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The Effect of Pulp Work Hasta Activity on Fine Motor Skills of Children Aged 5-6 Years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency

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Abstract. *This study aims to determine the effect of pulp work activities on fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency. This study uses experimental quantitative research using the quasi-experimental Design method with a Nonequivalent Control Group Design design. The research location of Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency. The subjects of the study were teachers and children aged 5-6 years, while the object of this study was the effect of pulp work cubic activities on fine motor skills of children aged 5-6 years. The population in this study of all students at Bintang Mulia Kindergarten is 39 children. Meanwhile, the sample of this study is students of group B of Bintang Mulia Kindergarten which consists of two classes, class B Ali (Experimental Class), consisting of 10 boys and 6 girls with a total of 16 children. And class B Umar (control class), consisting of 9 boys and 2 girls with a total of 11 children, using the Purposive Sampling technique. The data collection technique uses observation and documentation. Then the data analysis technique used normality tests, homogeneity tests, and hypothesis tests (t-tests). Based on the results of data analysis from this study, it is evident from the difference in fine motor skills of children aged 5-6 years between the experimental class that uses the pulp work cubit activity and the control class that does not use the pulp cubic activity. From the results of the T-test with a significance value of > or 20,323 > 2,201, so that Ha is accepted and Ho is rejected. So it can be concluded that there is an influence of pulp work activities on fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency*

Keywords: *Paper Pulp Handicraft Activites; Fine Motor Skill*

INTRODUCTION

Early childhood is a golden age marked by rapid changes in physical, cognitive, language, social and emotional development, religious and moral values, art, self-concept, discipline, and independence. This is the time to lay the groundwork in developing these aspects. In order for this period to be passed properly by every child, it is necessary to seek appropriate education and stimulation for early childhood (Berlian, 2024).

Early childhood development and growth requires direction to lay down guidelines that are in accordance with human development and growth completely, namely their physical, social-emotional growth and development, emotional intelligence, and comparable language and communication as the basis for shaping children's personalities so that the quality of children in the future will be easily achieved (Rofiatus Sholicha, et al., 2023). Therefore, early childhood education is needed to nurture creativity and hone skills that adjust to their developmental level. Furthermore, physical and motor development is an aspect that needs to be developed intensely.

Delayed motor development means that a child's motor skills are below standard for his age. As a result, at a certain age, children fail to achieve the developmental progress expected by the surrounding community. Many factors cause delays in motor development; Some of them can be controlled, while others are not. This condition can arise as a result of a brain injury at birth, unfavorable prenatal circumstances, or an unfavorable environment during early postnatal development. The effects of delayed motor skill development can be detrimental to a child's social and emotional adjustment.

Fine motor learning at school provides opportunities for children to gain various experiences or direct practice under the guidance and supervision of teachers. The purpose of developing children's fine motor skills is to provide training with various coordination activities between the senses of eyes and hands accompanied by emotional control in their activities (Maryam et al., 2023).

One of the activities that can elaborate children's fine motor skills is with forming activities. Forming activities can utilize various media such as clay, plastic, and newspaper pulp. Activities can form physical skills involving small muscles and hand-eye coordination for early childhood by providing media as a support in the learning process. The success or failure of the learning process is largely determined by the suggestions used (Umaemah Marsuki, 2022).

Fine motor skills are fine manipulation skills that involve the use of hands and fingers appropriately such as in writing and drawing activities. Fine motor skills focus on hand-eye coordination skills (Khadijah & Nurul, 2022). According to Ellizabeth Bergner Hurlock in Khadijah stated that motor development is interpreted as the development of the element of maturity in controlling body movements and the brain as the center of movement. These movements are clearly differentiated into rough and subtle movements. Movement motor processes that involve muscles to move and requirements processes that make a person able to move their limbs (hands, feet, and other limbs). Fine motor skills are fine manipulation skills that involve the use of hands and fingers appropriately such as in writing and drawing activities. Fine motor skills focus on the ability to coordinate hands and eyes (Masganti Sit, 2017).

The pulp making activity can improve the development of fine motor skills, and the basic materials are easy to obtain in the child's environment in addition, children will be given instructions on how to utilize recycled waste products. Furthermore, the use of waste materials and natural resources as play media can improve recreational facilities and function as a learning resource for children, so that they can maximize the potential of their

environment as an affordable, accessible, and easily obtainable play media (umaemah marsuki, 2022).

