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THE APPLICATION OF THE DISCOVERY LEARNING MODEL TO IMPROVE STUDENTS' LEARNING OUTCOMES IN A SINGLE TIME UNIT

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ABSTRACT

This study is motivated by the low learning outcomes of students. The low learning outcomes are influenced by a lack of understanding of the learning material, which is caused by students' passive involvement in the learning process, such as lack of concentration, limited active participation, and an inability to relate the learning material to everyday life. The aim of this research is to improve learning outcomes by using the Discovery Learning model. This research is a quantitative study. The research method used is an experimental method, with the experimental design being a Pre-Experimental Design, specifically the One-Group Pretest-Posttest Design. This research was conducted at SD Negeri 2 Lamcot Aceh Besar. The population of the study consisted of all third-grade students at SD Negeri 2 Lamcot Aceh Besar, and the data were collected using Purposive Sampling. The sample consisted of 21 students selected from class III-A. Based on the results of the study, there was a significant improvement in students' learning outcomes before and after the intervention. The average pretest score was 53%, and after the treatment, the average posttest score increased to 83%. The conclusion drawn from this study is that the implementation of the Discovery Learning model can improve students' learning outcomes. Therefore, the use of the Discovery Learning model can be considered as one of the effective teaching methods to be applied in Mathematics learning.

Keywords: *Discovery learning, learning outcomes, single time unit.*

INTRODUCTION

Education is important for human life to become better individuals in the future. Education aims to help students develop their potential. Through education, a person can avoid low cognitive abilities and poverty. Elementary school is the first education that seeks to form students to understand basic concepts. Children aged seven to eleven years are in the operational period of the congress. At elementary school level, students are given basic sciences such as mathematics, natural sciences, Indonesian, social sciences and citizenship education (Saputri:2022).

Mathematics is one of the important learning contents at the elementary school education level. Learning mathematics in elementary school is the basis for applying mathematical concepts at higher levels of education. It is hoped that the implementation of mathematics learning can be implemented according to the current policy or curriculum, namely the Merdeka curriculum. This is as stated by Rafiandi (2018) that the 2013 curriculum is an implementation of 21st century learning where this learning emphasizes 4C skills (Creative, Critical Thinking, Communivative, Collaborative) and also HOTS (Higher Order Thinking Skill). These four skills have principles in student-centered learning.

The results of initial observations on mathematics subjects in class III of SD Negeri 2 Lamcot, Aceh Besar Regency found that in the learning process so far students were still less actively involved in the learning process, such as: 1) students did not actively participate in learning, 2) students lacked concentration on when learning takes place, 3) students are less able to solve problems, 4) students are less skilled in finding things themselves, and 5) students are less able to relate learning material to real life. Students just sit quietly and listen to the explanation and answer the teacher's questions. As a result of interviews conducted by researchers with the class III teacher at SD Negeri 2 Lamcot Aceh Besar in September 2023 regarding mathematics subjects with time unit material, information was also obtained that some students' learning outcomes were still in the low category.

Based on these problems, one solution that is considered to be able to solve the problems in the learning process mentioned above is by applying the discovery learning learning model. The discovery learning learning model is a model for developing active learning methods by discovering on your own, investigating on your own. The discovery learning learning model has the advantage that students can actively participate in learning, foster and instill an inquiry attitude, train students' cognitive skills to find and solve problems. Previous research conducted by Deliana (2019) suggested that applying the discovery learning model in Mathematics subjects could improve student learning outcomes.

METHODS

This type of research is quantitative research. The research method used by researchers is the experimental method, in the form of Pre-Experimental One-Group Pretest-Posttest Design. This research was carried out at SD Negeri 2 Lamcot Aceh Besar. The population in this study were all class III students at SD Negeri 2 Lamcot Aceh Besar. Data collection uses the Purposive Sampling method. The sample used was 21 students taken from class III-A.

RESULTS AND DISCUSSION

The data collected in this research came from the initial test (pretest) and final test (posttest) on the subject of understanding material in units of time using the discovery learning learning model, given in the form of questions consisting of 4 pretest questions and 5 posttest questions with a maximum score. on 100 test questions. Providing pretest questions and posttest questions as a measuring tool to determine students' abilities. The following is the result data from the pretest and post-test scores.

