

## The Effect of Playdough Play on Early Childhood Fine Motor Improvement in Yogyakarta National Kindergarten



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**ABSTRACT:** This study aims to determine the effect of playing playdough on fine motor improvement in early childhood. This type of research is an experiment with design one group pre test and post test. The population in this study was 38 children from Yogyakarta National Kindergarten. The sample in this study was 10 people taken using purposive sampling techniques. The instruments used are to measure fine motor using (1) pattern thickening test, (2) coloring test, (3) memola test (4) cutting test, (5) bead meronce test with string thread. The data analysis technique used is the paired sample t-test. The results showed that there was a significant influence of playing playdough on the improvement of early childhood fine motor from the initial test and the final test there was an increase with a difference of 3.09 kg m / sec, namely from an average score of 9.3 in the pre-test to 15.1 in the post test, and strengthened by the results of the t test using a paired sample t-test with a t value of -7.127 and a p significance value of  $0.000 < 0.05$ . The conclusion in this study is that there is a significant influence of playing playdough on the improvement of fine motor skills in early childhood, Yogyakarta National Kindergarten.

**KEYWORDS:** Playdough, Fine Motor, Early Childhood

### I. INTRODUCTION

The world of world education is very important in human life. Human beings who are always accompanied by education, life will always develop in a better direction. Human life is constantly changing. All life is centered on education, because education is the printer of the next generation of the nation in human life. The development of educational life experiences dynamics that are increasingly developing and trying to adapt to the dynamic movement of life development. Education has an important role in childhood, because the improvement of personality abilities, mental and intellectual attitudes is formed in early childhood (Hastie & Wallhead, 2016). Quality in the early days of children including preschool is a mirror of the quality of the nation to come. Early childhood education is defined as the basic foundation for the child's subsequent education.

One of the abilities that needs to be developed in early childhood education institutions, especially in kindergarten, is motor skills. Fine motor development is related to the child's ability to use limbs. Motor processes involve a coordinated system of movement patterns (brain, nerves, muscles, and skeletons) with complex mental processes, referred to as the process of motion creation. The four elements cannot work individually, but are always coordinated (Cameron et al., 2016). If one of the elements is disturbed, the movement carried out can be disturbed. The movements made by the child are consciously influenced by a stimulus from his environment (verbal or oral information, images and other tools) to which the child can respond (Iivonen & Sääkslahti, 2014).

The position of early childhood is in a vulnerable and unstable period so that children need to get positive and thorough stimulation. The provision of stimulation through early childhood education needs to be given comprehensively, in the sense that children not only educate their brains, but are intelligent also in other aspects, because the fact that in the field there are still many problematic individuals seen from fine motor movements and independence, such as not being able to write correctly, not being able to button clothes independently, writing, drawing, still guided by the teacher (Van der Fels et al., 2015). This often causes problems and often makes the child get obstacles when completing their tasks.

This can be seen when the child holds a pencil, colors, pastes drawings, makes patterns, matches shapes. Children's fine motor skills that are not optimal are also caused because learning media has been used frequently and is no longer attractive to children. Strategies that are less helpful stimulate the improvement of children's fine motor skills so that children often have problems in carrying out tasks at school. This can be seen in the media used by teachers to improve fine motor skills, namely using children's worksheets such as reading so that children feel bored and not motivated to do learning activities in class. Learning

## The Effect of Playdough Play on Early Childhood Fine Motor Improvement in Yogyakarta National Kindergarten

activities are not structured through play so that children feel burdened by the tasks given by the teacher. Educators should support the improvement of children's motor skills through instructionally appropriate fine motor skills improvement programs.

Based on preliminary observations made by researchers in January 2023 at the Yogyakarta National Kindergarten from two classes of kindergarten teachers B Suryaningsih and Eni Handayani, it was revealed that the children's fine motor skills were still low. This is evidenced by the data obtained from two grades of 38 children of TK B Yogyakarta National Kindergarten obtained an average fine motor score of 1, when viewed in normative data, of course this is included in the category of less, while the standard value is worth 3. Play programs to train children's fine motor skills are also still lacking. Motode played before using motode playing, jumping rope, walking on a small sidewalk, putting the ball in the basket, imitating animal movements, of course this game trains the child's gross motor movements, does not train the child's fine motor skills.

