

THE EFFECT OF DISCOVERY LEARNING LEARNING MODELS ON STUDENT PHYSICS LEARNING OUTCOMES CLASS X SMA

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Abstract

This study aims to determine the effect of discovery learning learning models on the physics learning outcomes of class X SMA Karya Nangapanda in the 2019/2020 academic year. This type of research is quantitative research. The research sample was students of class X MIA, amounting to 16 people. Data collection techniques used are documentation techniques supported by interview techniques. Documentation data is the result of a test test physics class X MIA on KD 3.2 (the essence of physics) and KD 3.3 (measurement) for the 2019/2020 school year. The results showed that the dicoverly learning model had no effect on the physics learning outcomes of class X SMA Karya Nangapanda for the 2019/2020 academic year. Ha line is shown by the results of data analysis with a significant level of 0.05 and a confidence level of 95% so that the sig value is obtained. 0,

Keywords: *Learning Model Discovery Learning, Learning Outcomes.*

1. INTRODUCTION

Curriculum 2013 (K 13) adheres to the basic view that knowledge cannot just be transferred from teacher to student, but students are subjects who have the active ability to construct, process, seek, and use knowledge (Nurdyansyah & Fahyuni, 2016). Learning must be related to the opportunities given to students to construct their knowledge, students need to be encouraged to work to solve problems, find everything for themselves, and strive to realizetheir ideas.

It is known that learning is a lifelong need with the aim of developing intellectual intelligence and various other aspects. In other words, learning is defined as a human activity to develop one's potential, namely cognitive, psychomotor, and affective aspects. In addition, in the learning process the role of the teacher is very important, namely that the teacher can convey material well to students and also requires an appropriate learning model in order to facilitate students well.

One learning model that can be done is through a learning model that involves students. Students are active in the learning process both mentally, physically, socially, and in accordance with the conditions in the classroom, so that learning objectives can be

achieved as expected. There is a learning model that involves student activeness, namely discovery learning learning model.

Discovery learning is a teaching model that emphasizes the importance of helping students understand the structure and key ideas of a discipline, the need for active student involvement in learning, and true learning comes through Bruner's discovery (Nurdyansyah & Fahyuni, 2016). According to Kuniasih and Sani (Patandung, 2017) the discovery learning model is a component of a part of teaching practice, which is a type of teaching that includes methods designed to increase a greater range of student activeness, process-oriented, self- directed, seeking itself, and reflections that often appear as learning activities.

This research was conducted during the Covid-19 pandemic, which made it impossible to carry out learning activities in the classroom. So that the researchers chose survey research using documentation and interview techniques. This technique is useful for collecting data, information and other things needed in this research. According to Bloom (Ilyas, 2017) student learning outcomes are grouped into three domains, namely cognitive, affective, and psychomotor. This research emphasizes on the cognitive aspects.

Based on the results of interviews with the physics teacher at Karya Nangapanda High School, Maria Dolorosa Elu Saga, S.Pd, that the learning model applied to physics is the discovery learning model. There are several reasons why the use of discovery learning is very important in educational practice according to Sund (Setiyowati, 2019), namely a mental process where students are able to assimilate a concept or prinsip. What is meant by mental processes is observing, digesting, understanding, making guesses, explaining, measuring, making conclusions and so on.

According to Bruner (Mutmainna, 2015) the steps of discovery learning include five stages, namely:

- 1) *Stimulation*. The teacher asks by asking problems or asking students to read or listen to descriptions that contain problems.
- 2) *Problem statement*. Students are given the opportunity to identify various problems.
- 3) *Data collection*. To answer questions or prove whether this hypothesis is true, students are given the opportunity to collect various relevant information.
- 4) *Data processing*. All information from reading, interviews, observations, and so on, all processed, randomized, classified tabulated, even if necessary, it is calculated in a certain way and interpreted at a certain level of confidence.
- 5) *Verification or proof*. Based on the results of processing and verification, the previously formulated hypotheses are then checked.
- 6) *Generalization*. The next stage is based on the results of the verification, students learn to draw conclusions.

The physics learning outcomes of Karya Nangapanda High School students are still low. This fact can be seen from the results of studying physics which is shown by the acquisition of national final exam scores. The following is a table of the results of the National Examination (UN) SMA Karya Nangapanda in the last three years.

Table 1. Results of the National Examination (UN) at Karya Nangapanda High School

No.	Subjects	School year			Average
		2016	2017	2018	
1	Indonesia	66.76	69.60	67.97	68.11
2	English	54.64	52.32	53.51	53.48
3	Matematika	53.54	41.92	37.25	44.23
4	Physics	55.31	49.57	44.22	49.7
5	Chemistry	54.49	53.82	51.13	53.14
6	Biology	59.01	49.38	48.67	52.35
	Average	57.29	53.47	51.76	54.17

Source: SMA Karya Nangapanda

Table 1 shows that the physics learning outcomes of Karya Nangapanda High School students have decreased in the last three years. Based on the results of the interview that this is influenced by various factors including the lack of interest and attention of students, lack of infrastructure, students do not understand the concept of physics, teachers dominate learning, and students have difficulty solving problems. This is what causes student learning outcomes to have not reached the predetermined KKM (75).

