more creative and imaginative when making works. The world of children is play, which is why we often hear the term play while learning in early childhood. Many benefits are obtained from playing, one of which is developing children's creativity. By playing, children can create new things according to their imagination. In accordance with the opinion (Fitri & Hariyani, 2023) that *looseparts* are designed to make children more creative according to their imagination, besides that the use of objects in the environment can also teach children to take care of the environment.

Encouraging children to solve problems, we often find children tinkering with their toys, so children's toys are quickly damaged. This happens because of children's curiosity. This is what is meant that loose parts can solve children's curiosity problems even though they can sometimes damage their toys. Helping children to ask questions, preschool age is a period when children's curiosity about something is very high, at this time it is also called *golden age*, or golden age, children have high curiosity so that sometimes they ask questions endlessly, as a teacher we should facilitate children so that they can continuously stimulate children for their language development. Basically, children are unique, different, and have high curiosity.

Numeracy Development

Numeracy development is a skill to solve problems practically using numbers. Numeracy development is the development that a person has in using mathematical development to explain an event. The development of numeracy means a skill in applying the concept of numbers and skills in calculation operations, such as being able to use a variety of mathematical numbers and symbols to solve problems in daily life. According to (Utami & Eliza, 2022), introducing numbers is the basis for the development of basic mathematical concepts to develop children's numeracy development, as well as the ability to analyze information presented in various forms of reference such as tables, graphs, charts, and so on. The development of numeracy is defined as the skill in applying mathematical concepts and rules in real situations every day. These skills can arise when problems are often unstructured *(Untructured)* which usually have many ways to solve or even there is no complete solution and there is a relationship with non-mathematical factors While numeracy development is also

interpreted as the development of analyzing using numbers or knowledge and skills using various numbers or numbers. According to (Jarwani, 2022) a number or number symbol is a symbol or symbol that is used to represent a number. Number symbols need to be introduced as early as possible because they are the basis of mathematics.

Various numeracy developments include the development of using various numbers and symbols related to basic mathematics to solve problems in daily life. The development of numeracy consists of three categories, namely: numeracy relations are the development of distinguishing the number of objects that can be illustrated with less than, more than, more, or greater than. Counting is the development of counting the number of objects or identifying the number of objects. Arithmetic is the development of performing simple or basic arithmetic operations such as addition and subtraction.

Early Childhood

Early childhood experiences a period of very rapid growth and development. This period is also commonly called the golden age or golden period, where during this period the growth and development of children is very fast, children easily accept all information and very easily digest the surrounding situation. Therefore, early childhood needs to receive education that can optimize the growth and development of children by getting stimuli and stimulus, especially from the child's immediate environment.

One way for the growth and development of children to be optimal is to include children in early childhood education, for example kindergarten, because at that level all aspects of children's development are developed optimally, for example aspects of religious and moral values, cognitive, language, social-emotional, One of the concerns in this study is the physical motor aspect of children, where children's numerical abilities are one of the important aspects that children will use in the future. With good motor physique, it will make it easier for children to complete children's tasks in daily life. If the child's motor skills are not good, then the child will have difficulty in controlling his duties, Considering the importance of child development, we need to develop all aspects of child development, one of which is by sending children to PAUD.

Early childhood education (PAUD) is an education that is used to facilitate the growth and development of children as a whole, emphasizing all aspects of child development and children's personalities (Suyadi, 2017). Early childhood education can also be interpreted as a conscious effort planned to create a learning atmosphere and learning process for children at the age of 0-6 years actively and creatively so that all areas of development can be optimal as well as develop emotional intelligence. Spirituality and intellectual intelligence are necessary for themselves, society, nation, and state.

Another definition of Early Childhood Education (PAUD) is as all the efforts of educators (parents, teachers, and other adults) in facilitating the development and learning of children from birth to the age of six through the provision of various experiences and stimuli that are developmental, integrated, and comprehensive, so that children can grow and develop optimally in accordance with the values and norms of life adhered to. Early Childhood Education generally has two goals, namely the main goal and the accompanying goal. The main

goal of Early Childhood Education is to form quality children. These namely children grow and develop according to their level of development so that they have the optimal readiness to enter the next education.