Early childhood development efforts can be done in various ways, including play activities to improve their fine motor skills. Fine motor aims to assist the child in moving the limbs, especially part of the child's hand movements, thus giving birth to a meaningful independence (Linda & Suryana, 2020). Early childhood in the age range of 5-6 years is in the golden age everything is very valuable, both physically, emotionally, and intellectually (Bakken et al., 2017; Hasanah & Deiniatur, 2020). Early childhood is very much energy, so it requires very precise learning so that fine motor skills increase.

Training fine motor skills really requires eye and hand coordination, one form of play that trains eye and hand coordination is playing playdough. Playdough is a fun play activity at a low cost and has the value of flexibility, both for teachers and for children in designing patterns to be made according to plan and imagination. (Setiawati, 2022). According to previous research, it has shown that there is an influence of playing playdough in providing stimuli for children's fine motor improvement (Sutapa et al., 2018). Playing playdough can improve children's fine motor skills, indirectly children will be able to improve their abilities through squeezing, pressing, cutting, and matching pattern shapes according to their imagination.

This ability of muscles and nerves is what will be able to improve fine motor abilities such as squeezing, tearing, forming patterns, sticking (Kristiantari & Negara, 2017). The child's fine motor delay is due to the lack of opportunities for the child to learn fine motor skills and exercises. Playing playdough is a solution in improving children's fine motor skills so that educational activities are held that are interesting and meaningful for children. According to the previous opinion, the child instinctively has the urge to develop from a dependent position (dependence) to an independent position (being independent) the independent child will act confidently and not always rely on the help of adults in acting (Chen et al., 2019).

The position of early childhood is in a vulnerable and unstable period so that children need to get positive and thorough stimulation (Lisa et al., 2020). The provision of stimulation through early childhood education needs to be given comprehensively, in the sense that children not only educate their brains, but are intelligent also in other aspects, because the fact that in the field there are still many individuals who have problems seen from fine motor movements and independence, such as not being able to write correctly, not being able to button clothes independently, writing, drawing, still guided by the teacher. This often causes problems and often makes the child get obstacles when completing their tasks. Most of the motode play taught earlier use motode playing, jumping rope, walking on a small sidewalk, putting the ball in the basket, imitating animal movements, of course this game trains the child's gross motor movements, does not train the child's fine motor skills. The purpose of this study was to determine the effect of playing playdough on improving early childhood fine motor skills in Yogyakarta National Kindergarten.

## II. MATERIAL AND METHODS

This study used an experiment research model with a one group pre-test – poest test design. This method is validation, which is to test the influence of one variable on another. This experimental study used one group that received the same treatment, namely the provision of playing playdough. The population in this study was 24 people, and the sample in this study was 10 people. Sampling technique using purposive sampling technique. This study has received approval from all samples that have filled out a statement of ability to become a research sample and have met the requirements of the research code of ethics. Data collection techniques in this study are tests and measurements. Instruments for measuring fine motor using (1) pattern thickening test, (2) coloring test, (3) memola test (4) cutting test, (5) bead meronce test with string thread. After that, treatment or exercise was given as many as 16 meetings with a frequency of 3 times a week. And ended with taking the final test or post test to measure fine motor skills in early childhood using with the aim of knowing the difference in fine motor scores in early childhood after treatment.

The data analysis technique used in this study using SPSS 22 was to use a paired sample t-test. at the significance level  $\alpha=0.05$ . Before arriving at the use of paired sample t-test, it is necessary to carry out prerequisite tests, which include: (1) normality test and (2) hypothesis test with paired sample t-test.