2. RESEARCH METHODS

This type of research is quantitative descriptive research using ex post facto design. The population in this study were all students of class X SMA Karya Nangapanda in the 2019/2020 academic year, which amounted to 39. The sampling technique used was purposive sampling technique, namely the technique of selecting a group of subjects based on certain characteristics which were considered to have a strong relationship with the characteristics. -the characteristics of the population that the students have previously known (Arikunto, 2013). The samples taken were students of class X MIA, amounting to 16 students. This research was conducted at SMA Karya Nangapanda on 18-25 June 2020. The data collection technique used in the research was non-test techniques, namely in the form of documentation supported by interview techniques to obtain data on student learning outcomes.

3. RESULTS AND DISCUSSION

A. Descriptive Analysis Results

Namely to see the minimum value, maximum value, mean, median, mode and standard deviation of learning outcomes. Analysis of this data using the SPSS program and the results of the analysis can be seen in Table 2.

Table 2. Descriptive Analysis Results

Statistics		
LEARNING OUTCOMES		
N	Valid	16
	Missing	0
Mean		76.06
Median		76.00
Mode		76
Std. Deviation		2,462
Minimum		70
Maximum		80

From the table it is known that the number of students in the sample class is 16 students with a minimum value = 70, a maximum value = 80, a mean value = 76.06 and a standard deviation = 2.462.

B. Result of Inferential Analysis Normality Test Results

The normality test uses the SPSS program, the Shapiro-Wilk test. Where if the value of sig. > 0.05 then the data is normally distributed. The results of the normality test of learning outcomes can be seen in Table 3.

Table 3. Normality Test Results

	Tests of Normality					
	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Result Learn	.198	16	.095	.922	16	.180

Based on the results of the calculations in the table above, it can be seen that the sig. $0.180 > 0.05$, so it can be concluded that the data is normally distributed.

C. Hypothesis Test of Learning Outcomes

The value of learning outcomes in the hypothesis test is taken from the Daily Test (UH) on KD. 3.1 (The essence of Physics and Scientific Procedures) and KD 3.2 (Measurement) class X MIA. From these data, the hypothesis was tested using SPSS, namely the one sample test with the comparison used, namely the KKM value (75). The results of hypothesis testing can be seen in Table 4.

Table 4. Hypothesis Test of Learning Outcomes

	One-Sample Test					
	Test Value = 75					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					L	U
Result Study	1,726	15	.105	1,063	-,25	2,37

Based on the results of the one-sample test hypothesis, the sig (2-tailed) value of $0.105 > 0.05$ was obtained, so H_0 was accepted and H_1 was rejected. So it can be concluded that there is no effect of the discovery learning model on the physics learning outcomes of class X SMA Karya Nangapanda in the 2019/2020 academic year.

Based on the results of the analysis of the one-sample test hypothesis, the sig (2-tailed) value of $0.105 > 0.05$ then H_0 is accepted, H_1 is rejected. So that the discovery learning model does not affect the physics learning outcomes of class X SMA Karya Nangapanda in the academic year 2019/2020 in the cognitive aspects.

According to Djamarah (Afandi, 2013) discovery learning is learning to find and discover by yourself. In this teaching and learning system the teacher presents lesson material that is not final, but students are given the opportunity to seek and discover for themselves using problem-solving approaches.

According to Sardiman (Rahmayani, 2019) "In applying the discovery learning model, the teacher acts as a guide by providing opportunities for students to learn actively". Discovery Learning learning model is a learning model where the teacher does not directly provide the final result or conclusion from the material to seek and find the results of the data.

According to Kurniasih & Sani (Murtadlo, & Warti, 2017) discovery learning is defined as a learning process that occurs when the learning material is not presented in its final form, but students are expected to organize themselves. Sani said that discovery is finding a concept through a series of data or information obtained through observation or experiment.

Discovery learning learning model is a learning concept that prioritizes the activeness of students during teaching and learning activities. In this teaching and learning system the teacher presents lesson material that is not final, but students are given the opportunity to seek and discover for themselves using problem-solving approaches.

The results of this study are equivalent to the results of research by (Zaenuddin, 2019; Inde, et al, 2020) which showed that the learning outcomes of students who were taught using discovery learning and reception learning models obtained a sign value. <0.05 ($0.156 > 0, 05$) then H_0 is accepted, with a confidence level of 95% it is said that there is no influence of the learning model on learning achievement in the aspect of knowledge this is due to limited time, student unpreparedness, the number of students who do not understand the syntax of the learning model, and student intelligence.

This is also supported by the results of interviews with physics subject teachers who say that student learning outcomes are influenced by several factors such as interest in learning, infrastructure, student readiness, and individual student intelligence.

4. CONCLUSION

Based on the analysis and discussion of research data, it can be concluded that the discovery learning model has no effect on the physics learning outcomes of class X SMA Karya Nangapan academic year 2019/2020. This is evidenced by the results of data analysis, namely the sig (2-tailed) value $0.105 > 0.05$.

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