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Introduction of Sunflower Number Media to Enhance Symbolic Thinking Ability in Early Childhood

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Abstract

This research aims to introduce the sunflower media numbers in enhancing the development of symbolic thinking in early childhood. This research involves various aspects of child development, including moral and religious values, cognitive, and language. The research methodology uses a qualitative descriptive approach with the subjects of 17 children. Data collection techniques use observations and interviews to find out the processes of sunflower media numbers in enhancing symbolic thinking in children. The results of the research show that the application of sunflower media numbers can increase the enthusiasm of children in solving problems by arranging the numbers according to the solar pattern. Overall, the average indicator of symbolic thinking development indicates a continuous improvement, with children aged 5-6 years in the category of starting to develop (NA), developing as expected (MF), and developing very well (SA). Based on these findings, it can be concluded that the application of the sunflower media figures achieved as expected in improving the child's ability to think symbolically.

1. INTRODUCTION

Early childhood encompasses the development of various aspects of a child's being as they grow. These aspects include moral and religious values, cognitive abilities, and language skills. It is important to remember that these developments do not occur in isolation but are interconnected. Various studies show that early childhood is a critical period in a child's education. Education plays a central role in shaping a wise, secure, open, and democratic life. Therefore, it is necessary to establish an educational system that can maximize the development of various aspects of early childhood. Early childhood education plays a crucial role in uncovering a child's potential from an early age, preparing them to face life and adapt to their environment. The success of this education can help develop all aspects of a child's growth, including problem-solving abilities (Aryani & Ambara, 2021).

The principles of early childhood education play an important role in the focus of educational institutions. Several aspects that must be considered include: a) understanding and fulfilling the individual needs of children, b) applying a learning approach through play, c) creating a supportive learning environment, d) integrating learning within the context of play, e) developing various life skills, f) utilizing educational media and games, and g) implementing learning in a gradual and repetitive manner. The implementation of learning for early childhood needs to be conducted with a structured and orderly method, helping to facilitate the learning process. The learning method becomes a tool to organize learning systematically, serving as an effort to achieve goals with organized steps (Nawawi, 2018).

According to Piaget's perspective, play refers to activities that are repeated for the purpose of enjoyment. For early childhood, play is not merely a fun activity but also an indirect way to learn. Play has the potential to support a child's growth in mental, spiritual, language, social, and motor skills dimensions, all of which play a crucial

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role in facilitating a child's developmental stages. The aspect of symbolic thinking ability is included in cognitive development, which is an important aspect that children need to achieve and possess. (Bodedarsyah & Yulianti, 2019).

Various aspects of early childhood development include cognitive, socio-emotional, language, physical-motor, and moral religious values. Play can assist in the cognitive development of young children, as it is an activity all children enjoy and helps them understand the world around them. Symbolic play, a type of play that can enhance cognitive aspects, is particularly significant. According to Vygotsky, symbolic play involves role-playing and is crucial for developing abstract thinking skills. When children engage in pretend play, they begin to comprehend the meanings of the objects they represent independently (Veronica, 2018).

Children do not differentiate between play and work. For them, play encompasses all activities, such as playing and working. It is their way of understanding the world. Play is not just entertainment; it is a basic need for children, similar to food and attention. Children need various types of play to maintain mental health, emotional development, and physical well-being. Through play, children grow stronger. They do not just jump, throw, or run; they engage their entire minds, emotions, and feelings. Enjoyment is an essential part of play, and children will continue to play as long as the activity provides them with entertainment (Aryani & Ambara, 2021).

When feeling bored, children tend to stop their play activities. Play plays a crucial role in the physical, emotional, mental, intellectual, creative, and social development of children. Children who have ample opportunities to play tend to grow into creative and sociable adults. Critical thinking skills become highly important in cognitive development, much like physical development. When children are interested in something, their thinking skills become more complex. Conversely, when they encounter a lack of understanding of a subject, it can also affect their cognitive development (Setyaningrum et al., 2015).

