

The Effect of Loose Parts Media on Early Childhood Visual-Spatial Intelligence

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Abstract

This study aims to determine the effect of loose parts media on visual-spatial intelligence in early childhood. This study used an experimental method with a pre-experimental type one group pretest-posttest design. This Study used simple random sampling technique. The data collection technique used is a visual-spatial intelligence observation sheet. Data analysis technique using a t-test. The results showed that there was an effect of loose parts media on visual-spatial intelligence from the pretest, the treatment I to IV, and the posttest series. This is clear from the previous pretest average result which was 13.71, now the average has increased to 36.57 after being given treatment as using loose part media and the t-count is greater than the t-table which is $47.60 > 2.160$. This means that loose parts of media can affect the visual-spatial intelligence of early childhood. These loose parts are an alternative media that teachers can use to stimulate children's visual-spatial intelligence.

Key Words: Loose Parts Media, Visual-Spatial Intelligence, Early Childhood

Introduction

Every child in this world has a different level of intelligence. Children have different abilities and development, so each child needs individual attention. Toddlers need adults around them to help them develop and possess intelligence. This is because this time is the best time to shape a child's intelligence. In addition, proper education can also determine a child's intelligence (Elfiadi, 2017). The theory of intelligence, discovered and developed by Howard Gardner, is a fair and reasonable solution that treats children as unique and intelligent individuals (Widiastita & Anhusadar, 2020). In developing the potential a child possesses, it should be adapted to the child's growth and development. This is done so that the growth and development of the child can be carried out optimally according to the stages that affect the level of intelligence.

Intelligence is one of God's great gifts to humans and makes it one of the advantages of humans compared to other creatures. With their intelligence, humans can continuously

maintain and improve their increasingly complex quality of life, through continuous thinking and learning processes (Madyawati, 2017). Everyone can develop their intelligence through various ways which are known as multiple intelligences. According to Howard, multiple intelligences is the ability to generate problems or solve problems that exist in real life. Supporting Howard Gardner's theory, Dewi et al., (2021) said that multiple intelligences are multiple intelligences that can be interpreted as a person's ability to solve problems in real life, not only in theory. According to Elfiadi (2017), one of the characteristics of children who can develop optimally as expected is children who have multiple intelligences. Unlimited human intelligence can be grouped into linguistic intelligence (language), logical-mathematical, visual-spatial, gestures, musical, interpersonal, intrapersonal, naturalist, and spiritual.

The eight bits of intelligence above are certainly important to develop because each has its potential or talent, which includes visual-spatial intelligence. Visual-spatial intelligence is learning aimed at developing the ability to think, understand, and translate thoughts and imagination into visual-spatial forms. According to Dewi et al., (2021), visual-spatial intelligence is image intelligence and visualization related to the ability to visualize images in one's mind or create them in two or three dimensions. Visual-spatial intelligence makes it easier for someone to imagine geometric or three-dimensional shapes because he can observe the spatial world and can make changes to response including the capacity to visualize, present visuals with graphics or new views of the spatial world, and orient himself in space internally in his mind. This method is generally used by sailors or pilots in traveling the world (Suarca et al., 2016).

Children with visual-spatial intelligence are usually very aware of the location of all items in the house. Where they usually think in the form of visuals and images. If an item is lost or misplaced, they are the first to find the item. Children like this will be sensitive to changes in the interior of the house by giving like and dislike reactions. When they grow up, they may become architects, mechanics, engineers, or city designers. Being active in art classes at school, providing clear visual images when thinking about something, easy-to-read maps, graphs, and diagrams, drawing objects exactly to the original, and liking to doodle are skills and strengths that they may have (Suarca, 2005).

Children with high visual-spatial intelligence tend to be creative and like to imagine with pictures. Someone with good visual-spatial intelligence usually has the characteristics of liking to draw, describe things with pictures, likes to appreciate paintings or other art objects, can memorize a location easily, and able to memorize the faces of people and others (Maemunah, 2015). Visual-spatial intelligence is very important for children to have. Musfiroh (2014) suggests that every child must have visual-spatial intelligence because intelligence is very useful in understanding space, three dimensions, direction, shape, and geometry, and children are easy to move, grow more creative and innovative and express something based on their abilities, and to recognize an object or image correctly requires visual-spatial intelligence.

The results of observations were made at Islamic Kindergarten Harapan Ibu Lima Kaum Batusangkar Sumatra Barat, on January 15, 2021. Researchers found that children's visual-spatial intelligence was still low. This can be seen from the 14 children, 5 of whom were unable to determine left and right directions, and 2 children had difficulty remembering and grouping things based on shape. Meanwhile, when the teacher provides activities in the form of drawing a shape, there is a child's insensitivity to color. Children will only draw a shape and color it according to the example given by the teacher, so there is 1 child who does not pay attention and does not want to know about what is being taught. When the teacher asks children about shape, direction, and color lessons, there are still children who cannot answer questions from the teacher. This is caused by the teacher's lack of attention to children's visual-spatial intelligence in learning shapes, directions, and colors. The lack of concrete media in introducing

shapes, directions, and colors to children results in children being insensitive to the learning carried out by the teacher.

