

The Influence of Playdough Media on Visual-Spatial Intelligence of Group B Children (5-6 Years)

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ABSTRACT

This study aims to determine the effect of *playdough media* on visual spatial intelligence of group B children (5-6 years old) at Angkasa Lanud Kindergarten Palembang. This study used a *pre-experimental method with a One Shot Case Study Design*. The research sample consisted of 16 children selected using a *purposive sampling technique*. Data collection techniques include observation, testing and documentation. The data were analyzed using a one-sample t-test, which showed that the value of $t_{hitung} = 4.48$ was greater than $t_{tabel} = 1.75$, so H_0 is rejected and H_a is accepted. These results indicate that *playdough media* has a positive and significant effect on children's visual spatial intelligence. The implications of this study indicate that the use of *playdough media* not only improves children's visual spatial intelligence, but also develops fine motor skills, and cognitive and creativity in children.

Keywords : *Playdough Media* , Visual Spatial Intelligence of Group B Children , Early Childhood Education

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INTRODUCTION

Education plays a very important role for every individual, especially for children. In general, education can be interpreted as a human effort to develop innate potential, both physical and spiritual, in accordance with the values that apply in society and culture (Rahman et al., 2022). This is further explained in Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, especially in Article 1 Paragraph 14. The article states that early childhood education is an effort aimed at children from birth to the age of six, carried out through the provision of educational stimulation to support the growth and physical and mental development of children, so that they are ready to enter the next level of education.

Education can be obtained through formal or non-formal channels. One of the important early stages of education to undergo is early childhood education (Lumbantobing et al., 2023). This period is often referred to as the golden period or *golden age*, where children's brain development is very rapid, reaching more than 80%. Therefore, providing the right stimulation to stimulate children's intelligence is very crucial at this stage.

Intelligence can be defined as a person's ability to remember, think, and formulate problems. Every child has various types of intelligence within them, but generally only certain intelligences develop more dominantly, thus becoming a characteristic or uniqueness of each individual. Because each child has a different way of developing and expressing their intelligence potential, the learning process needs to be adjusted to the intelligence potential of each child so that they can develop optimally.

One of intelligence in *multiple intelligences* is visual spatial intelligence. According to Erica et al., (2021), visual spatial intelligence is ability think, understand and interpret thought or imagination in visual form. Furthermore, it is explained by Muttaqien et al., (2023), explaining that in children age early, visual spatial intelligence related close with their visual

abilities, such as Study through introduction colors, images, and other visual elements. Children with dominant visual spatial intelligence tend own good ability in remember direction, shape, location, as well as color.

Visual-spatial intelligence is important for early childhood because it supports their ability to understand and interact with the environment, as well as solve problems through visualization. This intelligence helps children learn basic concepts such as shape, size, and space, and contributes to the development of creativity and imagination. By developing this intelligence, children can improve basic cognitive skills, which serve as a foundation for future learning (Sukmadinata, 2021). Visual-spatial intelligence is very important for early childhood because it supports their ability to understand and interact with the environment and solve problems through visualization. According to Marlina (2017), this intelligence helps children recognize shape, size, and space, and contributes to the development of creativity and imagination. By developing visual-spatial intelligence, children can improve cognitive skills that serve as a foundation for future learning.

The problem that often arises in the development of children with visual spatial abilities is that they tend to have very high imaginations, so they often get lost in daydreams and imagine things that are in their minds. (Danang Dwi Prasetyo, et.al., 2021). Children who often daydream tend to be less focused on learning. Their imagination skills should be visualized through shaping activities. This activity can be a means to optimize children's visual spatial intelligence and turn it into real work. To stimulate children's visual spatial intelligence, educators need media as a tool to achieve learning goals. Learning media not only functions as a tool in the teaching process, but also has an important role as a support that can be used at any time. One of the interesting media for children to use in shaping activities is *playdough*.