# The Effect of Playdough Play on Early Childhood Fine Motor Improvement in Yogyakarta National Kindergarten

## III. RESULTS AND DISCUSSION

In the research results and discussion section, it will be presented sequentially, including: data on the results of the research pre-test and post-test, prerequisite test, and hypothesis test. The hypothesis test in this study will be presented according to the formulation of the problem, namely: (a) The effect of playing playdough on the fine motor improvement of early childhood. In full it will be presented as follows.

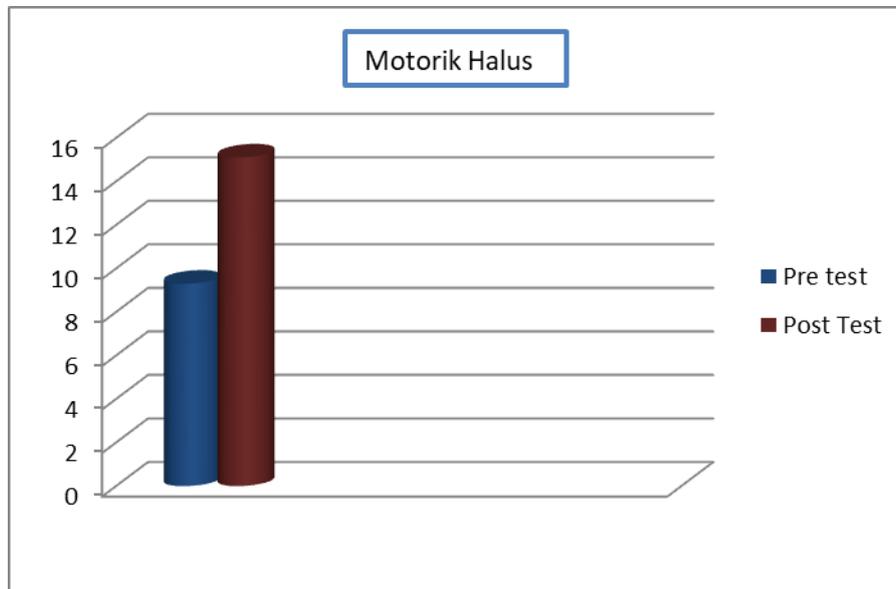


Figure 1. Early childhood fine motor pre test and post test bar chart

Based on Figure 1 above, it shows that early childhood fine motor is an average pretest worth 9.3 and has an increase at the time of posttest worth 15.1.

### 1. Prerequisite Test Results

#### a. Normality Test

The data normality test in this study used the Shapiro-Wilk method. The results of the data normality test conducted in each analysis group were carried out with the SPSS version 22.0 for windows software program with a significance level of 5% or 0.05. The summary is presented in Table 1 as follows.

Table 1. Summary of Normality Test Results

Group	P	Significance	Information
Fine Motor Pre test	0,813	0,05	Usual
Post Fine Motor Test	0,074	0,05	Usual

Based on the statistical analysis of the normality test that has been carried out using the Shapiro-Wilk test, all fine motor pretest and posttest data were obtained from the normality test results of the data significance value  $p > 0.05$ , which means that the data are normally distributed.

#### Hypothesis Test Results

Research hypothesis testing is carried out based on the results of data analysis and interpretation of paired sample t-test analysis. The results of hypothesis testing adjusted to the previously formulated hypothesis, as follows: "The hypothesis has the effect of playing playdough on the fine motor enhancement of early childhood" Based on the results of the analysis obtained data in Table 3 as follows.

# The Effect of Playdough Play on Early Childhood Fine Motor Improvement in Yogyakarta National Kindergarten

**Table 2. Results of paired sample t-test with playdough on early childhood fine motor enhancement.**

**Paired Samples Test**

	Paired Differences	t	df	Sig. (2-tailed)
	95% Confidence Interval of the Difference			
	Upper			
Pair 1 Pre test Motorik Halus - Post test Motorik Halus	-3.95912	-7.127	9	.000

From the results of the paired sample t-test test Table 2 above, it can be seen that the significance value of p is 0.000 and the value of t is -7.127. Since the significance value of p is  $0.000 < 0.05$ , it means that  $H_0$  is rejected. Thus there is a significant influence of playing playdough on the fine motor improvement of early childhood. This means that the research hypothesis that states that "There is a significant influence of playdough play on the fine motor enhancement of early childhood", has been proven.