Loose Part Media for Numeracy Development

The role of the teacher in learning is very important, this role is also carried out when the teacher gives *loose part activities* to children which are carried out in several stages, including: 1) exploration stage, 2) experiment stage, 3) creative stage. Factors that affect the development of numeracy include, natural factors, cognitive development factors, social background factors, learning motivation factors, teacher development factors, facilities and infrastructure factors. Meanwhile, the factors that hinder include: environmental factors, teacher development factors.

Research Method

This study uses a qualitative method with a descriptive approach. Qualitative research method is a research process that is carried out according to conditions that are actually objective without any engineering and manipulation that is in accordance with conditions in the field. The approach used in this study is a descriptive approach, which is a method that aims to provide an overview of the character of one variable, group or event that occurs in society With this qualitative research method, the researcher can describe and explain how to recognize the development of loose part media numeracy, the research instrument used consists of three aspects, namely the ability aspect, The expected competencies and loose part media/activities of participants or research samples are principals, teachers and kindergarten students, Data collection techniques are the most important thing in a research because the main purpose of research is to collect data. To support the success of the research, the data collection techniques in this study use observation, interview, and documentation methods. Triangulation is conducted to analyze the data in this study. Triangulation is a method that is carried out by comparing information or data in different ways, such as using observation, interview, and documentation methods.

Results

The results of this study consist of 2 things: a) the application of media *loose part* on improving the numeracy development of children aged 5-6 years, b) factors that support and inhibit the application of media *loose part* on the improvement of numeracy development of children aged 5-6 years.

Application of Loose Part Media to Improve Numeracy Development of Children Aged 5-6 Years

The development of numeracy carried out through *loose part media* in children needs to have stages in the implementation of using learning media, in order to produce a quality learning process, including teachers compiling teaching modules, the implementation of

numeracy development which is introduced to children aged 5-6 years using *loose part* materials where the child gives naming and mentions numbers including writing number symbols with loose *part media*, children understand the representation of numbers in symbols that are different from loose *part* media, children distinguish an object that can be illustrated with less than, more than, more or less. Children count the number of objects or identify the number of objects with *loosepart materials.* In the implementation of learning, there are several things that are done, namely morning habituation, opening activities, core activities, breaks, and closing activities.

a. Morning Habits
   Starting at 07.00 the children began to arrive one by one who their parents escorted, each arrival was warmly welcomed by the picket teacher who on this day got a picket schedule. The SOP for Welcoming is to get used to giving and answering greetings, children keep shoes and bags in their place, then do morning activities by lining up and entering the classroom, checking the health of nails and teeth.
b. Opening Activities
   The Opening Activity began with reading and praying before studying, prayers for both parents, prayers for the salvation of the world of ahirat, reading short surahs, and talking about topics by asking lighter questions, which is expected to enrich children's vocabulary and understanding. Teachers are faced with children with various children's characters, as we know that children have various characteristics, as well as the level of children's intelligence, some children really have an above-average level of intelligence, children who still feel less confident, children who are really low in their willingness to learn and so on. Like when children are asked to look for loose parts around the school that will be used for children's education, sometimes children do not want to because they still feel embarrassed, which is done by teachers to motivate and encourage children to build confidence so that they want to move forward to look for *loose parts* materials.
c. Core Activities
   Core activities provide opportunities for children to explore and build meaningful play experiences. The activity began with the teacher explaining to the children that today there will be several learning activities and for numeracy learning, namely playing using media *loose part*. The development of numeracy starts with the introduction of numbers, the concept of numbers, and counting. For numeracy learning activities through media *loosepart* is the development of knowing the symbol of the first number, the teacher invites the child to face the blackboard, in front of the teacher invites the child to count or count from 1-20, then the child is invited out of the classroom to look for various kinds of material media *loosepart* , then the teacher gave directions to make a number collage from loosepart materials that had been searched for and collected by children from around the school environment. After that, the teacher instructed the children that today's learning and play activity is to make number symbols using various materials *loose part* which has been prepared such as bottle caps, seeds, leaves, flowers, straws. and so on.
   The next activity The development of the traditional game is congklak, the teacher explained that the child counts first, for example, stones / grains amount to 5, then the child is asked to take a stone, which is 5. After the child understands, he is welcome to play, by

