International Journal of Sustainable Social Science (IJSSS)
Vol.2, No.4, 2024:235-240

The Influence of the Scientific Approach on Learning Motivation and Student Learning Outcomes on Algebra Material Grade VII MTsN 1 Bener Meriah

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A R T I C L E I N F O

Keywords: Scientific Approach, Learning Motivation and Learning Outcomes

Received : 3 Juny
Revised : 20 July
Accepted: 21 August

A B S T R A C T

The purpose of this research is to determine whether there is an influence impact of the Scientific approach on learning motivation and learning outcomes of class VII students. This research was conducted at MTsN 1 Bener Meriah on class VII students in the 2023/2024 academic year. The research method used is experimental research with a Posttest-only Control Design design. Sampling was carried out using cluster sampling. The research sample consisted of two classes, namely class VII-1 as the experimental class and class VII-5 as the control class. In the experimental class, learning with a scientific approach was given, while in the control class conventional learning was carried out. The research results were obtained by processing the data using the right-sided t test statistic. At a significance level of 5%, tcount = 2.70 and ttable = 1.67 were obtained. This shows that tcount> ttable. Meanwhile, for student learning motivation, it was analyzed based on student responses to the scientific approach. The score obtained was 3.35, which is classified as a very positive criterion. The results of this research indicate that there is a significant influence of the scientific approach on the motivation and learning outcomes of mathematics in class VII students of MTsN 1 Bener Meriah

DOI: https://doi.org/10.59890/ijsss.v2i4.2483
E-ISSN: 3026-4650
https://journal.multitechpublisher.com/index.php/ijsss

INTRODUCTION

Education today focuses on students as the center of learning. Students must play an active, creative, and innovative role in overcoming various life problems. The essence of education is the ongoing efforts of humans in overcoming the challenges faced throughout life. Therefore, it is important for students to be truly taught and given the opportunity to develop their ability to think independently (Herman, 2005).

One of the factors that supports the level of student participation in learning is choosing the right learning approach. (M. Ali Hamzah, 2014) The learning approach is a strategy that can clarify the direction set. The learning approach refers to the strategy used by teachers to carry out organized lessons in order to help students comprehend the material being taught.

The scientific approach is one of the more effective scientific approaches in increasing student participation in learning. The scientific approach can be in the form of seeking information from various sources. The study's findings demonstrate that when using a scientific approach to learning, students retain over 90 percent of information taught by teachers after two days, with a 50-70 percent acquisition rate of contextual understanding. (Sani, 2014) The scientific approach involves steps such as observation, asking questions, experiments, critical thinking, and communicating with others to gather information. The scientific approach is able to encourage students to be actively involved in mathematics learning. Active involvement of students will foster student motivation and learning outcomes in mathematics learning. Learning motivation is considered as a change in energy within a person that is shown through feelings and reactions to achieve goals (Hamalik, 2013). In the learning process, motivation can be considered as energy within students that drives, ensures smoothness, and provides direction to learning activities, with the hope of achieving predetermined goals (Fathurrohman and Sutikno, 2010). Student learning motivation is shown by attention, relevance, self-confidence and satisfaction.

The researcher was motivated to conduct a study after reading the description provided, with the goal of investigating the influences of the scientific approach on student motivation and academic performance.

LITERATURE REVIEW

Learning outcomes are skills or abilities that can be obtained by students, after participating in learning activities planned and carried out by teachers in certain schools and classes (Nana Sudjana, 2011). Benjamin Bloom stated that learning outcomes are students' cognitive achievements that can be measured through predetermined learning objectives. Bloom developed a taxonomy that divides learning objectives into levels such as knowledge, understanding, application, analysis, synthesis, and evaluation. Mathematics learning outcomes are students' achievements in understanding, using, and processing mathematical concepts. This includes their ability to solve problems, understand mathematical concepts, and apply mathematical methods in various situations. These learning outcomes are usually measured through tests, assessments, and application of concepts in real situations. Algebra is one of the mathematics

learning materials contained in BSKAP number 033 of 2022, concerning learning outcomes in the independent curriculum. in the Algebra material, students are expected to be able to abstract mathematical concepts into more general symbols and equations. In addition, students are also able to solve algebraic problems logically and systematically. Therefore, there is a close relationship between algebra material and the scientific approach.

METHODOLOGY

This research is a quantitative research, in the form of experimental research. Experimental research is conducted to see the effects of a treatment. This study uses the "Posttest-only Control Design" design because it wants to see the effect of the treatment given. The design pattern of this study is as follows.

Table 1. Research Design

Class	*Treatment*	*Posttest*
Experiment	A	X_1
Control	B	X_2

In this particular design, two groups are chosen at random. One group receives treatment based on the Scientific Approach (A), while the other group receives treatment based on a non-Scientific approach (B). The experimental group is the group that receives treatment using a scientific method, while the control group does not receive any treatment. (Sugiyono, 2011) The effect of treatment is (X1: X2).

The population in this study were all students of class VII MTsN 1 Bener Meriah. Sampling was carried out using the cluster sampling technique. This technique was taken based on groups, not individuals. The experimental class was class VII-1 and the control class was class VII-5. The research instrument used a test to measure student learning outcomes and a questionnaire to measure student learning motivation.

A test is a tool for gathering data that involves a set of questions or tasks designed to evaluate an individual or group's skills, knowledge, intelligence, abilities, or talents (Arikonto, 2006). The test used in this study was a written test in the form of essay questions consisting of 5 questions. Two expert validators perform validation checks before the test is administered. The questionnaire serves as a tool for gathering information by presenting a series of inquiries and written prompts for individuals to respond to (Arikunto, 2010). The student learning motivation questionnaire consists of questions or statements regarding student motivation after learning with a Scientific approach.