## DISCUSSION

The discussion of the results of this study provides a further interpretation of the results of the data analysis that has been put forward. Based on hypothesis testing produced three groups of analysis conclusions, namely: (1) there is a meaningful influence of the main factors of the study. The discussion of the results of the analysis can be further explained as follows.

"There is an effect of playing playdough on early childhood fine motor improvement"

Based on the results of the analysis carried out, it was found that the fine motor skills of early childhood experienced a good improvement by being given training using the playdough playing model. These results are consistent with previous studies stating that there is a significant influence of playdough play on fine motor skills in kindergarten (Setyaningsih & Fitri, 2022; Syawalia et al., 2022). Playing playdough has an effect on improving children's fine motor skills because when doing playdough play activities regarding the strength of the palms and fingers, coordination between the hands and eyes, and the flexibility of the palms of the fingers. This proves that the use of playdough can help children practice physical skills by hand, when the child manipulates the playdough with his fingers. According to some previous literature, it describes children's motor abilities, especially fine motor skills aged 5-6 years as follows: (1) drawing something meaningful to the child, (2) using finger movements during play, (3) coloring a pattern, (4) cutting simple shapes (Maurer & Roebbers, 2019; Vaneza & Suryana, 2020)

The results of the study showed that the motor skills activities of children using tools with playdough allowed children to discover the properties of this bending material (Hikmawati et al., 2022; Sutapa et al., 2021). According to the stated that playdough is an excellent play tool for children to develop fine motor skills, concentration, and patience. In addition, with playdough children can make various shapes either by using molds or not. Playing playdough can be used as an effort to help kindergarten children to develop their fine motor skills. Previous research can be used as a reference and can be supportive in conducting this research because it makes a positive contribution in developing the fine motor skills of kindergarten children. Play helps the child to master fine motor skills (Mutiah, 2016). It is beneficial to develop small muscles and large muscles of the child, fine motor is one of the important aspects to develop.

## IV. CONCLUSION

Based on the results of the research and the results of the data analysis that has been carried out, the following conclusions are obtained. There is a significant effect of playing playdough on early childhood fine motor improvement. The results showed that the playdough playing method is an effective method used for early childhood. The implications of the results of the study that to improve the fine motor skills of early childhood can be done by striving for the application of playdough play models. This means that children are given a play model that is in accordance with their characteristics so that in the learning process children feel happy and motivated to follow the learning process, so that learning objectives will be achieved. Then another implication is to encourage teachers to apply suitable learning models that can trigger children's fine motor movements in learning.

## REFERENCES

- 1) Bakken, L., Brown, N., & Downing, B. (2017). Early childhood education: The long-term benefits. *Journal of Research in Childhood Education*, 31(2), 255–269.