This problem requires a solution that is presented through the use of media. One that can be used is loose parts media. Loose parts media is a play material that can be moved, combined, and redesigned in various ways (Fransiska & Yenita, 2021). Loose parts media is one of the media that is easy to get in the surrounding environment without having to pay for it (Mubarokah, 2021). The loose part is a media material that is capable of educating because it can encourage children to think about what these materials will be formed into. Materials that have value and the potential to be changed in various ways so that they become new creations and discoveries that can encourage children's creativity and imagination (Siantajani, 2020).

The use of loose parts media in learning can provide various benefits for children including being able to increase children's creativity and imaginativeness, increasing children's cooperative attitude and socialization, children becoming more physically active, and being able to encourage children's communication and negotiation skills, especially when in open spaces (Damayanti et al., 2020). The use of loose parts media is one of the media that children need to learn and can create a richer environment for children to play so that children can use anything to play because loose parts media does not require special materials so that it provides endless possibilities. limited for children in imagining (Siantajani, 2020).

Several previous studies have stated that the use of loose parts provides many benefits such as stimulation of social behavior (Dyah et al., 2021), numeracy skills (Mubarokah, 2021), creativity (Farikhah et al., 2022), development fine motor aspects (Ridwan et al., 2022), improving learning quality (Dwiyama & Awaliana, 2021), solving simple problems (Najamuddin et al., 2022), and gross motor skills (Nurfadilah et al., 2020). Based on the background and the results of previous studies on loose parts media, the researchers found that no one had researched loose parts media for visual-spatial intelligence. For this reason, this research results.

Method

This type of research uses quantitative research with pre-experimental research with the type of one-group pretest-posttest. This experimental research intends to look for the effect of certain treatments on others under controlled conditions. The experiment is intended to determine the purity of the effect of X (the effect of loose parts media) on Y (children's visual-spatial intelligence). The pre-experimental model is as follows:

Table 1. Pre-Experiment Model

Group	Pretest	Treatment	Post-test
Experiment	O ¹	X	O ²

The sampling technique used is simple random sampling with a total sample of 14 children. The data collection technique used is the observation of children's intelligence development. Then the data analysis technique uses t-test (t-test).

Result and Discussion

Description of Children's Visual-Spatial Intelligence Pre-test Data

The data described in this study consist of: "The Effect of Loose Parts Media (X) as the independent variable and the dependent variable on Children's Visual-Spatial Intelligence (Y)", by experimenting 4 times. The population in this study were early childhood children in the

Islamic Kindergarten of Harapan Ibu Lima Kaum, amounting to 53 people. The sample consists of 14 children.

Based on the results of the initial instrument processing, it was found that there were real problems regarding children's visual-spatial intelligence, namely there were still children who were lacking in recognizing shapes, directions and colors, there was still a lack of teacher attention in developing children's imaginations, the media used was not concrete and children were still a lot silent when the teacher ask questions.

The following will present the results of research that reveal children's visual-spatial intelligence before being given treatment:

Table 4.2
Classification of Visual-Spatial Intelligence Scores in Children in Harapan Ibu Lima Kaum Kindergarten

No	Interval	Category	Pretest	
			F	%
1	34-40	Well developed	0	0%
2	26-33	Develop as expected	0	0%
3	18-25	Begin to develop	0	0%
4	10-17	Undeveloped	14	100%
Total			14	100%

Based on the table above, it can be concluded that in the pretest data there were no children in the category of very well developed, developing as expected, starting to develop, and there were 14 children who had not developed with a percentage of 100%.

Description of Posttest Result Data

After the implementation of playing using loose parts media, the children are evaluated so that they can see the visual-spatial intelligence of children in Harapan Ibu Lima Kaum Kindergarten. The data can be used as a comparison after being carried out and given experimental activities. Comparing the visual-spatial intelligence of children before and after the experimental activities were carried out with statistical analysis of the different test (t-test). The test was conducted to see the significance of children's visual-spatial intelligence. the following is the posttest data using loose parts according to the children's visual-spatial intelligence material:

Table 4.13
Obtaining Visual-Spatial Intelligence Result Data for Children at Harapan Kindergarten Ibu Lima Kaum (Posttest)

No	Interval	Category	Post-test	
			F	%
1	34-40	Well developed	13	93%
2	26-33	Develop as expected	1	7%
3	18-25	Begin to develop	0	0%
4	10-17	Undeveloped	0	0%
Count			14	100%

Hypothesis test

In answering the research problem formula that has been described in chapter 1, a hypothesis test is carried out. The hypothesis is a temporary test of the formulation of the problem in the research, it is called temporary because the answers given are only based on empirical facts which can be concluded from the hypothetical data to be tested.

