

**THE EFFECT OF PICTURE CARD MEDIA ON VISUAL-SPATIAL ABILITY AND MATHEMATICS LOGIC ABILITY IN EARLY CHILDREN (EXPERIMENTAL STUDY AT RAUDHATUL ATHFAL AL MUHAJIRIN MEDAN DELI)**

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**ABSTRACT**

The purpose of this study was to determine (1) the effect of picture card media on the visual-spatial ability of early childhood, (2) The effect of picture card media on the mathematical logic ability of early childhood, and (3) Differences in the effect of picture card media on visual spatial and mathematical logic abilities of early childhood. This research method is an experimental method, and this type of research is classroom action research which aims to see how far the influence of picture card media on visual spatial abilities and mathematical logic abilities of early childhood. All stages carried out in this classroom action research are actions that form a cycle which includes planning, implementation, observation and reflection. The subjects of this study were all students in groups B1 and B2 aged 5-6 years Raudhatul Athfal Al-Muhajirin Medan Deli. The results of this study are (1) Picture card media has a significant effect on children's visual-spatial abilities. This can be seen from the increase in children's visual-spatial abilities by 79% which developed very well after using picture cards. (2) Picture card media has a significant effect on children's mathematical logic skills. This can be seen from the increase in children's mathematical logic skills by 88% which developed very well after using picture cards. (3) Based on the F test that has been carried out, the picture card media has an effect on the visual spatial ability and mathematical logic ability of children together by 77.4% and the remaining 22.6% (100-77, 4) influenced by other variables.

**Keywords: Picture Card Media, Visual Spatial Ability, Mathematical Logic Ability.**

**INTRODUCTION**

Early childhood education is one form of implementation that focuses on laying the foundation for growth and development of both motor coordination (fine and gross), emotional intelligence, multiple intelligences, and spiritual intelligence. In accordance with the uniqueness of each child, learning in Kindergarten or Raudhatul Athfal uses the learning method through play. Children explore their surroundings physically, emotionally, linguistically, socially and cognitively.

Early childhood education is an educational program specifically designed according to the unique characteristics of children. Suyadi and Ulfah

(2013) state that early childhood education is a form of education that focuses on laying the foundation for growth and development, both motor coordination (fine and gross), emotional intelligence, multiple intelligences and spiritual intelligence.

Therefore, teachers should be able to understand how to create a conducive and fun atmosphere so that children do not get bored during learning. The teacher should give the children the freedom to do various activities and answer all the children's questions. Learning with a play atmosphere that children will show and show their true personality. In addition to learning while playing, children can develop all aspects of their abilities. Teachers must help students develop various abilities or intelligences possessed by each child, both psychologically and physically, which are commonly called "Multiple Intelligences".

The learning process with the help of the media will enhance children's learning activities in a long period of time. This means that children's learning activities with the help of the media will produce better learning processes and outcomes than those without the help of the media. In the use of learning media, one must also pay attention and consider the goals so that the results obtained are maximal (Djamarah dan Zain, 2006).

Picture cards as one of the media that can be used to improve numeracy skills is one of the printed media, namely media that is delivered on paper for teaching and information. Picture cards used are picture cards that are printed on images that represent concrete objects (Arsyad, 2002). Picture card games can improve and develop children's numeracy skills (Kumayah, 2011). One aspect of the ability to count is the ability to number, so that picture cards as children's learning media can be used as a medium for developing the ability to count children aged 5-6 years.

Picture cards are cards that contain pictures (objects, animals, etc.) that can be used to train children to spell and create vocabulary. Arsyad (2002) explains that picture cards are small cards that contain pictures, text, or symbols that remind or guide students to something related to the picture. In this study, picture cards were used to improve children's numeracy skills by showing pictures according to the theme. Then the child is asked to count them one by one.

The use of pictorial word card media is expected to be able to improve the visual spatial and mathematical logic abilities of early childhood in an interesting way and involve children directly because it is a concrete object so that it can be presented in a real way, overcomes the limitations of space and time, is easy to obtain and inexpensive, and can be used by children. Easily without the help of special tools. In addition, picture cards also attract children's attention because they are presented in colorful colors containing pictures and words so that it is easier to remember, understand, and recognize letter symbols.