Cognitive development is the process through which individuals develop thinking, understanding, and information-processing abilities as they age. One key aspect of cognitive development is critical thinking skills, which involve the ability to analyze information, evaluate arguments, and make sound decisions. In the context of games or activities like "Sunflower Number Media," there may be elements that stimulate critical thinking skills. Some games are designed to engage players in problem-solving, decision-making, and situational analysis. Players may need to strategize, make estimations, or evaluate their choices. Games often provide a safe environment for users to develop and sharpen their cognitive skills. In this regard, "Sunflower Number Media" may be designed to stimulate players in terms of critical thinking, mathematical abilities, or other cognitive aspects. Fulfilling cognitive development in children can broaden insights that can combine one event with another. This can also help children explore during developmental stages (Putri 2021).

Cognitive Development in Early Childhood

Cognitive development in young children shows variation as they enter the next stage. Piaget's theory states that children aged 0-2 years undergo the sensorimotor stage, where infants understand the world through direct physical actions in response to external stimuli. Behavior evolves from simple reflexes to a series of organized schemes, which are structured patterns of behavior. In the 2-7 year stage, children enter the pre-operational stage, where they still use symbolic thinking and begin to develop language abilities to describe objects and events. However, despite this, children's thinking at this stage is not yet logical and still shows significant differences from adult thinking. Young children in the pre-operational stage have the ability to think symbolically. They learn through experiences to understand the effects of an action, such as when they pour milk from a container into a glass and realize that it results in a decrease in milk in the container (Fitriana 2022).

In the pre-operational stage, cognitive development begins with the systematic mastery of language, symbolic play, imitation skills, and the ability to form mental images. This reflects that at this stage, children's thinking patterns are still egocentric as they tend to view everything from their own personal perspective. They struggle to understand their place in the world and the relationships between elements, as well as experiencing difficulty in understanding the feelings of others around them. Children at this stage are also not yet able to form thoughts that are oriented towards the perspectives of others. Therefore, it is important to provide appropriate stimulation to develop children's cognition to support their further developmental stages. The goal of cognitive development in early childhood is to enhance children's thinking capacity in processing learning information, enabling them to present various alternative solutions to problems, helping children acquire knowledge about space and time, as well as mathematical logic. This development also trains children in sorting, grouping, and preparing them to think carefully (Nurjanah 2018).

To achieve this goal, it is hoped to develop children who have the innovation, creativity, and critical thinking skills necessary to face a dynamic world. Someone's knowledge and the way they think about events, actions, and observations around them are closely correlated with their cognitive abilities. One's cognitive development significantly influences their problem-solving speed (Veronica 2018). In the context of school, teachers act as a source of information, while children act as recipients of information. Teachers can use media as a tool to communicate with children. Media can assist in conveying specific information to children. The use of media in the classroom can be successful if planned well. Play is one of the activities favored by kindergarten

children. Although this activity can be done without toys, most play activities require the use of educational toys (Azhima et al., 2021).

Educational toys (APE) are often specially designed to combine play elements with learning. The role of media becomes crucial in achieving the effectiveness of the teaching-learning process, and teachers are expected to have high ability or potential in developing methods of delivering subject matter so that educational goals can be achieved more smoothly. With the development of the times, teachers today are striving to improve the quality of education and learning to achieve maximum achievement in the field of education. Thus, it is expected that a teacher has creativity in creating visual media to improve the quality of learning. This study aims to assess how the implementation of learning can enhance cognitive aspects through the use of simple educational toys (APE) in TK Ihyausunnah Margorejo. Additionally, this research aims to explore whether the improvement of cognitive aspects through simple educational games can enhance the overall meaning of learning (Fitriana, 2022).

Educational Games

Educational games feature elements such as assembling, grouping, combining, matching, arranging, forming, organizing, and so on. However, it is important to consider various factors such as the media used, the location of the game, its alignment with learning objectives, and the appropriate level of difficulty. Game-based learning methods should take into account the developmental stages of children. Therefore, during play, attention should be given to how children grow and develop, the types of tools they use, and the environment where they play. Educational games encompass both modern and traditional games (Tai et al., 2021).

Modern games don't always have to be expensive; what's most important is parents' understanding of the benefits of the game. When buying a game, you should consider whether it educates or is beneficial for your child. First and foremost, games should encourage children to be physically active and promote their health. Second, games should provide a safe environment for children and support their physical well-being. Third, games should help children explore and experiment. Fourth, games should be dismantlable or deconstructible. Fifth, games should motivate children to imitate the thinking and actions of adults. Children can benefit from traditional games as they help them preserve cultural heritage and introduce them to traditional games from their region. Through games, children can develop skills and intelligence, learn social rules, discipline themselves, and open interests and opportunities for them to enter the adult world (Salis Hijriyani & Astuti, 2020).