Playdough/ Plasticine is a toy made of wax that can be changed shape, but to make it yourself does not use wax but can be replaced with other materials such as flour. This *playdough game* is very simple and easy to get, playing *playdough* is one of the beneficial activities for children's brain development, children's motor skills and as a learning aid to stimulate children's imagination. According to Purwanti, et al., (2023), *Playdough* is an effective medium for honing children's cognitive skills and development, such as recognizing colors, shapes, symbols, and sizes. In addition, playdough media can also influence children's physical motor development through the activity of squeezing *playdough dough*. This activity also stimulates children's creativity in forming *playdough dough* into a work. This game is very popular with children because of its soft texture and easy to shape, so children feel happy and interested in continuing to be creative.

There is research that discusses *playdough* media to visual spatial intelligence. Research from Nur Rahmah Abdullah1, et al., (2023), who stated that the media *is playdough* can increase visual spatial intelligence child. Next study Tauriana et al., (2022), there is influence of media *play play dough* to improvement motion motor smooth on the fingers hand child age preschool. Then the research conducted by Widiastita & Anhusadar, (2020), stated that visual spatial intelligence child develop significant proven fulfil criteria indicator success. *Playdough* media can also stimulate eye and motor coordination in making various shapes.

Through *playdough media*, it can provide fun learning for children so that children feel interested and enthusiastic in learning. Apart from that, this media can also develop children's imagination in forming and recognizing colors correctly as well as stimulating children's visual spatial intelligence in visualizing images into a shape or work that they make.

Based on the results of observations on November 18, 2024 at the Angkasa Lanud Palembang Kindergarten. Problems were found regarding children's visual spatial intelligence, where there are still children who do not recognize colors correctly, children still have difficulty in clarifying objects and shapes and children have difficulty in developing their imagination. This is certainly influenced by several obstacles in the ongoing learning process. Obstacles in the learning process include the lack of availability of media, tools, and materials, as well as limited time. The lack of media available in the kindergarten causes the learning process to tend to be monotonous and seem rigid. This has an impact on children's difficulty in understanding the material and expressing their imagination optimally.

Based on the problems above, it is necessary to design a study with the title. "The Effect of *Playdough Media* on Visual Spatial Intelligence of Group B Children at Angkasa Lanud Kindergarten Palembang."

METHOD

In this research, in terms of data type, the author uses a research method experiment. According to Sugiyono, (2022:72), experimental research is research used to find the effect of treatment *on* conditions that can be controlled. This means that this experimental research can determine the effect before and after treatment is given to the subjects being studied.

In this study, the population used was all children in group B at Angkasa Lanud Kindergarten Palembang in the 2024-2025 academic year, consisting of two classes with a total of 31 students. The sample selection technique used was the *purposive sampling technique* (purposeful sampling). According to Maghfira, (2021), the purposive sampling technique is a method of taking data samples by considering certain criteria. This technique establishes specific requirements that must be met by the sample to be selected as a source of data in the study. In this case, sampling was carried out by paying attention to children aged 5-6 years, which would then be discussed together by the researcher, the principal, and the teachers involved. As a result, the researcher chose 16 children from class B1 out of a total of 31 children in the class to be used as samples in the study.

The research design used in this study is a *one shot case study*. This design is used by researchers in accordance with what they want to research, namely to determine the effect of using *playdough media* on visual spatial intelligence of group B children, by providing treatment *and* at the end of the learning the sample is given a *post test* (final test). The data collection techniques used in this study are tests, observation and documentation.

The research process at TK Angkasa Lanud Palembang begins with determining and formulating existing problems, followed by finding a theoretical basis to answer these problems. Furthermore, a hypothesis is formulated to be tested for its truth through the one-shot case study design experimental method. The researcher then selects samples and populations using purposive sampling techniques, and creates appropriate instruments for data collection. Treatment is given to the sample using playdough media, where data is collected through observation and documentation techniques. The results of the data obtained are then analyzed using a test formula to determine the impact of the treatment given, and finally, conclusions are drawn to determine whether playdough media has an effect on visual spatial intelligence at TK Angkasa Lanud Palembang. In this study, data collection techniques used were tests, observation, and documentation.