Rachmawati and Kurniati said that pulp is a material for making artworks derived from paper and is a typical West African cultural art that aims to increase creativity and train originality in working (Rachmawati & Kurniati, 2011). According to Zawari, paper clay is clay made from pulp, mostly It is sold in white and there are also with a plaster mixture (such as lime). The final result is hard by being aerated and painted with color, which can also be done when polished directly with color. (Farid Ahmadi & Hamidulloh Ibda, 2018).

The steps of pulp activities according to Rahmawati are: (a) Preparing tools and materials, (b) Children are asked to bring used paper Children are asked to tear the paper into small pieces. (c) The child squeezes the paper in a bucket/basin that has been filled with water until it becomes a pulp, (d) After that, the pulp dough is squeezed using a used cloth to separate the water from the dough. (e) Then the finished dough is mixed with glue and stirred until well mixed. (f) Once the pulp dough is ready, grease the printer with vegetable oil so that the dough can come out easily. (g) Pulp dough is ready to be printed. (h) After printing, the dough is removed on a cardboard lined printing device and then dried in the sun. The last step is to give color to the dried print (Rachmawati & Kurniati, 2011).

Based on a preliminary study conducted on August 8, 2024, at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency, the following problems were found: information was obtained that there were 7 out of 16 children who had not experienced good fine motor development, 9 other children began to develop. This is characterized by the movement of the child who still looks stiff with the movements of his hands, the child still has difficulty in tearing the paper and in gluing to each of his activities, the child is still imperfect in holding stationery correctly such as crayons, and scissors strongly. The child's fingers hold the stationery using the tip of the index finger and thumb, this makes the child look hesitant in sketching writing using a stationery. It can be seen from the fact that there are still many children who still have difficulty in making a work, cutting according to the pattern that has been provided, making vertical and horizontal lines, and having difficulty imitating shapes. The non-optimal development of children's fine motor development also has an impact on children's ability in terms of writing. There are some children who still have difficulty controlling their energy when holding a pencil, so that the child's hands get tired quickly. The provision of learning media that supports children's hand and finger activities is still considered to be lacking. And teaching and learning activities are still monotonous, concentrating teaching and learning activities using children's worksheets.

Based on the above problems, the researcher is interested in doing Research on "The Effect of Pulp Works Activities on Fine Motor Skills of Children Aged 5 – 6 Years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency".

METHODOLOGY

The research that will be used in this study is a quantitative experiment. Experimental method is an experimental method is a study conducted to determine the effect of giving a treatment or treatment to the research subject. In this study, the researcher conducted an experimental quantitative research using the Quasi Experimental Design method with a Nonequivalent Control Group Design design. This design has a control group, but it cannot function fully to control the external variables that affect the

execution of the experiment. Quasi Experimental design, is used because in reality it is difficult to get control groups used for research. (Sugiyono, 2021).

The population in this study is early childhood at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Riau Regency, which totals 39 children.

Table.1

Data on the population of students at Bintang Mulia Kindergarten in 2024/2025

Group	Class	Man	Woman	Sum
A	Uthman	9	3	**12**
	Umar	9	2	**11**
B	Ali	10	6	**16**
	Total	**28**	**11**	**39**

Data Source: Documentation of Bintang Mulia Rimbo Panjang Kindergarten for FY 2024/2025

The sample of this study is group B students at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency. Group B consists of two classes, class B Ali (Experimental Class), consisting of 10 boys and 6 girls with a total of 16 children. And class B Umar (control class), consisting of 9 boys and 2 girls with a total of 11 children. The sample technique used in this study is the Purposive Sampling technique. Purposive Sampling is a sample determination technique with certain considerations.

There are 2 data collection techniques in this study, namely: 1) Observation, Observation in this research is a way of directly looking at the objectives of the research and seeing how the activity is carried out. In this case, the researcher directly observed the process of the activity of the pulp work on fine motor in the learning process.With this observation activity, researchers can more easily get information about whether there is an effect of pulp work activities on fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Kindergarten Length 2) Documentation, Documentation is a record of events that have passed. Documentation can be in the form of writings, drawings or mentional works of a person (Fenti, 2020). Documentation is intended to obtain data directly from the research site, including relevant books, regulations, activity reports, photographs, documentaries. Documents in the form of writing, such as historical records, life histories, biographical stories, regulations, policies. Documents in the form of pictures, such as photographs, living images, sketches, and others. Documents in the form of works such as art, which can be in the form of drawings, sculptures, films, and others.