## The Effect of Playdough Play on Early Childhood Fine Motor Improvement in Yogyakarta National Kindergarten

- 2) Cameron, C. E., Cottone, E. A., Murrah, W. M., & Grissmer, D. W. (2016). How are motor skills linked to children's school performance and academic achievement? *Child Development Perspectives*, 10(2), 93–98. <https://doi.org/10.1111/cdep.12168>
- 3) Chen, K. J., Gao, S. S., Duangthip, D., Lo, E. C. M., & Chu, C. H. (2019). Prevalence of early childhood caries among 5-year-old children: a systematic review. *Journal of Investigative and Clinical Dentistry*, 10(1), e12376.
- 4) Hasanah, U., & Deiniatur, M. (2020). Character education in early childhood based on family. *Early Childhood Research Journal (ECRJ)*, 2(1), 29–42.
- 5) Hastie, P. A., & Wallhead, T. (2016). Models-based practice in physical education: The case for sport education. *Journal of Teaching in Physical Education*, 35(4), 390–399. <https://doi.org/10.1123/jtpe.2016-0092>
- 6) Hikmawati, H., Takasun, T., & Lailin, M. (2022). Efforts to Improve Students' Fine Motor Skills With Playdough Activities at Tk Yaa Bunayya. *Jurnal Abdi Insani*, 9(3), 878–885.
- 7) Iivonen, S., & Sääkslahti, A. K. (2014). Preschool children's fundamental motor skills: a review of significant determinants. *Early Child Development and Care*, 184(7), 1107–1126. <https://doi.org/10.1080/03004430.2013.837897>
- 8) Kristiantari, M. G. R., & Negara, I. G. A. O. (2017). Development learning tool modification of music and dance to increase physical development in early childhood on the cluster Jempiring Denpasar. *9th International Conference for Science Educators and Teachers (ICSET 2017)*, 237–244.
- 9) Linda, S., & Suryana, D. (2020). The Effect of Stencil Print in Developing Early Childhood Fine Motor Skills. *Jurnal Pendidikan Tambusai*, 4(2), 1399–1407.
- 10) Lisa, M., Mustika, A., & Lathifah, N. S. (2020). Educational Game Tools (APE) Improve Fine Motor Development in Children Aged 4-6 Years. *Jurnal Kesehatan*, 11(1), 125–132.
- 11) Maurer, M. N., & Roebers, C. M. (2019). Towards a better understanding of the association between motor skills and executive functions in 5-to 6-year-olds: The impact of motor task difficulty. *Human Movement Science*, 66, 607–620.
- 12) Mutiah, D. (2016). Development Of Behavior Modification Models To Improve Children's Social Skills (Development Research In Grade 1 Madrasah Ibtidaiyah And Sd Islam Ruhama Ciputat South Tangerang). *Jurnal Pendidikan Usia Dini*, 10(2), 365–384.
- 13) Setiawati, E. (2022). The Effect of Playdough Games on Children's Creativity in Early Childhood Education. *Gagasan Pendidikan Indonesia*, 3(1), 24–30.
- 14) Setyaningsih, K., & Fitri, I. (2022). The Effect of Media Playdough on Fine Motor Development in Children Aged 5-6 Years in Amanah Sekayu Kindergarten in 2021. *ULIL ALBAB: Jurnal Ilmiah Multidisiplin*, 1(3), 239–246.
- 15) Sutapa, P., Prasetyo, Y., Arjuna, F., & Prihatanta, H. (2018). Differences of Influence of Playing Playdough and Puzzles on Fine Motor Skills and Logical-Mathematical Intelligence in Early Childhood. *2nd Yogyakarta International Seminar on Health, Physical Education, and Sport Science (YISHPESS 2018) and 1st Conference on Interdisciplinary Approach in Sports (CoIS 2018)*, 171–174.
- 16) Sutapa, P., Pratama, K. W., Rosly, M. M., Ali, S. K. S., & Karakauki, M. (2021). Improving motor skills in early childhood through goal-oriented play activity. *Children*, 8(11), 994.
- 17) Syawalia, G. F. F., Rahman, T., & Giyartini, R. (2022). Literature Study: A Learning Medium Used For Fine Motor Development Of Children Aged 4-5 Years. *PAUDIA: Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini*, 11(2), 510–521.
- 18) Van der Fels, I. M. J., Te Wierike, S. C. M., Hartman, E., Elferink-Gemser, M. T., Smith, J., & Visscher, C. (2015). The relationship between motor skills and cognitive skills in 4–16 year old typically developing children: A systematic review. *Journal of Science and Medicine in Sport*, 18(6), 697–703. <https://doi.org/10.1016/j.jsams.2014.09.007>
- 19) Vaneza, T., & Suryana, D. (2020). The Effect of Cotton Collage on the Fine Motor Ability of Children Aged 5-6 Years in Bunda Tunas Harapan Kindergarten, Pasaman Regency. *Jurnal Pendidikan Tambusai*, 4(1), 572–580.



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