FINDINGS AND DISCUSSION

The study was conducted by providing treatment to children aged (5-6) years using *playdough media*. The provision of treatment was adjusted to the instrument sheet. Data after treatment were obtained through a post-test in the form of a test of behavior after the application of *playdough media* to children's visual spatial intelligence. Post-test data guided by indicators of visual spatial intelligence of children aged 5-6 years produced an average of 80.31 and a standard deviation of 13.82. The results of this post-test were used to see the effect of *playdough media* on the visual spatial intelligence of group B children at Tk Angkasa Lanud Palembang.

Post-treatment data were obtained through a post-test in the form of a behavior test after the application of *playdough media* to children's visual spatial intelligence. Post-test data guided by indicators of visual spatial intelligence of children aged 5-6 years produced an average of 80.31 and a standard deviation of 13.82. The results of this post-test were used to see the effect of *playdough media* on the visual spatial intelligence of group B children at Tk Angkasa Lanud Palembang.

Based on the recapitulation of data after treatment, the results obtained were that 1 child got a score of 95, 3 children got a score of 91, 5 children got a score of 87, 1 child got a score of 83,

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1 child got a score of 79, 1 child got a score of 75, 1 child got a score of 66, 3 children got a score of 62. The post-test data are presented in the form of the following frequency distribution table.

Table 1. Frequency Distribution of Post Test Scores

Mark	Category	Frequency	Percentage (%)
82- 100	BSB	10	62
63- 81	BSH	3	18
44- 62	MB	3	18
25- 43	BB	0	0
Total = 16			

Table 1 shows that in the first interval with a value range of 82-100, there were 10 children (62%) who were included in the Very Well Developed (BSB) category. In the second interval with a value range of 63-81, there were 3 children (18%) who were included in the Developing According to Expectations (BSH) category. In the third interval with a value of 44-62, there were 3 children (18%) who were included in the Starting to Develop (MB) category. In the interval with a range of 25-43, there were no children included in the Not Yet Developed (BB) category. Further explanation can be seen in the diagram below.

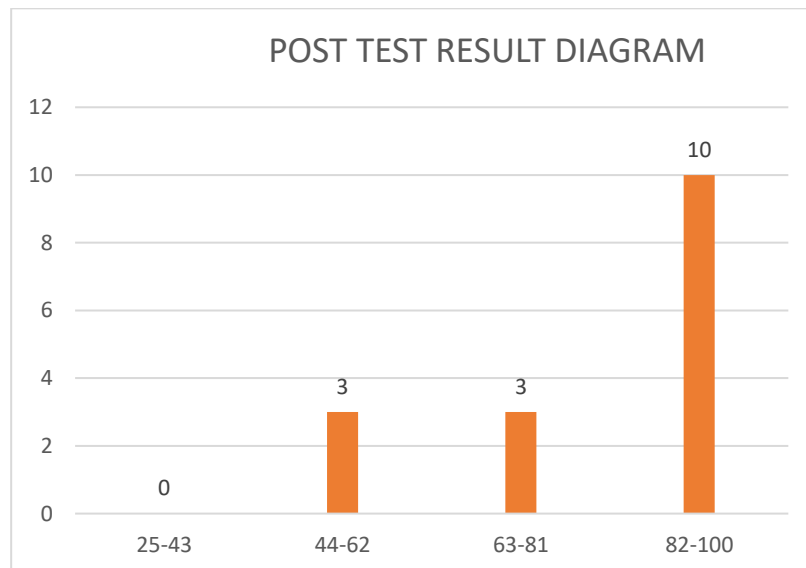


Figure 1. Bar Chart of Post-Test Results of Visual Spatial Intelligence of 5–6-Year-Old Children at Angkasa Lanud Kindergarten, Palembang

Then a normality test was carried out to know data that obtained normally distributed or No. In research This , test normality Which used is a test Chi Square. The following are the results of normality calculations using the Chi Square t test .