Based on the observations and interviews that the authors conducted at Raudhatul Athfal Al Muhajirin Medan Deli, the authors saw that children's mathematical logic abilities still showed at the undeveloped stage and were starting to develop. This can be seen from 40 children there are still 25 children

who have not been able to pronounce numbers correctly. Children have difficulty, for example, when asked to name the number "ten" the child usually stops at the number "five". Then when they continue from the number "five" they immediately mention the number "seven", so that the number "six" is skipped and then the child continues by mentioning it randomly. The child's difficulty in mentioning others is when the child is asked to name from "one" to "twenty". Of the 40 children, only 10 were able to pronounce correctly. Other children have difficulty and stop at certain numbers or random numbers. When they reach the number "ten", they immediately say the number "twenty", "thirty", "forty" and so on. In addition, children still focus on counting numbers in sequence and have difficulty when asked to do random numbers. Children also show undeveloped visual-spatial abilities because they are still confused about distinguishing both letters and numbers, such as inverted in saying the numbers "six" and "Nine", inverted in saying the letters "b" and "d", and it is still sometimes difficult to distinguish between the letters "c" and "e" because the shape is almost the same. Some children also confuse the letters "m" and "n" because the pronunciation of the letters is almost the same.

Several studies have shown the effect of using picture card media in improving early childhood intelligence, especially visual spatial intelligence and mathematical logic, including: Mufrizuddin (2017), Budianti, Rangkuti and Nasution (2020), Sriwahyuni and Nasriah (2021), uliana (2016), Sadidah and Nursalim (2019), Ningrum (2019), Prastyoningrom, Sutijan and Shaifuddin (2014), Ningsih and Salwiah (2021), Abdiana (2020) and Setyawati (2020) .

Looking at the description above and the results of previous research, it can be understood that the use of pictorial word cards media is expected to improve the visual spatial and mathematical logic skills of early childhood in an interesting way and involve children directly because it is a concrete object so that it can be presented in a real way, overcoming the limitations of space and time. time, easy to obtain and inexpensive, and can be used by children easily without the help of special tools. In addition, picture cards also attract children's attention because they are presented in colorful colors containing pictures and words so that it is easier to remember, understand, and recognize letter symbols.

Research on picture card media to improve visual spatial and mathematical logic skills of early childhood in Raudhatul Athfal Al Muhajirin Medan Deli needs to be studied. This is so that teachers have variations in learning activities and gain new knowledge in using effective media in the learning process.

## **RESEARCH METHODS**

This research method is an experimental method. and this type of research is classroom action research which aims to see how far the influence of picture card media on visual spatial abilities and mathematical logic abilities of early childhood. All stages carried out in this classroom action research are actions that form a cycle which includes planning, implementation, observation and reflection. The subjects of this study were all students in groups B1 and B2 aged 5-6 years Raudhatul Athfal Al Muhajirin Medan Deli.

## **RESEARCH RESULT AND DISSCUSSION**

The results of observations on initial abilities carried out by researchers, namely from 24 children, there were 5 children who had not developed and 19 people began to develop in their visual spatial abilities and mathematical logic abilities. In visual-spatial abilities, it can be seen that children have not been able to understand the concept of color that is introduced, have not been able to connect images with available colors, while in mathematical logic skills there are still children who still have difficulty in counting many objects. The process of counting children is also not correct, namely the discrepancy between pronunciation and the number of objects counted. The ability of children's mathematical logic is still in the form of rote, so that children are still upside down in mentioning number symbols. Children also still have difficulty in distinguishing the symbols of numbers between 6 and 9.

Based on the results of observations in Cycle I, overall learning went quite smoothly, the children of Group B1 were very enthusiastic and interested in playing picture cards. However, when the child turns to play it is a bit slow. This results in a rather low learning time efficiency. Some children are less focused in playing because playing time has run out. In addition, the pictures contained on the picture cards in large numbers look small so that children have difficulty in counting the pictures.

The results of the implementation of the first cycle of learning obtained that some children's visual abilities have shown an increase but not too significant, namely some children have shown that they are starting to develop in their visual spatial abilities. Likewise with mathematical logic skills, some children have begun to be able to recognize number symbols well. From the results of the implementation of Cycle I learning, it can be seen that there is an increase in the percentage of children who have been able to recognize number symbols well. In addition, it appears that in Cycle I there was a decrease in the percentage of students who had not developed recognizing number symbols.

Based on the success indicators, it can be concluded that Cycle I learning has not been successful as expected, and will continue to the next cycle. Based on the analysis and reflection on the learning outcomes of Cycle I, several things were found as the causes of the low results obtained as follows: (1) some children are still fighting over the toys used in playing picture cards, (2) the efficiency of learning time is still low due to the slow mobility of children at the time of learning. Change to play. Some children have not finished playing picture cards but playing time has run out and other children have eaten together so that the children's concentration is divided, and (3) the media in the form of cards used is not large enough so that for large numbers, the pictures are too small.

