

The Influence of Discovery Learning Model Based on Scientific Line and Angle Materials on Student Learning Outcomes and Creativity Students

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ABSTRACT

This study aims to determine the effect of scientific discovery learning models on line and angle material on student learning outcomes and creativity. The research method used is quantitative research with experimental research type with the type of quasi experimental design method, and pretest-posttest control group design. The population of this study were all students of class VII MTs NU Mojokari, with sampling using random assessment techniques, two classes were selected as samples in this study, the experimental class and the control class. The instruments used were tests and non-tests. The test instruments used in this study were descriptive questions to measure the learning outcomes of students, while the non-test instruments used in this study were questionnaires and observation sheets to measure students' creativity. The data analysis technique used in this research is hypothesis testing, however before testing the hypothesis, prerequisite tests must be carried out, namely the normality test and the homogeneity test. The results showed that there was a significant influence on the scientific-based discovery learning model on line and angle material on the learning outcomes and creativity of class VII SMP MTs students.

Keywords: *Discovery Learning, Saitific, Learning Outcomes and Student Creativity*

INTRODUCTION

The progress of the era of rapid globalization requires people to be involved in it, mastery of science and technology is needed to face the effects of globalization. Efforts that can be made to acquire science and technology are through education. Efforts to face the globalization era that is happening. Success in mastery of science and technology can prove that human resources are competent resources. Efforts that can be made to achieve this success are through education.

Efforts to face the current era of globalization, education does not only emphasize the intellectual aspect, but the creativity aspect also plays an important role so that it must be developed. Siswono (Satiti et al., 2019) defines that creative thinking is a cognitive activity that a person uses to build or generate new ideas and ideas. In developing creativity that is implemented in the learning system, students are expected to be able to issue progressive ideas they have when facing and competing in increasingly fierce and changing global competitions.

The first step in the change efforts made by the education unit to advance Indonesian education is to implement the 2013 curriculum. Changes made are by applying a learning approach or learning model that is in accordance with the 2013 Curriculum. The learning approach introduced in the 2013 Curriculum is a scientific approach or the so-called approach. scientific. The scientific approach is a learning approach that is carried out through the process of observing, asking, trying, reasoning, and communicating (Fadlillah, 2014). While the learning models introduced in the 2013 Curriculum are diverse, one of which is the discovery learning model. Discovery method is learning to find and find it yourself (Djamarah, 2010).

But in reality, the mathematics learning outcomes of Indonesian students are still far from satisfactory. Based on the 2018 PISA international study organized by the OECD, it was reported on

Tuesday, December 3, 2019 that Indonesia's math score was ranked 72 out of 78 countries. Researchers also found similar results when conducting an interview with one of the mathematics teachers at MTs NU Mojosari Nganjuk.

Based on the results of the interview, information was obtained that the teacher encountered several obstacles in the learning process. One of the obstacles found was learning material that was difficult for students to understand so that it had an impact on student learning outcomes. Especially in geometry material, this can be seen from the results of the National Examination at MTs NU Mojosari, the geometry material and measurements obtained from the Puspendikbud are very low, namely 37.23. According to one mathematics teacher who was interviewed said that this was because students did not understand the concept of geometry, namely the discussion of lines and angles, so that in the next geometry material students could not master it well. Lack of understanding of students' concepts on a material results in low learning outcomes of students.

The low learning outcomes of mathematics are influenced by several factors, both from inside and outside the students. One of the factors that is the root cause of the low learning outcomes of mathematics is the lack of creativity of students in learning. In addition to the creativity of students, another factor that is the root cause of low mathematics learning outcomes is the process of learning mathematics which is more teacher-centered, not student-centered. In order to improve the quality of educational education at this time, a shift in the learning paradigm that must be carried out by (conventional) teachers becomes learning activities that further activate the involvement of students (Khotimah, 2017). Based on this, an innovation in mathematics learning is needed that can increase the potential and creativity of students. Observing existing problems, researchers will use scientific-based discovery learning models to improve the quality of learning and the creativity of students which will then have an impact on students' mathematics learning outcomes to increase better.

METHOD

The research approach used in this research is a quantitative approach to the type of experimental research. The research method used by researchers is a quasi experimental design method, with the design used is the pretest-posttest control group design. The form of this experimental design is that there are two groups selected randomly, then given a pretest to find out the initial conditions, is there a difference between the experimental group and the control group (Sugiyono, 2015).

RESULT AND DISCUSSION

This research was conducted at MTs NU Mojosari Loceret Nganjuk in the 2019/2020 school year. The research subjects used were students of class VII MTs NU Mojosari Loceret Nganjuk. This research was conducted on March 7, 2020 s.d. March 21, 2020 with a sample of two classes, namely class VII A as the experimental class and class VII H as the control class.

The material used for this research is lines and angles in the material of the relationship between angles as a result of two parallel lines that are cut by the transverse line. The implementation of learning material here is based on the planning made by the researcher, namely in the experimental class with a scientific-based discovery learning model. Whereas in the control class the learning model is usually used by the teacher. Based on the results of research on learning activities the teacher has carried out the stages of learning activities as a whole. So it can be concluded that the teacher has carried out learning activities properly when implementing it.

Analysis of the prerequisite test data before testing the hypothesis is the normality test and the homogeneity test. The results of the data distribution normality test were tested using the Kolmogorov-Smirnov technique using the assistance of SPSS 20 which has a significant number greater than 0.05. This is shown from the data the value of the experimental class learning outcomes is 0.200 and the control class is 0.181. Meanwhile, from the questionnaire data, the creativity of the experimental class was 0.097 and the control class was 0.062. Both learning outcomes and creativity data are normally distributed because the significance value is > 0.05 . Furthermore, homogeneity testing is carried out to determine the variance.