Table 2. Results Calculation Normality Use Test Chi Square

No	Class Interval	Limit Real	Z score	Limit Class	Wide Area	f_h	f_o
1	82- 100	100.5	1.30	40.32		6.45	10
2	63- 81	81.5	0.07	02.79	37.53	0.44	3
3	44- 62	62.5	- 1.15	37.49	-34.7	5.99	3
4	25- 43	43.5	- 2.38	49.13	-11.64		0
		24.5					

Table 3. Chi Square Calculation

No	f_o	f_h	$(f_o - f_h)$	$(f_o - f_h)^2$	$\frac{(f_o - f_h)^2}{f_h}$
1	10	6.45	3.55	12.60	1.86
2	3	0.44	2.56	6.78	15.4
3	3	5.99	-2.99	8.94	1.49
4	0				
				χ^2	18.75

From the Chi Square calculation table above, the value of χ^2 is obtained which is **18.75**. The data is normally distributed if the value of χ^2_{hitung} is smaller than χ^2_{tabel} , and the data is said to be not normally distributed if the value of χ^2_{hitung} greater than. From calculation n-1 on interval trust 95%, got $\chi^2_{tabel} = 24.99$ which has a value greater than $\chi^2_{hitung} = 18.75$. So, this shows that the data is normally distributed because $\chi^2_{hitung} \leq \chi^2_{tabel}$ where $18.75 \leq 24.99$.

The t-test was used to test the hypothesis in this study which was based on the research objective, namely to determine whether or not there was an influence of *playdough media* on the visual spatial intelligence of group B children at Angkasa Lanud Kindergarten, Palembang.

Before do calculation, researcher moreover formerly determine average value and standard deviation. The following are the results of the t-test calculation.

It is known:

$$\bar{x} = 80.31$$

$$\mu_0 = 63$$

$$S = 15.46$$

$$n = 16$$

$$t_{hit} = \frac{\bar{x} - \mu_0}{s/\sqrt{n}}$$

$$t_{hit} = \frac{80,31 - 63}{15,46/\sqrt{16}}$$

$$t_{hit} = \frac{17,31}{15,46/4}$$

$$t_{hit} = \frac{17,31}{3,86}$$

$$t_{hit} = 4,48$$

tabel obtained from mark distribution t (attached) Where opportunity $(1 - \alpha)$ and dk (n-1). Amount dk = $(16-1) = 15$, mark $\alpha = 0.05$ got **t tabel** value as big as **1.753** or 1.76.

Based on the calculation of the data analysis test and the hypothesis carried out. It can be concluded that there is an influence of *playdough media* on the visual spatial intelligence of group B children at Angkasa Lanud Palembang Kindergarten. In learning using playdough media, children tend to build more meaningful experiences because *playdough media* is concrete and there are many creations that children can make so that they can increase their imagination and make them more innovative. (Permadi & Dewi, 2022)

Table 4. Data Results for Each Indicator

Indicator	Item	Score	Number of children	Percentage (%)
Distinguishing visuals such as colors and shapes	Differentiate between various colors in playing playdough	1	0	0%
		2	5	31.25%
		3	10	62.5%
		4	1	6.25%
Distinguishing big-small, long-short shapes when playing with playdough		1	0	0%
		2	5	31.25%
		3	10	62.5%
		4	1	6.25%
Able to coordinate eyes and hands in making various shapes	Forming squares, circles, and triangles with playdough	1	0	0%
		2	1	6.25%
		3	10	62.5%
		4	5	31.25%
Imitate the visual pattern exemplified by the teacher in using playdough media		1	0	0%
		2	1	6.25%
		3	4	25%
		4	11	68.75%
Create works that look like real shapes using playdough media	Able to create shapes/works that are in accordance with creative ideas in using <i>playdough</i>	1	0	0%
		2	1	6.25%
		3	4	25%
		4	11	68.75%
Able to express artistic activities according to children's imagination	Able to express his/her expression through shaping <i>playdough</i>	1	0	0%
		2	0	0%
		3	5	31.25%
		4	11	68.75%

Based on the data above, in indicator 1, children are taught to distinguish the various colors found in *playdough*. At the beginning of *the treatment*, children are given an explanation of *the playdough media*, from the ingredients, texture and color as well as the simple shape of *the playdough*. This is in accordance with the visual spatial intelligence indicator according to (Tadzkirah, 2020), namely that children have sensitivity to color, meaning that children remember/recognize colors faster. This is also in line with the opinion of (Amelia et al., 2021)

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that playing *playdough* can improve children's cognitive development, where children's cognitive development is such as being able to clarify secondary and primary colors, and children are able to clarify large and small sizes.

