THE EFFECT OF DISCOVERY LEARNING MODEL ON LEARNING OUTCOME OF GRADE-VII STUDENTS OF SMPN 5 NANGAPANDA

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ABSTRACT

The study aimed to determine the effect of discovery learning models on learning outcomes of grade-VII students of SMPN 5 Nangapanda in the academic year 2019/2020. The type of research was survey research with a quantitative approach that used ex-post facto research designs. The population in this study was students of grade-VII of SMPN 5 Nangapanda, and the sample was 27 students obtained by purposive sampling technique. Data obtained from the study sample in the form of daily test scores on science subjects. The data analysis technique was performed by a one-sample t-test. The results showed the discovery learning model affects the learning outcomes of science students in grade-VII of SMP 5 Nangapanda in the academic year 2019/2020. This finding was indicated by the results of data analysis for science learning outcomes with the sig level. 0.05 and 95% confidence level, so that the sig obtained. $0.115 > 0.05$.

INTRODUCTION

The teacher is an important factor for the success of their students. Teachers should be creative in delivering material using appropriate models, strategies, and learning media to reach the goal of learning. The role of the learning model is very important in teaching and learning activities as with appropriate learning model will facilitate students to gain in-depth knowledge against the material taught by the teacher.

The Discovery learning model is an appropriate learning model to lead students to play an active role and think critically in finding knowledge through direct investigation. The Discovery learning model is a model used to develop ways of learning students actively find independently, process-oriented, self-directed, and reflective" Hosnan (Putri, 2017).

Based on the reality today which is in a COVID-19 pandemic situation, researchers cannot conduct the learning activities directly in the classroom. So, the researchers used survey research and documentation, supported by interview techniques to collect information and data about the learning outcome of science learning for grade-VII students of SMPN 5 Nangapanda.

Based on the results of the survey and interview with Mr. Adrianus Malo Daga, S.Pd as a science teacher at SMPN 5 Nangapanda, the discovery learning model is chosen as a learning model in learning.

Based on the previous explanation, the article tries to know that does the discovery learning model affects the learning outcomes of students on a science subject.

Bruner (Nurdyansyah & Eni Fariyarul Fahyuni, 2016) states that discovery learning is a learning model that helps students understand the structure and key ideas of a scientific discipline, and the need for the active involvement of students in learning. Djamarah (Afandi, 2013), Discovery Learning is learning to find and discover independently. In this teaching and learning system, the teacher presents uncomplete learning materials, and, students are provided the opportunity to look for and find independently using a problem-solving approach.

The steps of the discovery learning model according to Djamarah (Afandi, 2013) are as follows:

1) Stimulation. The teacher asks by raising a problem or asking students to read or listen to the description containing problems.

2) Problem statement. Students are allowed to identify problems.

3) Data collection. Students are allowed to collect relevant information to answer the question or verify the hypothesis.

4) Data processing. All information from reading, interviewing, observing, etc., all processed, randomized, classified tabulated, and even if necessary, calculated in a certain way and interpreted at a certain level of trust.

5) Verification. Based on the results of processing and verification, the formulated hypothesis is then checked.

6) Generalization. The next stage is based on the results of the verification, students learn to conclude.

The advantages of discovery learning model are as follow:

1) Consider as able to help students in developing or increasing and mastery of students' cognitive skills and processes when the students continuously involved in the guided discovery. The advantages of the discovery process come from the effort to discover; so someone learns how to discover it.

2) The knowledge gained from this strategy is very personal and may constitute a very solid knowledge; in the sense of deepening of understanding; retention, and transfer.

3) Discovery strategies arouse the passion of students, for example, students do the investigation, experience success, and sometimes fail.

4) This method allows students to move forward according to their abilities.

5) This method causes students to lead to their way of learning, so that they more involved and motivated to learn, at least, obtain a special discovery project.

6) This method helps to strengthen students' personalities by increasing confidence through the processes of discovery.

7) This strategy is child-centered, for example, giving opportunities to them and the teacher participating as peers in checking ideas. The teacher becomes a peer of learning, especially in situations of discovery whose answers are unknown.

8) Foster students' development towards healthy skepticism to find the final and absolute truth.

Hamalik (Kristina Pardede & Efendi Napitupulu, 2016) illustrates that the learning outcomes might be measured through the progress made by students after studying truly. Learning outcomes are the ultimate goal of the implementation of learning activities, and the abilities possessed by students after receiving learning experiences and positive behavioral changes that are relatively permanent on the students. These changes are in terms of thinking ability, problem-solving abilities, and cognitive, affective, and psychomotor areas and measured through the level of success (achievement) of students. The progress obtained by students after learning earnestly can be measured by conducting tests, and the measurements consist of tests and non-tests. And, the data collection instrument called the instrument of learning outcomes assessment. Gunada et al (Prayudi, 2017) Learning Outcomes are changed in abilities obtained after implementing learning activities. The intended learning outcomes are cognitive learning outcomes, namely changes in intellectual abilities obtained by students after obtaining the treatment of problem-based learning models in learning activities.

