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The Effect of Pantik Teaching Aid (Statistics Board)

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Abstract

This study aims to determine the effect of the PANTIK Teaching Aid Statistics Board) on the results of students' mathematics learning on the mean, median and mode of grade VI SDN Cilangkap 01 Pagi. The method used in this study is an experiment with Nonequivalent Control Group Design. The sample of this research was class VI B which consisted of 30 students and class VI D which consisted of 30 students. This research was conducted in May 2023. Based on calculations, data was obtained that the average student learning outcomes during the pre-test were 10,828 standard deviations, 70 median, and 80 mode. And during the post-test, the standard deviation was 9,625, the median was 85, and the mode was 80. Based on the hypothesis test, a significant influence of the PANTIK Teaching Aid (Statistics Board) on students' mathematics learning outcomes in the material mean, median and mode of class VI SDN Cilangkap 01 Pagi.

Keywords: mathematics learning outcomes on the mean, median and mode, pantic teaching aids (statistical board)

1 INTRODUCTION

The presence of the teacher in teaching and learning activities is expected to develop the potential and creativity of students. Therefore, teachers are required to be creative so that learning becomes active and fun. One way is to use props that can be used as a medium in delivering material in class. So that students have knowledge not only theory, but can practice it for the future in the development of the times.

(According to Nugraha, 2020) Learning outcomes are the main goals that must be achieved by learning activities. Learning outcomes are the skills a student has after gaining learning experience. Learning outcomes play an important role in the learning process. After the learning process is complete, students receive learning outcomes. (According to Mentari dkk, 2021) Learning outcomes are changes in a person's attitude or way of thinking after experiencing experiences in the learning process. After getting experience, students will know the results of learning that has been done. Learning outcomes are used to determine how well students understand and are able to understand the material.

One of the problems facing the world of education today is the problem of weak implementation of the learning process implemented by teachers in schools. The learning process that has occurred so far has been less able to develop students' thinking skills. This condition also applies to mathematics lessons. (According to Sundayana, 2016) Mathematics is one component of a series of subjects that have an important role in education. Mathematics is a field of study that supports the development of science and technology.Mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines and builds human intellect. In this regard, the process of learning mathematics must focus on solving mathematical problems so as to build the thinking power of students from elementary school.

(According to Pramudjono, 2016) teaching aids are concrete objects that are made to help and develop mathematical concepts. By using the Pantik visual aid (Statistics Board)

in learning mathematics on mean, median and mode students will find it easier to understand how to determine the mean, median and mode. The task of a teacher is not limited to just how we present the material, but the most important thing is how we make students really understand the material we are conveying and become active and participative in the teaching and learning process. Students tend not to care about the material being taught by simply explaining and writing material on the blackboard. That is the importance of us as teachers knowing how to attract students' interest in learning and being good at using the media or props around us to convey material.

Mathematics learning (According to Susanto, 2016) is a teaching and learning process that is built by teachers to develop students' creative thinking, and can improve the ability to construct new knowledge as an effort to improve good mastery of mathematical material. In the advancement of education, the content of mathematics lessons, especially in the mean, median and mode material in class VI elementary school, has an important function because in every aspect of life, whether in the world of commerce, offices, population, etc., you are often faced with the mean, median and mode. (According to Kasri, 2018) In life activities, we always practice mathematics, with this material children can think logically, analytically, methodically, creatively and critically which can certainly be implemented to solve a case that results in a study like the one above. (According to Hamzah dkk, 2014) These competencies are needed so that students can have the ability to acquire, manage, and utilize information to survive in conditions that are always changing, uncertain and competitive.

Based on the results of the observations made, the following information was obtained: First, the process of learning mathematics still uses the lecture method so that the teacher plays an active role in the learning process. Meanwhile, students only receive the information conveyed by the teacher. Second, the teacher does not use media or visual aids in the learning process, especially on the subject matter of Mean, Median, and Mode the teacher only teaches in pre-existing ways, which results in students not understanding the material taught by the teacher well during the learning process . Third, students consider mathematics subjects to be difficult, complicated and involve a lot of memorizing formulas. Fourth, the learning outcomes of students' math scores in the Mean, Median and Mode materials are still below the KKM (Minimum Completeness Criteria) that has been determined.

The problem that occurred in this research was the low student learning outcomes and the lack of teaching aids taught by the teacher. The problems described previously require solutions to improve the quality of mathematics learning.

2 RESEARCH METHODS

The research that will be carried out is research using quantitative methods using experimental methods with the dependent variable being student mathematics learning outcomes, the independent variable being teaching aids (statistics boards) and the lecture method. The experimental research design used is quasi experimental design. This design has a control group, but it cannot function fully to control external variables that influence the implementation of the experiment. The design used in this research is a nonequivalent control group design, a design that is almost the same as the pretest-posttest control group design, only in this design the experimental group and control group are not chosen randomly.