Additionally, traditional games have rich variations in each of their games. Puzzles are an example of children's game tools that can enhance a child's cognitive abilities, involving problem-solving activities, namely assembling pictures. This opinion is supported by Veronica's research findings (2015), which show that games like "Guess My Name" and puzzle-solving games can increase the cognitive aspects of 5 to 6-year-old children by 94.63%. Besides playing puzzles, there are also other educational games that can enhance children's cognition, such as number sun games (Munasti et al., 2022).

The concept of symbols in children's minds is then conveyed through sentences or words. This oral expression indicates that children are starting to understand existing concepts. The first part of the preoperational thinking process is the stage of symbolic function. In this stage, children develop symbolic thinking abilities by being able to mentally imagine something that does not exist in the real world. This symbolic function aids in the rapid development of children's mental worlds. According to several experts mentioned above, the development of symbolic thinking refers to a structured process over a certain period, namely the preoperational stage in children (between the ages of 2 and 7 years). In this stage, children can manipulate symbols or representations of various objects, allowing them to use notation without relying on real objects (Azhima et al., 2021).

At the stage of symbolic thinking, children have reached the ability to express concepts in their minds and imaginations through words or statements. In symbolic thinking, children are involved in recognizing vowels, consonants, as well as identifying numbers from 1 to 10. The characteristics of symbolic thinking become evident when children start engaging in fantasy play and pretend play. At this point, creativity development is closely related to symbolic thinking abilities. Children at this phase tend to actively ask questions, provide answers, and try various things related to concepts of numbers, space, quantity, and so on. They also start using various objects as symbols, such as considering leaves as money, or engaging in activities like talking to or feeding their dolls pretend food and drinks. These symbolic activities provide exercises in thinking and help children adapt to their environment. As they develop, these activities will become increasingly close to reality (Umaroh et al., 2023).

Piaget's theory of cognitive development is a concept that explains how children interact with objects and understand events in their surroundings. Piaget believed that children's cognitive development progresses through stages or periods that become increasingly complex. One of the key aspects in Piaget's view is the ability of symbolic thinking. According to Piaget, symbolic thinking involves a child's ability to understand and represent objects and events that are not physically present in front of them. Symbolic thinking encompasses the use of symbols such as words, numbers, or images to recall and think about something that is not physically present, or to imagine objects or events. However, field observations indicate that many children have not fully mastered the use and accurate naming of numbers (Umaroh et al., 2023).

In order for children to develop symbolic thinking abilities, appropriate teaching strategies and learning media are needed. Therefore, researchers strive to provide engaging and educational learning media to ensure the systematic progression of learning activities and the achievement of desired learning objectives. The research titled "Efforts to Improve Symbolic Thinking Skills through the Use of Number Sunflower Media in Early Childhood Group B at Al-Imaniah Kindergarten" demonstrates the importance of using media in the context of early childhood learning.

This research has clear objectives, namely: 1) To assess the initial condition of symbolic thinking abilities among Class B children at Al-Imaniah Kindergarten, aged between 5 and 6 years old, in the Soreang district, Parepare City, South Sulawesi, 2) To investigate the implementation of number sunflower media in efforts to enhance symbolic thinking abilities among Class B children (aged 5-6 years old) at Al-Imaniah Kindergarten, Soreang district, Parepare City, South Sulawesi, 3) To analyze the results of implementing number sunflower media in the efforts to enhance symbolic thinking abilities among Class B children (aged 5-6 years old) at Al-Imaniah Kindergarten, Soreang district, Parepare City, South Sulawesi.

2. METHODS

This research applies a qualitative descriptive approach and is conducted at Al-Imaniah Kindergarten, located in Parepare City, situated at Jalan Pendidikan, Bukit Harapan, Soreang district, Parepare City, South Sulawesi. The subjects of the study consist of 17 children aged 5-6 years who are attending classes at Al-Imaniah Kindergarten, with the research focusing on three children as specific subjects. The data collection process is carried out through observation and interviews. The research instrument involves the use of observation sheets designed for both teachers and children. These observation sheets record children's activities explored through the number sunflower media, with the aim of observing the behaviors of teachers and children. Specifically, observations are conducted in the context of introducing numbers 1-10 using this media.