Some of the data analysis techniques in this study: 1) Normality Test, a statistical process used to determine whether a sample of data or data distribution follows or approaches a normal distribution. 2) Homogeneity Test, a test that must be carried out to see that the two classes studied have been tested for homogeneity 3) Hypothesis test The hypothesis in this study uses the t-test formula to see the difference between experimental pre-test and post-test experiment to see how much the activity of the pulp work cubic activity affects the increase in creativity of children aged 5-6 years. The method used is the Independent Sample T-test. (T-test), 4) N-gain test, a commonly used method to measure the effectiveness of a learning or intervention in improving student learning outcomes.

RESULT AND DISCUSSION

Before starting the research, the first thing that was carried out was a pretest to find out the description of the activities of pulp work in children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, experimental data collection was carried out in 3 stages, namely the pretest, treatmeant, and postest stages. The pretest stage is carried out 1 time in each group, the treatmeant stage is the treatment stage which is carried out 4 times, and the last stage is the posttest which is carried out 1 time which is also carried out in each group. Pretests were carried out before the implementation of the treatmeant in each experimental group and control group. The treatment was carried out 4 times and ended with a meeting for the postest in each group, both the experimental group and the control group. Data collection was carried out in all experimental groups and control groups, namely the experimental group of 16 people and the control group of 11 children.

Table. 2
Overview of Early Childhood Fine Motor Skills Aged 5-6 Years at Bintang Mulia Rimbo Panjang Kindergarten Before Treatment (Pretest)

NO	Category	Score Range	Group B Ali		Group B Umar	
			F	%	F	%
1	BSB	76-100%	0	0%	0	0%
2	BSH	56-75%	0	0%	0	0%
3	MB	40-55%	7	43.74%	3	27.27%
4	BB	<40%	9	56.25%	8	72.73%
Sum			16	100%	11	100%

Data Source: Research Data Processing 2025

Based on the table above, it can be known that fine motor in children aged 5-6 years at the time of the pretest was obtained, there was no data that was in the criteria of developing very well (BSB) and there was no data that was in the criteria of developing as expected (BSH) and starting to develop (MB) as many as 7 children with a percentage of 43.75% and there were 9 children who were in the criteria of not developing (BB) as many as 9 children with a percentage of56.25% . Meanwhile, in the control group (B Umar) there were 8 children with a percentage of 72.73% in the undeveloped (BB) criterion, as many as 3 children with a percentage of 27.27% who were in the criteria of starting to develop (MB) and not having percentage data on the criteria of developing as expected (BSH) and developing very well (BSB).

According to Suryana, fine motor skills concern the coordination of finger movements in various activities, including: Being able to use scissors to cut paper, Being able to put on and unfastening buttons and zippers, Being able to hold paper with one hand, while the other hand is used for drawing, writing, or other activities. Can insert thread into the needle, Can thread beads. Can be formed with plasticine/was, Can fold paper to be made into a form of work. (Dadan Suryana, 2016).

In the first treatment, the fine motor skills of students at Bintang Mulia Kindergarten have not increased, namely 40.06% with the BB (Not Developed) category. In the second treatment, the fine motor skills of students at Bintang Mulia Kindergarten increased to 47.44% with the MB (Starting to Develop) category. In the third treatment, the fine motor skills of students at Bintang Mulia Kindergarten increased to 60.23% with the

BSH (Developing as Expected) category. In the fourth treatment, the fine motor skills of students at Bintang Mulia Kindergarten increased to 77.98% with the BSB (Developing Appropriately) category.

