METHODS OF THE INFLUENCE OF BRAINSTORMING LEARNING ON STUDENT LEARNING OUTCOMES

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Abstract:

The low student learning outcomes in mathematics can be caused by the use of learning methods that are not in accordance with the material to be delivered, so that students do not play an active role in learning activities that affect student learning outcomes. Research with the Brainstorming learning method at MTs Nurul Jannah aims to determine whether there is an influence of the Brainstorming learning method on student learning outcomes on the subject of Two Variable Linear Equation Systems in class VIII MTs Nurul Jannah Palengaan Pamekasan. This research is a quantitative research with an experimental type of research. Based on the data obtained in the form of student learning outcomes after data analysis using the t-test was obtained, the average for the experimental class was 77,1 higher than the control class, namely 68,05 using a two-party test with a significant level of 5% and interval 95% confidence is $2,571 \geq 2,022$ ($t_{hitung} \geq t_{tabel}$) so it can be concluded that there is an influence of the brainstorming learning method on student learning outcomes on the subject of the Two-variable Linear Equation System for class VIII MTs Nurul Jannah Palengaan.

Keywords: Brainstorming learning, learning outcomes

Introduction

Education is all activities that are planned and carried out regularly and directed at school educational institutions (Suhartono, 2008: 46). One of the problems faced by the world of education is the problem of the weakness of the learning process. In the learning process, students are less encouraged to play an active role, so that it affects learning outcomes, one of which is in mathematics.

According to Suprijono (in Thobroni, 2015:20) learning outcomes are patterns of actions, values, understandings, attitudes, appreciation and skills. Meanwhile, according to Sudjana (2010:22) who says that learning outcomes are the abilities that students have after they receive their learning experiences. Learning outcomes are things that cannot be separated from learning activities, because learning activities are a process, while learning outcomes are the result of the learning process.

Learning activities can be directed to improve student learning outcomes, according to Piaget (in Dimyati and Mudjiono, 2002:13) "Learning is knowledge formed by individuals".

Therefore, to improve student learning outcomes, teachers should use student-centred learning methods (student center).

Based on the results of interviews I did with the mathematics teacher at MTs Nurul Jannah regarding the problems that occurred at the school, he stated that many students tend to be silent in the learning process so that it results in student learning outcomes, this can be seen from the results of the Daily Test scores of students who still get a lot of scores below the KKM, the teacher stated that the low learning outcomes were due to students not playing an active role in the learning process and teaching and learning activities at MTs Nurul Jannah school were still dominated by teachers, the teacher also stated that the learning methods used were still using conventional learning methods. . According to Yamin (2013: 59) conventional learning methods are learning that prioritizes measurable results and the teacher plays an active role in learning, students are encouraged to memorize the material presented by the teacher.

Based on the results of these interviews, a student-centered learning method is needed and can make students play an active role in the learning process. The learning method that is expected to be a solution to this problem is the Brainstorming learning

method, according to Suryono & Hariyanto (2015: 117), "Brainstorming or brainstorming is a student-centred learning method (Student-Centered-Methods) learning in groups where each member the group contributes a number of new ideas without having to be evaluated as to whether or not, true or not, whether the idea is relevant or not. Meanwhile, according to Sani (2013: 203) states that the Brainstorming learning method is a method of collecting a large number of ideas from a group of people in a short time. and According to Samani & Hariyanto (2011:155) Brainstorming learning method is a group of people who contribute a number of new ideas, without having to be evaluated whether or not it is appropriate, whether or not the idea is relevant or not, so based on some of these opinions it can be concluded that what is meant by this method is Brainstorming learning is a way of presenting learning by giving a question to students to get different answers based on the abilities of each student. One of the materials that are suitable with the Brainstorming learning method is the Two Variable Linear Equation System material. Two Variable Linear Equation System is a system of equations that contains two or more linear equations of two variables.

If there are two linear equations of two variables in the form $ax + by = c$ and $dx + ey = f$ or usually written

$$ax + by = c$$
$$dx + ey = f$$

Then it is said that the two equations form a two-variable linear equation system (SPLDV). The solution to the system of linear equations of the two variables is a pair (x,y) that satisfies the two equations (Wibowo, 2012:64).

With the Brainstorming learning method students can solve problems related to the Two Variable Linear Equation System in several ways according to their respective ideas and thoughts but with the same results.

Based on the problems described above, researchers are interested in conducting research on student learning outcomes whose learning uses the Brainstorming learning method, with the research title "The Effect of Brainstorming Learning Methods on Student Learning Outcomes on the Subject Linear Equation System of Two Variables Class VIII MTs Nurul Jannah Palengaan Pamekasan ".

Research Method

This research uses a quantitative research approach and the type of experimental research. According to Emzir (2007:63) experimental research usually involves two groups, one experimental group and one control group. The experimental group usually receives a new, a treatment under investigation. Meanwhile, the control group usually receives a different treatment or the usual treatment.

This research was conducted at MTs Nurul Jannah Palengaan Pamekasan. The time of the research was carried out in the second semester starting on April 11 to May 2, 2021 for 6 meetings.

The population in this study were students of Class VIII MTs Nurul Jannah Palengaaan Pamekasan. In this study, sampling was done by random sampling or random. According to Arikunto (2006:134) Random Sample is the researcher mixes the subjects in the population so that all subjects are considered equal, thus the researcher gives equal rights to each subject to have the opportunity (chance) to be selected as the sample. Random sampling was carried out by means of a lottery using a small piece of paper on which the names of each group were written. Through the lottery, one control group and one experimental group were obtained. Class VIIIa was determined as an experimental group of 20 students. Meanwhile, class VIIIb was determined as the control group with a total of 20 students.