filling in the holes, namely 5, then playing it according to the teacher's instructions, Using Media *loose part* that children like. With this game, children will be able to recognize the symbol of the number of an object. After completion, children are invited to tidy up the toys and all the media used by combining loosepart materials with various kinds of games can more arouse children's enthusiasm in learning, this activity can develop children's understanding of counting the number of objects, getting to know the concept of numbers, and getting to know the symbols of numbers. About Materials *loose part* what is used in class B6 in carrying out numeracy introduction learning activities in children.

d. Cover

After the child has finished all learning activities, the child is instructed to queue up to wash their hands in the sink, take the lunch and then take a position to pray before eating and eating together. After finishing eating, the child is invited to pray to finish eating, then the child rests by playing outside the classroom under the supervision of the teacher. When the bell rings, the child re-enters, the teacher evaluates today's learning activities, then reads short surahs, reads prayers to leave the house and prayers to ride on land vehicles.

e. Teachers carry out learning evaluations

The evaluation stage is a stage that is carried out after the implementation of learning activities in kindergarten, in the implementation it is carried out by looking at the results of the children's work in the assessment of the work, serial photos, anecdotal notes and checklists.

Factors That Support and Hinder the Application of Loose Part Media to Improve the Numeracy Development of Children Aged 5-6 Years.

Factors that support the application of loosepart media include freedom of exploration, teachers do not dictate how to use loosepart media, so that children can explore their own initiatives, think about what will be made from the loosepart material, can form a creative child's character, cooperation and responsibility, in addition, loosepart materials are easy to find in the environment around children so that children can know and appreciate the benefits of the surrounding materials and recycling in learning recognition The development of numeracy is mainly the characteristics of different children. Teachers are also required to be able to overcome obstacles in the right way, motivate and encourage children to grow confidence in participating in every learning process.

Discussion

The researcher stated that in accordance with the results of the research obtained through observation and in-depth interviews with several informants related to this study, the researcher conducted observation interviews that clarified the data obtained. Based on the facts of the findings obtained by researchers in the field, it can be improvised that the development of cognitive aspects of children aged 5-6 years is an important thing to be considered by both parents and educators of an institution in providing stimulation to maximize cognitive development in children. Especially in early childhood which can be called a golden age for

the development of children's potential The use of *loose part media* is one of the ways teachers at Pembina Malili State Kindergarten can provide educational services that are attractive to children in learning and playing. Based on the facts of the research findings related to the introduction of numeracy development through *loose part media* in children in the age group of 5-6 years, the researcher obtained several components that can be analyzed.

Various kinds of numeracy development introduced to children in accordance with aspects of development and competencies that children are expected to achieve at the age of 5-6 years include: a) Making number symbols using *looseparts* (Children are able to give naming and mentioning numbers including writing number symbols, b) Play find missing numbers (Children are able to distinguish an object that can be illustrated with less than, more than, more/less). c) Playing Congklak (Children are able to count the number of objects or identify the number of objects. While the novelty of this study is in terms of the preparation of learning media where students search and find their own favorite loosepart materials before using them in numeracy learning activities, because in the previous research all learning looseparts were prepared by teachers.

Conclusion

Based on the results of this study, two things were concluded, namely the improvement and application of Loose Part *media* to Improve the Numeracy Development of Children aged 5-6 years, as follows.

1. The application of *Loose Part* media to Improve the Numeracy Development of Children aged 5-6 years has been carried out and has been running well through learning activities and in accordance with expectations. It is known that this study aims to determine the level of development of numeracy development through *loose part media* in children aged 5-6 years.
2. Factors that support the application of loosepart media to improve the numeracy development of children aged 5-6 years include natural factors, cognitive development factors, social background factors, learning motivation factors, teacher development factors, facilities and infrastructure factors, while the inhibiting factors are environmental factors and teacher development factors.

Declaration of conflicting interest

The authors declare that there is no conflict of interest in this work.

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