Table.3
Overview of the Fine Motor Skills of Children Aged 5-6 Years at Bintang Mulia Rimbo Panjang Kindergarten After Treatment (Posttest)

NO	Category	Score Range	Group B Ali		Group B Umar	
			F	%	F	%
1	BSB	76-100%	16	100%	3	27.27%
2	BSH	56-75%	0	0%	3	27.27%
3	MB	40-55%	0	0%	5	45.45%
4	BB	<40%	0	0%	0	0%
Sum			16	100%	11	100%

Data Source: Research Data Processing 2025

Based on the table above, it can be known that fine motor in children aged 5-6 years at the postest time in the experimental class as many as 16 were in the criteria of very good development (BSB) with a percentage of 100%, and there was no data that was in the criteria of developing as expected (BSH) and starting to develop (MB) as many as 7 children with a percentage of 43.75% and no data that were in the criteria of not developing (BB). Meanwhile, in the control group (B Umar) there was no data on the undeveloped criteria (BB) as many as 5 children with a percentage of 45.45% who were in the starting development criteria (MB) and as many as 3 children with a percentage of 27.27% on the criteria of developing as expected (BSH) and as many as 3 children with a percentage of 27.27% developing very well (BSB).

a. Pre-test normality test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil Kemampuan Motorik Halus	Pretest Eksperimen	.156	16	.200*	.942	16	.370
	Pretest Kontrol	.211	11	.186	.926	11	.374

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The data is said to be normal if the level of Sig. In Shapiro-Wilk greater than 0.05 then the data is distributed normally, if it is less than 0.05 then the data is distributed abnormally. Before being given treatment, the experimental class was 0.370 and the control class was 0.374. This value shows that the child's fine motor skills before being treated in the experimental and control classes have a Sig. > 0.05, so the data is distributed normally.

b. Post-test normality test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	kelas	Statistic	df	Sig.	Statistic	df	Sig.
hasil kemampuan motorik halus	Posttest eksperimen	.189	16	.130	.909	16	.113
	Posttest Kontrol	.200	11	.200*	.909	11	.237

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The data is said to be normal if the level of Sig. In Shapiro-Wilk greater than 0.05 then the data is distributed normally, if it is less than 0.05 then the data is distributed abnormally. Sig . After treatment in the experimental class was 0.113 and the control class was 0.237. This value shows that the fine motor ability of the experimental and control groups has Sig. > 0.05, the data is distributed normally.

c. Uji Homogenitas Pre-test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Hasil Kemampuan Motorik Halus	Based on Mean	2.337	1	25	.139
	Based on Median	1.975	1	25	.172
	Based on Median and with adjusted df	1.975	1	24.701	.172
	Based on trimmed mean	2.169	1	25	.153

Based on the table above, the results of the test of homogeneity of variance which shows the levene statistic is 2.337 with a probability of 0.139 > 0.05, then it can be concluded that the two population variances are identical or homogeneous.

d. Post-test Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
hasil kemampuan motorik halus	Based on Mean	.373	1	25	.547
	Based on Median	.247	1	25	.623
	Based on Median and with adjusted df	.247	1	23.482	.624
	Based on trimmed mean	.354	1	25	.557

Based on the table above, the results of the test of homogeneity of variance which shows the levene statistic is 0.373 with a probability of 0.547 > 0.05, then it can be concluded that the two population variances are identical or homogeneous.

e. Uji Hypothesis

Group Statistics

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Hasil kemampuan motorik halus	Posttest Eksperimen	16	37.56	1.788	.447
	Posttest Kontrol	11	24.55	1.368	.413

Independent Samples Test

		Levene's Test for		t-test for Equality of Means							
						Significance		Mean	Std.	95% Confidence	
		F	Itself.	t	df	One-Sided p	Two-Sided p	Differen ce	Error Differen	Lower	Upper
Result Squirt Points Motor soft	Equal varianc is assume d	0.373	0.547	20.352	25	0.000	0.000	13.017	0.640	11.700	14.334
	Equal varianc It's not assume d			21.400	24.629	0.000	0.000	13.017	0.608	11.763	14.271

Based on the table above, it is known that the results of the t-test are 20,352 with df 25. The mean difference is 13,017 The difference (Standard Error) is 0.640 with the value of Sig. (Sig.2-tailed) = 0.000 < 0.05 then Ho is rejected and Ha is accepted. Therefore, the researcher can conclude that there is a significant difference in fine motor skills of children aged 5-6 years between group B ali and group B umar at the time after the treatment (posttest) is carried out.