The instrument used to collect student learning outcomes is the provision of tests. According to Sudjana (2010: 35) essay tests are questions that require students to answer them in the form of outlining, explaining, discussing, comparing, giving reasons and other similar forms in accordance with the demands of the question using their own words and language.

To test the research hypothesis, the t-test is used as follows:

$$t = \frac{\overline{x}_1 + \overline{x}_2}{s\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad \text{(Sudjana, 1996:239)}$$

Information:
$\overline{x}_1$: The average value of the experimental class
$\overline{x}_2$: The average value of the control class results
n_1 : The number of samples of the experimental class
n_2 : Number of control class samples

With the combined variance calculated using the formula:

$$S^2 = \frac{n \sum f_i x_i^2 - (\sum f_i x_i)^2}{n(n-1)} \text{ (Sudjana,1996:95)}$$

Information:

n : many samples

f_i : Indicates the frequency for the corresponding x_i value.

x_i : Declare test scores

The test criteria are if $t_{hitung} \geq t_{tabel}$ then H_1 is accepted and H_0 is rejected. It means that there is an influence of the Brainstorming learning method on student learning outcomes on the subject of Two Variable Linear Equation Systems. But if $t_{hitung} < t_{tabel}$ then H_0 is rejected and H_1 is accepted. It means that there is no influence of the Brainstorming learning method on student learning outcomes on the subject of Two Variable Linear Equation Systems.

Result and Discussion

The results showed that in the experimental class students who scored below the KKM before the application of the Brainstorming learning method seen from the results of the daily test 1 were 5 out of 20 students with an average value = 64,25 and the daily test score of 1 control class who got a score below KKM is as many as 5 out of 20 students with an average value = 64.

After being treated with the brainstorming learning method, the following data were obtained:

Table 1 test results for the experimental class and the control class

Experiment Class			Control Class		
Score	Frequency	Average	Score	Frequency	Average
60-67	6		50-56	3	
68-75	4		57-63	3	
76-83	3	77,1	64-70	7	68,05
84-91	4		71-77	3	
92-99	3		78-84	3	
$\sum = 20$			$\sum = 20$		

The application of the brainstorming learning method in the experimental class and the application of conventional methods in the control class obtained the average value of the experimental class test results = 77,1 and the average value of the control class test results = 68,05, from these results it appears that there is a difference between the learning outcomes which uses the brainstorming learning method and the use of conventional methods with the difference in the average value between the experimental class and the control class is 9,05.

Hypothesis testing in this study includes testing the difference in test scores for the experimental class and the control class. After learning in the experimental class using the brainstorming learning method and the control class using the conventional learning method, the calculation of the hypothesis test is obtained as follows: $t_{hitung} \geq t_{tabel}$ (2,571 $\geq$ 2,022) then H_0 is rejected, and H_1 is accepted. The results of hypothesis testing can be seen in the following table

Table 2 Calculation results of t-test

Data	Average	t_{count}	t_{table}	Information
The value of the first test result of the experimental class	64,25			Initial ability of students is the same
The value of the first test result of the control class	64	1,72	2,26	
The value of the experimental class test results	77,1			There is a difference due to influence
Control class test result scores	68,05	2,571	2,022	

The results showed that there was a significant difference between student learning outcomes using the brainstorming learning method and the use of conventional learning methods on the subject matter of the Two Variable Linear Equation System, this was evident from the results of the average test score of the experimental class of 77,1 while the average the value of the control class test results was 68,05.

The results of this study are in accordance with research that has been previously researched by Rohmanurmeta, MF, et al (2016: 19) who concluded that there is a positive influence of the brainstorming method on learning outcomes in integrative thematic learning, the sub-theme of togetherness in diversity in MIN Demangan compared to conventional methods. Previous research has also been conducted by Ginting, ME & Karo Br TY. (2016: 56) also concludes that there is a significant difference between student learning outcomes with the cooperative model of the group investigation type (group investigation) with the brainstorming method and conventional learning on dynamic fluid subject matter.

This is based on several things, including the brainstorming learning method involving students taking an active role in learning by means of the teacher motivating students to be enthusiastic about following the subject and asking students to recall the previous material and convey learning objectives, then the teacher presents the problems contained in the student worksheets about, after that the teacher gives students the opportunity to provide ideas/suggestions from the problems presented in accordance with the abilities of each student, then the teacher classifies the ideas from students if there are similarities then they are taken that are relevant to the discussion, and finally the teacher leads students to conclude several alternatives classified answers.

The results of this study show that the use of brainstorming learning methods can improve student learning outcomes compared to the use of conventional learning methods. But during the research there were several obstacles faced including students who were still not confident enough to go forward and express their opinions, students were still rigid in conveying opinions and students who were listening still had difficulty understanding the opinion of one of the students who expressed their opinion. Researchers should encourage students to be more active in participating in learning activities to train students' skills and courage in expressing opinions.

Conclusion and Suggestion
Conclusion

Based on the research results obtained from the results of data analysis and hypothesis testing, it can be concluded that the average student learning outcomes in the experimental class using the brainstorming learning method on the material of the Two-variable Linear Equation System in class VIIIa obtained an average value of 77,1 superior compared to the average value of class VIIIb as a dick class that uses conventional learning methods, which is 68,05. So there is the influence of the Brainstorming Learning Method on the Learning Outcomes of Class VIII Students. The subject of the Two Variable Linear Equation System in Class VIII MTs Nurul Jannah Palengaan Pamekasan.

Suggestion

In the application of the brainstorming method, the teacher's ability to manage time and apply each step of the brainstorming learning optimally so that it does not focus on just one step, but all the steps in this method can be conveyed properly so that increased activity and student learning outcomes can increase.

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