Table 1. Pretest-Posttest

NO	Name	*Pretest*	*Post Test*
1	ARM	30	80
2	AR	60	85
3	ANP	75	90
4	ABA	60	100
5	AKA	65	90
6	CNS	70	85
7	DF	45	90
8	MFF	50	80
9	MK	65	100
10	MR	25	85
11	MSA	70	85
12	MZM	75	85
13	MZ	40	60
14	ND	40	90
15	NS	75	80
16	NN	60	90
17	NA	20	65
18	PBH	75	85
19	RR	50	65
20	RA	50	75
21	SB	45	85
Amount		**1145**	**1750**
Average		**54,52**	**83,33**

Based on the table above, a significant increase was obtained before and after the treatment was carried out. This is indicated by obtaining an average score from the pretest results of 54.52 with the lowest score being 40 and the highest being 75. After applying the treatment the learning outcomes increased in average score to 83.33 with the lowest score being 60 and the highest being 100.

Furthermore, before carrying out further data analysis, it is necessary to determine whether the data obtained is normally distributed or not. In this case, the normality test was tested using Kolomogrov-Smirnow with the following test criteria: significance > 0.05, so the data is normally distributed, while significance < 0.05, the data is not normally distributed because data n < 50, so Shapiro Wilk is used.

Table 2. Pretest-Posttest Normality Test Results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.162	21	.156	.913	21	.064
Posttest	.204	21	.022	.913	21	.062

Sumber: SPPS versi 29

The basis for collecting Shapiro Wilk normality test data is as follows:

a. Pretest: significance value (sig) of 0.064 > 0.05
b. Posttest: significance value (sig) of 0.062 > 0.05

Based on the description above, the normality test results can be concluded that the pretest and posttest value data are normally distributed.

After the data is normally distributed, a hypothesis test is then carried out which is used to test whether the proposed hypothesis can be accepted or must be rejected based on the sample data (Sugiyono: 2020). Hypothesis testing in this test was carried out using the partial t test with the help of the SPSS Version 29 program. The t test was used to determine the influence of the independent variable on the dependent variable, namely the discovery leaning learning model variable on improving student learning outcomes. Hypothesis testing using the t test is carried out by comparing t_count with t_table. The testing criteria using the t test are if t_count > t_table the alternative hypothesis is accepted and if t_count < t_table the alternative hypothesis is rejected. Below we will present a table and the results of hypothesis testing with the help of the SPSS version 29 program as follows:

Table 3. Pretest-Posttest Hypothesis Test

Paired Samples Test

		Paired Differences					t	df	Significance One-Sided p	Significance Two-Sided p
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper				
Pair 1	Pretest - Posttest	-31.90476	19.33108	4.21839	-40.70416	-23.10536	-7.563	20	<,001	<,001

Sumber: Ouput IBM SPPS Statistik versi 29

Based on the table above, it is known that the t_count value is 7.563 and t_table is 1.720, so that t_count > t_tabel then Ha is accepted, namely that there is a significant increase between the discovery learning learning model and student learning outcomes.

After the hypothesis test data showed that there was a significant increase between the discovery learning learning model and student learning outcomes, the researchers then carried out the N-gain Test (Normalized Gain) to measure the increase in student learning outcomes after following a learning process. This test is useful for seeing how effective a model or treatment is in improving students' understanding or abilities. The following are the N-Gain test results obtained:

Table 4. Pretest-Posttest N-Gain Test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_Score	21	.20	1.00	.6132	.21867
Ngain_Persen	21	20.00	100.00	61.3247	21.86693
Valid N (listwise)	21				

Sumber: Ouput IBM SPPS versi 29

Based on the results of the SPPS output table, the average value of N-Gain is 0.6132, this data is in the medium category. This shows that there is a significant increase in student learning outcomes among students after implementing the discovery learning model.

CONCLUSION

Based on the results of the research conducted, there was a significant increase before and after the treatment was carried out. With an average pretest score of 53%, after applying the treatment the learning outcomes increased the average score to 83%. The conclusion obtained from this research is that the application of the discovery learning model can improve student learning outcomes. Thus, the use of the discovery learning learning model can be used as a learning model to be applied to elementary mathematics learning.

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