To find out whether the hypothesis is accepted or rejected, it can also be seen from the value. Determination can be calculated by the following characteristics:

DF = (+ -2)
= 16 + 11 – 2
= 25

With df = 25, it can be seen that price = 20.352 > at a significant level of 5% (1.708), thus > or 20.352 > 1.708, then it can be concluded that Ho is rejected and Ha is accepted. This means that in the study there was a significant difference in the fine motor skills of children aged 5-6 years between group B ali and group B umar at the time before the treatment (pretest). This condition shows that fine motor skills in the group of children who use the pulp work cubit activity are higher than the group of children who do not use the pulp work cubit. Thus, the proposed research hypothesis proves that there is a significant influence between the activities of pulp work on the fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten.

f. Uji N-Gain

The effectiveness level test was taken from the analysis of pretest and posttest score data classically between the experimental class and the control class using the normality test. However, before the N-gain test is carried out, the two samples must be ensured that the data obtained must be normal and homogeneous. For an analysis of normality and homogeneity, you can see the previous page. The N-gain test is used to find out how much of an influence Paper pulp work activities for fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten after being treated. Based on the results of the calculation of the results of the N-gain test of the experimental class and the control class, the results were obtained as follows:

Table. 4
Experimental Class N-Gain Test Results

N0	Subyek	Value		N-Gain	Criterion
		pretest	Posttest		
1.	Subject A	43.2	86.36	75.99%	**Tall**
2.	Subject B	40.9	86.36	76.92%	**Tall**
3.	Subject C	43.2	88.34	80.01%	**Tall**
4.	Subject D	43.2	86.36	75.99%	**Tall**
5.	Subject E	47.7	91	82.78%	**Tall**
6.	Subject F	38.6	88.64	81.49%	**Tall**
7.	Subject G	31.8	84.09	76.66%	**Tall**
8.	Subject H	31.8	81.82	73.34%	**Tall**
9.	Subject I	36.4	86.36	78.57%	**Tall**
10.	Subject J	40.9	90.91	84.62%	**Tall**
11.	Subject K	47.7	89	78.96%	**Tall**
12.	Subject L	43.2	84.09	72.00%	**Tall**
13.	Subject M	29.6	77.27	67.74%	**Keep**

14.	Subject N	36.7	84.09	75.00%	**Tall**
15.	Subject O	25	77.27	69.69%	**Keep**
16.	Subject P	31.8	84.09	76.66%	**Tall**
Average				**76.65%**	**Tall**

Source: Processed Research Data 2025

Table. 5
Control-Class N-Gain Test Results

N0	Subyek	Value		N-Gain	Criterion
		pretest	Posttest		
1.	Subject A	31.82	54.55	33.34%	**Keep**
2.	Subject B	45.45	58.22	20.84%	**Low**
3.	Subject C	43.18	52.27	16.00%	**Low**
4.	Subject D	38.64	56.82	29.63%	**Low**
5.	Subject E	45.45	59.09	25.00%	**Low**
6.	Subject F	38.64	61.36	37.03%	**Keep**
7.	Subject G	40.91	52.27	19.22%	**Low**
8.	Subject H	29.55	55.45	35.49%	**Keep**
9.	Subject I	38.64	59.09	33.33%	**Keep**
10.	Subject J	36.36	55.45	28.58 %	**Low**
11.	Subject K	38.64	52.27	22.21%	**Low**
Average				**27.33%**	**Low**

The effect of pulp work cubit activities on fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency can be seen from the percentage of N-Gain. The percentage of N-Gain obtained was normalized in the experimental class by 76.65%, and was included in the high criterion. Meanwhile, the percentage of N-Gain obtained in the control class was 27.33%, and was included in the low criteria.

So there is a difference in fine motor changes in children aged 5-6 years who use the pulp work hasta activity and group B umar who does not use these activities. Where after treatment has a greater influence than before treatment with the normalized gain category value being in the high category of 76.65%, which means that the influence given by the pulp work activity on fine motor skills in children aged 5-6 years is quite effective. Based on the results of the above research, it is identified that the activity of pulp work can have an effect on improving fine motor skills in children aged 5-6 years and make students more active and enthusiastic during the learning process.

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant influence between the activities of pulp work on fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency. This result is evident from the difference in fine motor skills of children aged 5-6 years between the experimental class that uses the pulp work cubic activity and the control class that does not use the pulp

work cubic activity. Based on the results of data analysis and from the results of the t-test with a significance value t_{hitung} of > t_{tabel} or 20,323 > 2,201, so that Ha was accepted and Ho was rejected. So it can be concluded that there is an influence of the pulp work hasta activity on the fine motor skills of children aged 5-6 years at Bintang Mulia Rimbo Panjang Kindergarten, Kampar Regency and in this activity makes students active and enthusiastic during the learning process.

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