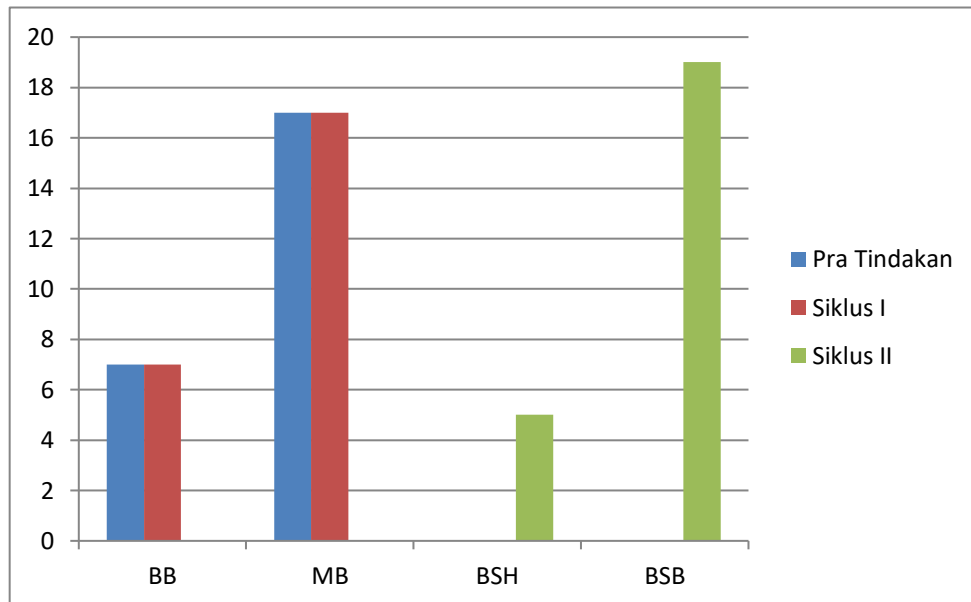
Based on the causes of the low results obtained in Cycle I, what needs to be improved in Cycle II are: (1) learning activities are made as effective as possible so as to allow all children to play until they are finished with focus, (2) the media used is even larger so that for numbers with a large number of pictures not too small and the colors and pictures used are really clear so that

children are able to group colors and pictures well, (3) provide rewards for children who are able to complete tasks well, (4) learning is presented through more advanced activities, varied and fun, and (5) the card media used was made even more interesting and the concrete object media used were more and more varied so that it was more fun to play.

The first and second meetings in Cycle II, the learning activities carried out were still the same, namely matching picture number cards with concrete objects. However, the cards used in playing are bigger so that the picture for the large number of numbers can be calculated easily by the child. In addition, the timing is also made more efficient so as to allow all children to play with focus until the end.

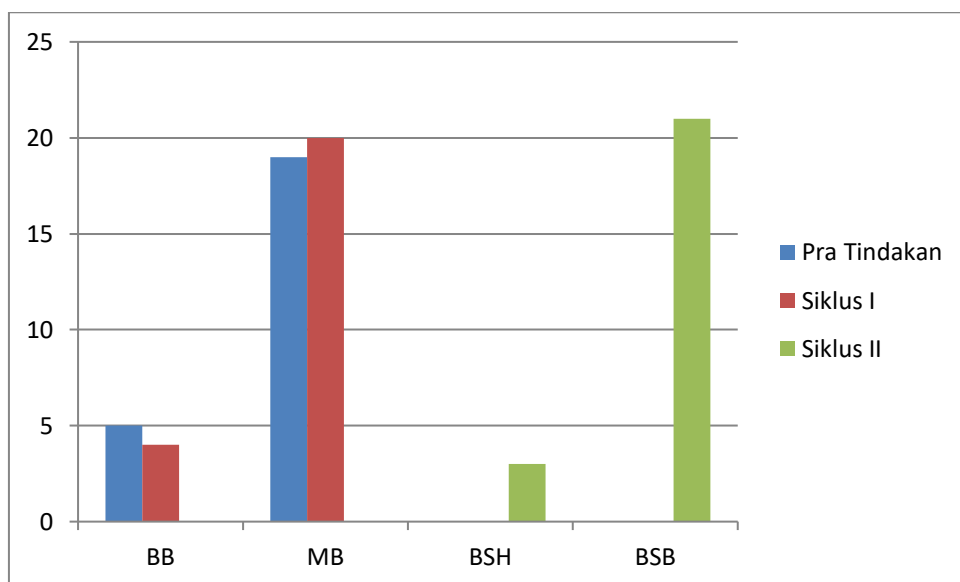
The results obtained in the first meeting of Cycle II learning, visual spatial abilities and mathematical logic abilities of children have started to experience a quite visible increase. This is in accordance with the results of the tests carried out. In terms of visual-spatial abilities and mathematical logic, there are no children who have not developed yet and there are already some children who are in a very well-developed stage, although the numbers are still small. Responding to the results obtained at the first meeting, at the second meeting, the learning carried out was modified into role playing. Children role-play using picture cards, where picture cards are used as money for sellers to buy toys that have been provided. The toy objects may be named after the objects sold in the market. The buyer and seller pair are children who have heterogeneous abilities in visual spatial and mathematical logic. That way children who are able to recognize number symbols well will help children who still need guidance in recognizing number symbols. The sellers in this game are prioritized for children who still need guidance in recognizing number symbols.