According to Dimyati and Mudjiono (Ilyas, 2017), two factors affect student learning outcomes, namely:

1. The internal factors, namely internal factors, such as attitudes, interests, learning motivation, learning concentration, ability to process learning materials, ability to save the acquisition of learning outcomes, ability to explore stored learning outcomes, ability to excel, sense of confidence, intelligence and learning success, learning habits and ideals.

2. The external factor is a factor that is outside the individual, such as family environment, school environment, and community environment.

METHOD

The research used survey research with a quantitative approach to determine the effect of discovery learning models on student science learning outcomes. The research design was ex post facto which is a causal relationship research design that is not manipulated or treated by the researcher (Sukmadinata, 2016). This research was conducted in SMP Negeri 5 Nangapanda in the academic year 2019/2020 on June 18 to 25 June 2020. The population was 53 students of grade-VII of SMP Negeri 5 Nangapanda, which divided into two classes, namely classes VII A and VII B. And, the sample was 27 students of grade-VII A of SMPN 5 Nangapanda in the academic year 2019/2020. The purposive sampling technique used to select the sample with certain considerations (Suharsimi, 2013).

Data collection techniques were documentation and supported by interview techniques. The obtained data analyzed quantitatively using descriptive analysis and inferential analysis with the help of SPSS software. The descriptive analysis aimed to see the minimum

and maximum score, the mean, and the standard deviation of learning outcomes while the inferential analysis is the prerequisite test analysis (normality test) and hypothesis test (one-sample t-test).

RESULT

Data on learning outcomes were the results of daily tests of students grade-VII A on natural science subjects in the 2019/2020 school year.

Table 1. Results of descriptive analysis

Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
Learning outcome	27	70	80	75.85	2.713
Valid N (listwise)	27				

Based on table 1, the results of the descriptive analysis, total of students on sample class were 23 students with a minimum score = 70, maximum score = 80, mean = 75.85, and standard deviation = 2.713.

Table 2. Data on normality test results

	Shapiro-Wilk		
	Statistic	df	Sig.
Learning outcome	.939	27	.116

Based on the calculation in Table 2, the score of sig. Shapiro-Wilk. 116> 0.05, so concluded that the data are normally distributed.

Table 3. Mean and standard deviations of science learning outcomes.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Learning outcomes	27	75.85	2.713	.522

Based on table 3, the hypothesis test is done using SPSS version 22 using one sample test with KKM 75. The number of samples is 27 students with a mean of 75.85, the standard deviation of 2.713, and Std. Error Meaning of .522.

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	
					Lower	Upper
Learning outcome	1.631	26	.115	.852	-.22	1.93

Based on the obtained data and analysis using SPSS version 22, obtained sig. (2-tailed). 115> 0.05, and the tcount-value = 1.631. Then, H0 is rejected and H1 is accepted. So, it concluded that the discovery learning model affected the learning outcomes of the students on grade-VII of SMPN 5 Nangapanda.

DISCUSSION

Based on the results of the research, discovery learning models affect the learning outcomes of science in the cognitive aspects. This is seen from the score of Shapiro-Wilk sig. 0.116> 0.05. Then, H0 is rejected and H1 is accepted. So, it concluded that the discovery learning model affects the learning outcomes of students in grade-VII of SMPN 5 Nangapanda. This is also supported by the results of interviews with science teachers of SMPN 5 Nangapanda that the discovery learning model affects the learning outcomes of students as seen from the number of students who have above the KKM.

Djamarah stated that discovery learning is also learning to find and discover independently (Afandi, 2013). In this teaching and learning system, the teacher presents uncomplete materials, but students allowed to find and discover independently using the problem-solving approach. According to (Kristin, 2019), the discovery learning model is a learning process that requires students to find information independently, requires students to be active, and find the information through observing or experimenting. Hosnan (Jumaeroh, 2019), discovery learning is a model by developing an active way of learning by finding independently, then the results obtained will be faithful and long-lasting stored in memory.

In the implementation of discovery learning, there are several steps taken by the teacher before conducting learning, namely providing orientation, apperception, motivation, and providing references. In the discovery learning process, the teacher is first links the learning activities material to the experience of students, and students are allowed to be able to find a concept and real examples in daily life related to the material. This step is made to ensure students' understanding to create active

learning. Next, the teacher gives a stimulus to students by telling a phenomenon related to the material of temperature and its changes. The teacher divided students into groups to identify the problem of the narrated phenomena. Then, students are asked to collect data, process data, test the data, and draw conclusions. In groups, students present the results of group discussion in front of the class and other groups respond to it. This session intended to create active learning and improve student learning outcomes.

Supported by Ardianto, the application of discovery learning models improved student mathematics learning outcomes (Ardianto, 2019). The results obtained by the mean of classes treated with discovery learning models are higher than classes treated with conventional models. So, it concluded that there is a significant effect of discovery learning models on mathematics learning outcomes of grade-VII students of junior high school.

CONCLUSION

The article proposes suggestions that Discovery learning has better cognitive abilities to invite students to play an active role in learning. Then, students who the score has not yet reached the KKM are expected to follow the Discovery learning models to improve learning outcomes, especially in science learning. In the learning process, teachers should more emphasis on student activity that aimed to increase the learning outcomes.

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