In addition to observation, data is also collected through interviews, where information is obtained directly through conversation or question-and-answer sessions. This approach and method of data collection are expected to provide a comprehensive picture of the impact and effectiveness of using the number sunflower media in enhancing the symbolic thinking abilities of young children at Al-Imaniah Kindergarten. Data triangulation technique, which combines various sources using the same method, is employed to determine the relevance of the research data. The results from both sources can be compared by juxtaposing the interview and observation findings (Octaviani et al., 2018)

3. RESULT AND DISCUSSION

The focus of this research was on the use of observation and interviews as data collection techniques. This approach was employed to evaluate the success of teaching in introducing numbers 1-10 using the Number Sunflower media. The analysis results indicate that the observation sheets served as the basis for assessing the effectiveness of the Number Sunflower media as a tool for understanding number concepts. Based on the evaluation of data obtained through triangulation of observations and interviews, it can be concluded that the introduction of numbers using the Number Sunflower media at TK Al-Imaniah has been successful. Children showed high enthusiasm and happiness during the mathematics learning process (Kurniati, Yuniati, et al., 2022)

To improve number recognition using the Sunflower Numbers media for Group B children at Al-Imaniah Kindergarten, where there are 17 children, initial data was obtained through interviews with the homeroom teacher. Among the children observed, there were three subjects: NA, who had not developed well in number recognition, MF, who was beginning to develop, and SA, who had developed as expected. For our experiment, we prepared the Sunflower Numbers media to introduce numbers 1-10. After conducting the experiment, there was an improvement: NA started to develop, MF developed as expected, and SA developed very well. Previously, these children could not recognize numbers 1-10 accurately, but after applying the media, we saw improvement. The children were able to recognize the numbers correctly by repeating several times and showed interest in the media we used. Introducing the concept of numbers is a fundamental step in simple mathematics learning, helping children develop the ability to imagine and understand abstract concepts. The symbolic function in this context includes the children's ability to use mental representations such as words, numbers, and images.

The importance of studying mathematics regularly lies in children's ability to become more skilled in calculations during play. Additionally, the goal of introducing number concepts is to provide children with an understanding of numbers and how to apply them using concrete objects. This aims to create a solid foundation to support further development of mathematical skills. Therefore, it is highly recommended that children learn number concepts or basic mathematics using concrete objects. Using concrete media can help children understand numbers because all their senses (seeing, touching, feeling, hearing) can be engaged directly. This is due to the fact that children have the ability to learn enactively through the use of concrete and iconic objects along with pictures and symbols. One example of a concrete object used to teach number concepts to young children is the sunflower with numbers (Kurniati, Yuniati, et al., 2022).

Piaget believed that children's thinking evolves to become more complex over time. The ability to think symbolically is considered a key element in child development. From Piaget's perspective, even though objects and events are not physically present in front of children, their ability to think about these objects and events still exists. Thinking is a mental process that involves concepts and actions. It enables someone to interpret the world as examples and manage it effectively according to their goals, plans, and desires. In cognitive development, the ability to think symbolically becomes a central element. In the early stages of the preoperational thinking of young children, there is symbolic function where they learn to mentally imagine objects that are not physically present. The use of mental representations such as words, numbers, and pictures, known as symbolic function, allows them to rapidly develop their mental world.

Symbolic thinking in children aged 5-6 years, as outlined in Permendikbud 134 of 2014, involves using number symbols for calculations, recognizing various symbols of vowels and consonants, naming number symbols from 1 to 10, matching number symbols with corresponding numbers, and presenting various objects in the form of pictures or writing. Menurut Piaget, symbolic thinking involves the ability to think about things that are not physically present in front of the child. The preoperational stage, occurring between the ages of two and seven years, is the period in which symbolic thinking abilities emerge. Cognitive development, as explained by Mirror (2015), includes the ability to think symbolically. The early stage of children's thought development is symbolic function. Activities such as playing with mirrors provide enjoyment to children while also teaching them about limitations and the reality of life (Kurniati, Ikhsan, et al., 2022)

This research refers to the phase of motor development regulated by the Minister of Education and Culture Regulation (Permendikbud) Number 137 of 2014 concerning Early Childhood Education Standards. In this regulation, several Standards of Child Development Achievement Levels (STPPA) are listed, particularly focused on cognitive development and symbolic thinking. Details regarding the standards of achievement levels for child development can be identified in Table 1 below.