The learning outcomes of Cycle II at the second meeting showed that 79% of the children in Group B2 of RA Al-Muhajirin Medan Deli had good visual-spatial skills and 88% had good mathematical logic skills. If it refers to the indicators of success, then Cycle II learning can be said to be successful. After the implementation of learning using picture cards, children's visual-spatial and logical-mathematical abilities can develop well. The recapitulation of data from pre-action observations, Cycle I, and Cycle II can be seen in Figure 1 below:



**Figure 1 Recapitulation Diagram of Spatial Visual Ability**

Furthermore, the recapitulation of mathematical logic abilities can be seen in Figure 2 below:



**Figure 2. Recapitulation Diagram of Mathematical Logic Ability**

After looking at the results of the data on visual spatial abilities and mathematical logic abilities of children in Group B at RA Al-Muhajirin Medan Deli in the graph above, it can be seen that playing picture cards can improve

children's visual spatial abilities and mathematical logic skills. This can be seen from the increase in the percentage of children's visual spatial and mathematical logic abilities after learning by playing picture cards. The ability to recognize visual-spatial children in Group A1 has increased, namely children who have good visual-spatial abilities at the stage before the action are no children who show very well developed (0%), and continuing in Cycle I there are no children who show very well developed (0%), and Cycle II had many children who showed very good development as many as 19 people (79%). There was also an increase in mathematical logical abilities, namely children who had good visual-spatial abilities at the stage before the action were no children who showed very well developed (0%), and continued in Cycle I there were no children who showed very well developed (0 %), and Cycle II had many children who showed very good development as many as 21 people (88%). The increase that occurred was in the first and second cycles of the second meeting, it was seen that children with developmental indicators developed very well in their visual-spatial abilities and mathematical logic skills. That way, the use of picture card media can improve children's visual-spatial and mathematical logic skills.

Based on the results of observations in Cycle II, it can be stated that the use of picture card media can improve children's visual-spatial and logical-mathematical abilities. In this study, playing picture cards was done to stimulate children's ability to recognize visual-spatial and logical-mathematical abilities. Visual-spatial ability and mathematical logic ability are abstract learning materials. Group B children are children aged 5-6 years, children at this age according to Piaget (in Budiningsih, 2005) are in the preoperational stage, namely at this stage, children's thinking is still at the stage of concrete thinking. Children in the preoperational stage will find it difficult if they are invited to think abstractly. This is in accordance with the opinion expressed by Piaget (in Budiningsih, 2005) that a person cannot learn something that is outside his cognitive stage. Therefore, playing picture cards is appropriate to stimulate visual-spatial abilities and children's mathematical logic skills because to recognize abstract material, media is needed that is able to concretize the material presented.

Learning activities through playing using picture cards made according to the child's thinking stage make it easier for children to recognize and classify colors and number symbols. Playing picture cards starts from playing picture cards with concrete objects, playing picture cards with concrete objects, playing sensory cards with concrete objects, and playing cards with concrete objects. This is in accordance with Piaget's opinion (in Pitadjeng, 2006) which states that the development of children's visual-spatial and mathematical learning goes through four stages, namely the concrete stage, semi-concrete, semi-abstract, and abstract stage. From the results of the research above, the use of picture card media makes it easier for children to recognize and classify colors and number symbols. This is in accordance with the theory put forward by Bruner (in Sugihartono et al., 2007), namely early childhood is at the iconic stage, namely early childhood is able to learn to use symbols, so it is appropriate when learning is done using picture cards. However, picture cards are visual media

that only involves the sense of sight, so we need a learning method that activates children in learning.