3 RESULT AND DISCUSSION

Presentation of research data in descriptive statistical analysis in the form of the amount of data (N), minimum value, maximum value, mean, and standard deviation. The results of the descriptive analysis can be seen in the following table.

Descriptive Analysis

Presentation of research data in descriptive statistical analysis in the form of the amount of data (N), minimum value, maximum value, mean, and standard deviation. The results of the descriptive analysis can be seen in the following table.

Table 1 Descriptive Analysis Results

Descriptive Statistics

	N	Minimum	Maximum	Mean	std. Deviation
Pre-Test Experiment (Pantik)	30	50	90	70.00	10,828
Post-Test Experiment (Pantik)	30	55	100	85.67	9,625
Pre-Test Control (Conventional)	30	55	80	66.83	7,931
Post-Test Control (Conventional)	30	55	100	76.67	10,775
Valid N (listwise)	30				

Calculations from descriptive analysisshows the results in the experimental class pre-test in the form of a minimum score of 50, a maximum score of 90, an average of 70, and a standard deviation of 10,828. In the post-test, the experimental class obtained a minimum score of 55, a maximum score of 100, an average of 85.67, and a standard deviation of 9,625. Meanwhile, in the pre-test, the control class obtained a minimum score of 55, a maximum score of 80, an average of 66.83, and a standard deviation of 7,931. In the post-test the control class obtained a minimum score of 55, a maximum score of 100, an average of 76.67, and a standard deviation of 10,775.

Data Analysis

Table 2 Kolmogorov Smirnov Normality Test

Tests of Normality

		Kolmogorov-Smirnova			Shapiro-Wilk		
	Class	Statistics	Df	Sig.	Statistics	Df	Sig.
Mathematics Learning Outcomes	Pre-Test Experiment (Pantik)	,145	30	.111	,950	30	,170
	Post-Test Experiment (Pantik)	.178	30	.016	,890	30	,005
	Pre-Test Control (Conventional)	,172	30	.023	,916	30	.021
	Post-Test Control (Conventional)	,145	30	.107	.968	30	,493

a. Lilliefors Significance Correction

The test was carried out at a significant level of 95% (a = 0.05) for the study sample group. It can be concluded that the posttest results of the two experimental and control groups are normally distributed because they fulfill r count > r table. The post-test normality results for the experimental class were 0.016 > 0.05, so the data were normally distributed. While the post-test normality results for the control class were 0.107 > 0.05 so that the data were normally distributed.

Table 3 Homogeneity Test

Test of Homogeneity of Variance

		Levene Statistics	df1	df2	Sig.
Mathematics Learning Outcomes	Based on Mean	.513	1	58	,477
	Based on Median	,610	1	58	,438
	Based on Median and with adjusted df	,610	1	57,950	,438
	Based on trimmed mean	,432	1	58	,514

Then a homogeneity test was carried out using the Levene Test, in this study using SPSS statistics 27. Based on the output it is known that the Significant value (Sig) Based On Mean obtained is 0.477 > 0.05, so it can be concluded that the variance of the Post-test data for the experimental class and Post-test data for the control class is the same or homogeneous.

Independent Sample T-test

Table 4 Independent Sample T-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	Q	Df	Sig. (2-tailed)	Mean Differences	std. Error Difference	Lower	Upper
Mathematics Learning Outcomes	Equal variances assumed	.513	,477	3,412	58	001	9,000	2,638	3,720	14,280
	Equal variances not assumed			3,412	57,277	001	9,000	2,638	3,719	14,281

From the calculation of the hypothesis test, the t count is 3.412 with a significance of 0.001 where α is 5%. Because t count (3.412) > t table (0.361). So it can be concluded that there is an influence of the statistical board (Pantik) on the mathematics learning outcomes of experimental class students because there are differences before being treated at the pre-test and after being given treatment at the post-test.

4 CONCLUSION

Based on the results of the research and discussion that has been carried out at SDN Cilangkap 01 Pagi, it can be seen that the learning outcomes in mathematics learning for class VI students have increased. This is evident from the results of the initial ability (pre-test) the average value in the control class was 66.83 and in the experimental class was 70.00.

These results were obtained before being given treatment with statistical board aids (Pantik) for the experimental class and conventional learning methods for the control class. Treatment for each class was given twice and then a final ability test (post-test) was given to both classes. From the results of the post-test data both classes improved very well, seen in the average value of the control class of 76.67 and for the experimental class of 85.67.

From the average scores of the two classes, it can be seen that the mathematics learning outcomes of class VI students at SDN Cilangkap 01 Pagi have improved well. A greater increase occurred in the experimental class with the treatment of the statistical board aid (Pantik), it was proven that the statistical board aid (Pantik) could affect students' mathematics learning outcomes.

Based on these results, the researcher can conclude the results of the study that there is a significant effect of the statistical board aid (Pantik) on learning outcomes in class VI semester II of the 2022-2023 Academic Year at SDN Cilangkap 01 Pagi.

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