After the results of the treatment, the next step is to analyze the data from the treatment by performing statistical tests. To see whether or not there is a significant increase in visual-spatial intelligence in children through loose parts media. In this case, seeing whether or not there is a significant increase in children's visual-spatial intelligence is done by using a t-test analysis. Before the "t" test is carried out, a calculation table is first made to obtain the "t" value in table 4.17 below:

Table 4.17
Testing the Truth of the Alternative Hypothesis (Ha)

No	Child Code	Pretest	Posttest	D	D ²
		Skor	Skor		
1	AM	15	37	22	484
2	AS	14	38	24	576
3	FM	14	37	23	529
4	MF	13	39	26	676
5	MR	14	39	25	625
6	RNN	14	37	23	529
7	RMA	14	36	22	484
8	SZP	13	37	24	576
9	KNA	13	36	23	529
10	SK	13	36	23	529
11	NZ	14	35	21	441
12	NV	14	36	22	484
13	IHM	14	33	19	361
14	AZ	13	36	23	529
	Count	192	512	320	7352
	Means	13,71	36,57	22,85	525,14

The next step is to provide an interpretation of t_0 , which first takes into account the df or db, $df = N - 1 = 14 - 1 = 13$, comparing the magnitude of t obtained with the calculation of $t_0 = 47.60$ and the amount of "t" listed at a significant level 5% ie $t_{5\%} = 2.160$ so it can be seen that t_0 is greater than $t_{5\%}$ i.e. $47.60 > 2.160$. Then by comparing the results of t arithmetic (t_0) with t table, it can be analyzed that t_0 is greater than $t_{5\%}$ ($t_0 > t_{5\%}$), so H_0 is rejected and H_a is accepted, this means that loose parts media has a significant effect on children's visual-spatial intelligence in kindergarten. Islam Hope for the Mother of Five People.

Discussion

Based on the data above, the writer sees that loose parts media affect the visual-spatial intelligence of early childhood. Every child has a different intelligence and not all aspects of intelligence must be developed by children, one of the intelligences that can be improved in children is visual-spatial intelligence. So it is necessary to have interesting media in improving children's visual-spatial intelligence. One of them is by using loose parts media, with this media so that children can more easily understand, and imitate during learning, children feel interested in learning so that children are more enthusiastic and focused in learning.

This study is in accordance with research conducted by Farida, (2021) with the title "Use of Loose Parts Media to Improve Early Childhood Creativity". This study uses descriptive quantitative research methods. This study says that the use of loose parts media in the learning process plays a role in developing early childhood creativity by carrying out all stages of using loose parts media.

The same research was conducted by Mubarokah, (2021) with the title "Efforts to Improve Counting Ability Using Loose Parts Media in Group B Kindergarten Children". The research uses classroom action research. Where the application of loose parts media can improve children's numeracy skills. Through the application of loose parts media which is carried out gradually in learning activities, it can improve children's numeracy skills.

In addition, the concept of loose parts has also been studied by Spencer, et al, in Mastuinda et al. (2020) which confirms the results of research conducted playing with this concept can help children when interacting with social relationships, because they develop skills and increase self-confidence and independence.

In addition, using loose parts will create unlimited creations like the child's self, increase the desire for deep creativity and instill a child's concern for the surrounding environment. Children will optimize all their five senses, absorb all activities that take place and gain valuable experience in knowledge information (Safitri & Lestaringrum, 2021).

Spencer, et al., (2019) also said that media called loose parts can help children to build relationships, develop skills, leadership, gain self-confidence, and independence. This study also shows that children who use loose parts are more involved in sharing and caring for the environment.

Based on the data processing, it can be seen that the results after the treatment, the children's scores increased in the post-test results compared to the pre-test results. So it can be understood that the hypothesis that loose parts media has no significant effect on children's visual-spatial intelligence is rejected, and the alternative hypothesis H_a which says that loose parts media has a significant effect on children's visual-spatial intelligence in Harapan Ibu Lima Kaum Islamic Kindergarten. This means that loose parts media affect the visual-spatial intelligence of early childhood at a level of 5%.

Based on the results of the pre-test and post-test, it was shown that the score of children's visual-spatial intelligence development in Harapan Ibu Lima Kaum Islamic Kindergarten increased after treatment using loose parts media in the experiment. The results of the post-test showed that 1 child with a percentage of 7% developed as expected and 13 children with a percentage of 93% developed very well. Then it can be seen from the average pre-test score of 13.71 before being given treatment the average score of children's visual-spatial intelligence increased to 36.57 (post-test), the increase that occurred proved that loose parts media had an effect on visual-spatial intelligence. Spatial early childhood.

Conclusion

Loose part media can be given to children to improve visual-spatial intelligence from an early age. Loose Parts creates unlimited creative possibilities in learning activities and invites the creativity of students. Loose part is a media of teaching materials whose uses in student learning are never-ending. Also loose part teaching materials can be used as a tool to explore various aspects. Thus, the principal must be able to provide directions to teachers to apply loose part media in the learning process so that teachers can use loose part media to improve children's spatial visual intelligence. The continuation of this research can be measured by other

problem variables, different research subjects, and the application of loose part media to overcome any problems in children.

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