Playing is one of the right methods that can activate children in learning. Playing picture cards makes children more active in learning activities. On average, children are happy in participating in learning activities so that children are able to survive from the beginning to the end of the activity. Children also really pay attention when playing picture cards, making it easier for children to recognize and classify colors and number symbols. In Cycle I, children play by pairing concrete objects with the picture cards or picture cards that have been provided. Concrete objects used for playing are objects that can be used for development play such as lego, blocks, tangrams, pebbles, and many other objects. Children looked very enthusiastic when playing picture cards in Cycle I. In Cycle I, to strengthen the recognition and grouping of colors and number symbols, they played sensory cards, namely cards with raised surfaces.

In Cycle II, playing picture cards was done by role playing. In Cycle II, picture cards are used as money to buy things in the market. In Cycle II, children who are sellers and buyers will learn together in recognizing and classifying colors and number symbols. The pair between the seller and the buyer is a heterogeneous pair, so that children who are able to recognize and classify colors and number symbols well will help children who still need guidance in recognizing and classifying colors and number symbols. Visual-spatial abilities and mathematical logic skills in Cycle II which were carried out by role-playing using picture cards made the children develop very well in their visual abilities and mathematical logic abilities.

In each cycle, children's visual abilities and mathematical logic skills by playing picture cards have increased. Playing picture cards can help children recognize the concept of colors and numbers. Children who at first are not familiar with the concept of grouping colors and numbers, by playing picture cards the child is able to recognize the concept of grouping colors and numbers well. Playing matched picture number cards with concrete objects can introduce the concept of numbers to children. Children are able to recognize the concept of numbers by collecting concrete objects according to the number of pictures on the picture number cards.

After the child is able to recognize the concepts of color and number well, then the child is asked to match the picture cards with concrete objects and picture cards with appropriate colors to help children recognize the concept of grouping. To strengthen visual-spatial skills and mathematical logic skills, it can be done by playing sensory cards, where children are asked to feel for picture cards whose numbers are made embossed. Children are also invited to role-play using the picture cards. By playing picture cards, children can recognize and classify colors and number symbols well. The improvement of visual-spatial and logical-mathematical abilities by playing picture cards, in addition to making it easier for children to recognize and classify colors and number symbols, is also able to increase children's learning enthusiasm. The improvement of visual spatial abilities and mathematical logic through the media of picture cards makes children's learning more fun. Fun learning makes children easy to accept



what is learned and children are more enthusiastic and active in the learning that is carried out. Therefore, playing picture cards can improve the visual-spatial and logical-mathematical abilities of children at Raudhatul Athfal Al Muhajirin Medan Deli.

## CONCLUSIONS AND RECOMMENDATIONS

The conclusions that can be drawn from the findings of this study are as follows: (1) picture card media has a significant effect on children's visual-spatial abilities.. This can be seen from the increase in children's visual-spatial abilities by 79% which developed very well after using picture cards, (2) picture card media had a significant effect on children's mathematical logic skills. This can be seen from the increase in children's mathematical logic skills by 88% which developed very well after using picture cards, and (3), picture card media had an effect on the visual spatial abilities and mathematical logic abilities of children together by 77.4% and the remaining 22.6% (100-77.4) is influenced by other variables.

The suggestions that can be given from these findings are: (1) learning through playing picture cards should be carried out in the further learning process in order to improve children's visual spatial and mathematical logic abilities. Playing picture cards can also be done to introduce and classify colors and number symbols in Group B by presenting cards that are tailored to the needs of children, (2) teachers, especially kindergarten teachers, are expected to be able to implement learning using picture cards to improve visual-spatial abilities, and mathematical logic, (3) playing picture cards can be done in a wide variety of ways. Variations can be seen from how to play and the appearance of the picture cards used. This requires teachers to be more creative in making and presenting games that are fun and in accordance with the child's thinking stage, (4) this research is only on improving children's visual spatial and mathematical logic skills, so further research is needed in the field of developing other abilities so that more convincing evidence is obtained in order to improve the quality of learning at kindergarden institutions that are adapted to the development and needs of early childhood, and (5) to school institutions, the use of picture cards can be taken into consideration in preparing learning materials, especially in improving visual abilities spatial and mathematical logic skills.

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