Table 1. Scope of Cognitive Development

Scope of Development 3.5	Levels of Child Development Achievement	
	Age 4 - 5 years	Age 5 - 6 years
Symbolic Thinking Activity-2	1. Counting objects from one to ten 2. Understanding Number Concepts 3. Recognizing numeral characters 4. Recognizing letter symbols	1. Naming numbers 1-10 2. Using number symbols for counting 3. Matching numbers with numeral characters 4. Recognizing various vowel and consonant letter symbols 5. Presenting various objects in the form of pictures or writing (e.g., a pencil followed by its written name and picture of a pencil)

Based on the data collected through observation, interviews, and documentation techniques in the implementation of the sunflower number media, it was found that in the cognitive development of children in symbolic thinking, on the indicator of counting objects from 1 to 10, the children showed significant progress..

Table 2. Results of Symbolic Thinking Assessment NA

Indicator	Sub-indicator (Activities)	Assessment Criteria			
		BBB	MMB	BBSH	BBSB
Counting objects from one to ten	1. Counting numbers 1 to 10 using the sunflower number media		✓✓		
	2. Sorting the sunflower number media from 1 to 10	✓✓			
	3. Naming numbers 1 to 10 using fingers	✓✓			
	4. Naming numbers 1 to 10 using fingers	✓✓			

Noted:
BB: Not Developing
MB: Beginning to Develop
BSH: Developing as Expected
BSB: Developing Very Well

Table 3. Results of Symbolic Thinking Assessment MF

Indicator	Sub-indicator (Activities)	Assessment Criteria			
		BBB	MMB	BBSH	BBSB
Counting objects from one to ten	1. Counting numbers 1 to 10 using the sunflower number media			✓ ✓	
	2. Sorting the sunflower number media from 1 to 10	✓		✓✓	
	3. Naming numbers 1 to 10 using fingers	✓		✓✓	
	4. Naming numbers 1 to 10 using fingers	✓	✓✓		

Noted:
BB: Not Developing
MB: Beginning to Develop
BSH: Developing as Expected
BSB: Developing Very Well

Table 4. Results of Symbolic Thinking Assessment SA

Indicator	Sub-indicator (Activities)	Assessment Criteria			
		BBB	MMB	BBSH	BBSB
Counting objects from one to ten	1. Counting numbers 1 to 10 using the sunflower number media		✓		✓✓
	2. Sorting the sunflower number media from 1 to 10	✓			✓✓
	3. Naming numbers 1 to 10 using fingers	✓			✓✓
	4. Naming numbers 1 to 10 using fingers	✓			✓✓

Noted:
BB: Not Developing
MB: Beginning to Develop
BSH: Developing as Expected

BSB: Developing Very Well

From the table above, we can conclude that the implementation of the media at TK Al-Imaniah has resulted in improvement for subject NA. Previously, NA was not developing, but after the media was applied, this subject has started to progress. The subject can be categorized as "Beginning to Develop" because they were able to fulfill 1 assessment indicator. From the assessment table, we can conclude that the implementation of the media at TK Al-Imaniah has led to improvement for subject MF. Prior to the media application, MF was already showing progress. However, after the implementation, there was further enhancement, and MF has developed as expected. This subject can be categorized as "Developing as Expected" because they were able to fulfill 3 assessment indicators. From the assessment table, we can conclude that the implementation of the media at TK Al-Imaniah has led to improvement for subject SA. Prior to the media application, SA was already developing as expected. However, after the implementation, there was significant enhancement, and SA has developed very well. This subject can be categorized as "Developing Very Well" because the child was able to fulfill all 4 assessment indicators.

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4. CONCLUSION

The sunflower number media method has successfully enhanced symbolic thinking development. Overall, the average of the symbolic thinking development indicators shows good results, indicating that the development of symbolic thinking in children aged 5-6 years falls into the category of "Beginning to Develop" for NA, "Developing as Expected" for MF, and "Developing Very Well" for SA. In conclusion, the implementation of the sunflower number media has been successful.

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