The results of the homogeneity test using the levene's test with the help of SSS 20 produced data on learning outcomes with a significance value of 0.822. Meanwhile, the creativity data with a significance value of 0.234, which means that the data on the value of learning outcomes and the data on the creativity of students are homogeneous because the significance value is > 0.05 . Because the prerequisite tests (normality and homogeneity) have been carried out, it can be continued with hypothesis testing to answer

the problem formulation in this study using the independent simple t-test with SSS 20 assistance.

The results of the experimental sample at MTs NU Loceret Nganjuk whose learners used a scientific-based discovery learning model showed significant results (see attachment). This is in accordance with the average pre-test and post-test results obtained by students using scientific-based discovery learning models which are higher than those using daily learning in mathematics learning material lines and angles. The results of data analysis show that the effect of scientific discovery learning models on student learning outcomes is $0.000 < 0.05$. It is clear that the average value of the experimental class is 88.25, which is higher than the control class, which is 75.66.

The implementation of the learning process cannot be separated from involving evaluation of learning. Learning that goes well will have a good impact on student learning outcomes, and vice versa if learning does not go well it will have an impact on low student learning outcomes. Learning outcomes are a number of experiences obtained by students which include the cognitive, affective, and psychomotor domains (Sudjana, 2012). Learning is not only mastery of subject theory concepts, but also includes mastery of habits, perceptions, pleasures, talents, social adjustment, various skills, ideals, desires and expectations.

The results of classroom observations show that classes that apply daily learning basically still focus on assessing their cognitive domains and students are less active in their affective and psychomotor domains. This is because the learning model used is less attractive to students. So that students are not active in the learning process, especially in learning mathematics which is often considered difficult by students.

Based on the description of the explanation and analysis of the research data, it can be stated that the application of the scientific-based discovery learning model can have an effect on the improvement of students' learning outcomes in the mathematics learning process. Thus, it can be directly stated the hypothesis that "There is a significant influence on the discovery learning model scientific-based material on lines and angles to the learning outcomes of class VII SMP / MTs "is accepted. This statement is in line with the results of research conducted by Petrina who concluded that there is an effect of using the discovery learning model on student learning outcomes (Nordianti, 2018).

The results of the experimental sample at MTs NU Loceret Nganjuk whose learners used a scientific-based discovery learning model showed significant results. This is in accordance with the average questionnaire value results obtained by students using scientific-based discovery learning models which are higher than those using everyday learning in mathematics learning material lines and angles. The results of data analysis showed that the effect of scientific discovery learning models on the creativity of students was $0.000 < 0.05$. It is clear that the average score of the experimental class questionnaire is 56.81 higher than the control class, which is 49.88. So it can be concluded that there is a significant difference in the creativity of students between classes with scientific discovery learning models and classes with daily learning. Student creativity is the ability of students to make something through new combinations based on data, information, and pre-existing elements (Munandar, 2014). Creativity is indispensable in learning to help students understand lessons that are difficult to understand.

Based on the description of the explanation and analysis of the research data, it can be stated that with the application of the discovery learning model based on science it can have an effect on increasing the creativity of students in the mathematics learning process. scientific material on lines and angles to the creativity of class VII SMP / MTs students "accepted. Based on the results of the sample learning experiment using a scientific discovery learning model, it shows significant results. This is in accordance with the data analysis using the two-way analysis test or MANOVA on the third hypothesis. The test results show that the average results of the questionnaire and learning tests of students who are taught with scientific discovery learning models are higher than students who are taught using learning methods that are usually used by teachers or daily learning.

This is shown from the results of the analysis for learning outcomes and student creativity using two-way analysis or MANOVA obtained with a P value or a significance value of 0.000. So the value or significance value of $0.000 < 0.05$ from the significance level, which means that all values are significant. Based on the results of the test of between-subject effect, the learning outcomes of students gave an F value of 52,988 with a significance of 0,000. Meanwhile, the students' creativity obtained an F price of 250.789 with a significance of 0.000. Thus the third hypothesis states that "there is an effect of scientific-based discovery learning on lines and angles on learning outcomes and creativity of class VII SMP / MTs students" is accepted.

CONCLUSIONS

Discovery learning method based on scientific influence on student learning outcomes in line and angle material. This is indicated by the results of the calculation of the independent sample t-test formula that the t value is 7,279 with a significance of 0,000. The significance value shows $0.000 < 0.05$, then H_0 is rejected, H_a is accepted, meaning that there is a significant effect of the scientific-based discovery learning model on line and angle material on the learning outcomes of class VII SMP / MTs students.

The scientific discovery learning method affects the creativity of students in line and angle material. This is indicated by the results of the calculation of the independent sample t-test formula that the t count is 15.920 with a significance of 0.000. The significance value shows $0.000 < 0.05$, then H_0 is rejected, H_a is accepted, meaning that there is a significant effect of scientific-based discovery learning models on line and angle material on the creativity of VII grade students of SMP / MTs.

Discovery learning method based on scientific influence on learning outcomes and creativity of students in line and angle material. This is indicated by the calculation results of the MANOVA formula that the calculated F value is 52, 988 with a significance of 0.000. The significance value shows $0.000 < 0.05$, then H_0 is rejected, H_a is accepted, meaning that there is a significant effect of scientific-based discovery learning models on line and angle material on learning outcomes and creativity of VII grade students of SMP / MTs.

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