In indicator 2, the researcher provided treatment regarding various shapes such as triangles, circles and squares, in the next meeting the researcher provided visual examples/flower shapes using *playdough* and the children were asked to follow the instructions to form flowers from *playdough*. This is also related to the opinion conveyed by (Agriana & Hujjatusnaini, 2022) Children can use their hands and tools to make and shape the dough with that experience, children improve hand-eye coordination and dexterity and hand strength which can advance children's motor development for writing and drawing. In line with the opinion of (Harmonis et al., 2022) children's visual spatial intelligence is further increased by seeing the available images directly and increasing their memory to guess the images they see.

In indicator 3, researchers provide free *treatment* for children to be creative according to their creative ideas in forming using *playdough*. According to (Rezieka et al., 2021) through imagination, children can develop creative thinking skills and always feel motivated to realize the ideas they think of. This condition, according to researchers, is an important stage for child development, because when children use their imagination, their thinking process becomes naturally structured, allowing creativity to develop without realizing it. In this indicator, children have used their imagination to create creative forms, as seen from the results of the work they have made, some of which make rockets, stars, cats, robots, flowers and other unexpected objects.

In indicator 4, the researcher gave the child treatment to tell the results of the work he had made. (Rezieka et al., 2021) also expressed their opinion that creativity in oral language in children is reflected in their ability to ask questions, want to give answers, tell experiences, and share information with adults, teachers, or friends.

Thus, it can be concluded that the development of language skills in children can be improved through stimulation that invites them to tell stories and through frequent questions to them. This will increase children's interest in communicating verbally, encouraging them to be active and creative in speaking or telling their experiences. When children are often involved in listening to stories from parents or educators, their curiosity will increase, encouraging them to talk and ask more, such as the activities carried out by researchers in indicator 4 for item 6, children are asked to explain the results of the work they have made, how children can get the idea and how they convey it through their own language, it can be from the habits they do, hobbies they like, and so on.

Based on *the post-test* that was given at the end of the meeting and the assessment criteria that had been determined, the researcher obtained data from the results of observations of all indicators, namely that 10 children were in the Very Well Developing (BSB) category with a percentage of 62%, 3 children were in the Developing According to Expectations (BSH) category with a percentage of 18%, while 3 children were in the Starting to Develop (MB) category with a percentage of 18% and no children were included in the Not Yet Developing (BB) category.

From the results of the overall post-test scores of children and the discussion above, it can be concluded that *playdough media* has an effect on children's visual spatial intelligence in group B at Angkasa Lanud Kindergarten Palembang. This is indicated by the results of the T-test calculation where the value of $t_{hitung} = 4.48$ which is greater than $t_{tabel} = 1.75$ so that H_0 is rejected and H_a is accepted, Thus *playdough media* can be used effectively to improve the visual spatial intelligence of children aged 5-6 years. This study provides empirical evidence that supports the use of *playdough media* as an effective tool in early childhood learning, especially to develop their visual spatial intelligence.

CONCLUSIONS

Playdough can be a good media in learning process. Based on data analysis and T-test, the value of $t_{hitung} = 4.48$ is obtained, greater than $t_{tabel} = 1.75$. This shows that H_0 is rejected and H_a is accepted, which means that playdough media has a positive and significant effect

on increasing visual spatial intelligence of group B children at Angkasa Lanud Kindergarten Palembang. This study supports the use of playdough as an effective tool in learning for children aged 5-6 years, not only for visual spatial intelligence, but also to improve fine motor skills, language development, cognitive, and creativity.

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