The analysis techniques used in this study include analysis of learning outcome test data and analysis of learning motivation questionnaires. For the analysis of learning outcome tests, several stages are carried out, namely: 1) Homogeneity assessment to assess whether the tested pair data is homogeneous (not different), which is carried out using the F test; 2) Normality assessment to assess whether the collected data is normally distributed. The normality test is used with chi-square; 3) Hypothesis testing using the t-test to examine whether

motivation and mathematics learning outcomes are better between groups using the scientific approach and the approach with conventional learning. For

The questionnaire analysis method involved collecting responses from students and analyzing them quantitatively in a descriptive manner. Measurement of learning motivation is based on the ARCS aspect. The ARCS aspect is an aspect of learning motivation developed by Keller (1987) which consists of aspects of attention, relevance, confidence, and satisfaction. ARCS was then developed into several indicators. In order to assess how students responded, a study was carried out by aggregating the scores gathered from the Likert scale format. (Sukardi, 2014) When using the Likert scale, responses are assigned a score ranging from 1 to 4 for positive statements and from 4 to 1 for negative statements. The average score of student responses can be calculated using the following formula:

$$skor\ rata - rata = \frac{\sum_{i=1}^{4}(n_i f_i)}{N}$$

Description:

fi : number of students who can answer choice i

ini : weighted score of choice i

N : total number of students who responded

i : 1 – 4

The average score criteria for participant responses are shown in the following table:

Table 2. Score Criteria on the Likert Scale

Score	Criteria
3< average score ≤ 4	very positive
2 < average score ≤ 3	Positive
1< average score ≤ 2	Negative
0< average score ≤ 1	very negative

RESULTS AND DISCUSSION

Before analyzing data with the t-test, it is necessary to conduct a normality test and a homogeneity test first. The test results show that both classes, namely the experimental class and the control class, have a normal distribution and homogeneous data. The results of the t-test are as follows:

$$s_{gab} = 4{,}35,\ t = \frac{\bar{x}_1 - \bar{x}_2}{s\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}},\ t_{hitung} = \frac{3{,}59}{4{,}35(0{,}30)} = \frac{3{,}59}{1{,}30} = 2{,}70,\ t_{(tabel)} = 1{,}67$$

Based on the results of the data processing above, it was obtained that t_count = 2.70 and t_((table)) = 1.67. So t_count>t_table. Therefore, it is concluded that student learning outcomes are better when taught using the Scientific Approach than the conventional approach. This also shows that there is an influence of the scientific approach on student learning outcomes.

Based on the questionnaire filled out by 30 students after participating in learning using the Scientific Approach, the results were obtained with details as in the following table:

Table 3. Average Score of Student Responses

NO	Question	Average Score
(1)	(2)	(3)
1	Mathematics learning with a Scientific Approach makes me more interested in learning	3,38
2	I am very focused on doing each stage of learning activities	3,40
3	I am very enthusiastic about finding and finding information related to the material.	3,42
4	Mathematics learning with a scientific approach makes it easy for me to understand learning materials	3,35
5	I find it easier to understand problems related to real life	3,29
6	The Scientific Approach can motivate me to work well together in discussion groups	3,39
7	The Scientific Approach trains me to dare to ask questions and express opinions to teachers or friends in class	3,32
8	I am able to solve math problems independently	3,41
9	I try to be active in math learning activities	3,29
10	I completed every project and exercise thoroughly.	3,30
Amount		33,55
Average Score		3,35

CONCLUSIONS

According to the information presented in Table 3, students generally had a positive to very positive attitude towards learning with a scientific approach. With an average score of 3.35, it can be concluded that students' responses to this learning method are categorized as very positive based on the established criteria. This shows that the Scientific approach can influence students' learning motivation in learning mathematics.

RECOMMENDATIONS

The findings of this research are anticipated to be beneficial and make a valuable contribution to the field of education. This study shows that by using the right learning approach, it can increase students' motivation and learning outcomes. Students should be able to enhance their motivation and creativity in learning math by utilizing their skills. Meanwhile, teachers are expected to apply a scientific approach as a variation in teaching methods. For subsequent researchers, further research is needed involving larger and more diverse samples to develop this research with broader problem limitations.

FURTHER STUDY

This research still has limitations, so it is necessary to carry out further research related to the topic of The Influence of the Scientific Approach on Learning Motivation and Student Learning Outcomes in order to improve this research and add insight to readers.

REFERENCES

Fathurrohman Pupuh, dkk. (2010). Strategi Belajar Mengajar melalui Penanaman Konsep Umum & Konsep Islam. Bandung: Refika Aditama.

Hamalik Oemar. (2013). Proses Belajar Mengajar. Jakarta: Bumi Aksara.

Herman Hudojo. (2005). Pengembangan Kurikulum dan Pembelajaran Matematika. Malang: Penerbit Universitas Negeri Malang.

Keller, J. M. (1987). Development and use of the ARCS model of instructional design. Journal of Instructional Development, 10(3), 2-10.

M. Ali Hamzah dan Muhlisrarini. (2014). Perencanaan dan Strategi Pembelajaran Matematika. Jakarta: Rajawali Pers.

Sani Ridwan Abdullah. 2014. Pembelajaran Saintifik untuk Implementasi Kurikulum 2013. Jakarta: PT Bumi Aksara.

Sudjana, Nana dan Ahmad Rivai,. (2011). Media Pengajaran. Bandung: Sinar Baru Algensindo.

Sugiyono. (2011). Metode Penelitian Kualitatif dan R & D. Bandung: Alfabeta.

Suharsimi Arikunto. (2006). Prosedur Penelitian: Suatu Pendekatan Praktik. Jakarta: Rineka Cipta.