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THE EFFECT OF THE USE OF VOLUME CONSERVATION TOOLS ON STUDENT'S LEARNING OUTCOMES

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Abstract

Education is the main factor that must be improved in quality, the progress of the civilization of a society or nation will lie in the level of education. To improve the quality of education in this case it is necessary to increase student learning outcomes, in studying science to achieve these goals, in the teaching and learning process there must be adequate situations and conditions as well as appropriate methods in learning that can have a positive effect on learning effectiveness in achieving goals. education. The method used in this study is a quantitative method, where the final score of the variable is in the form of numbers which are then processed using a statistical formula to produce a value. The population in this study were all students of class VIII at SMP Negeri 1 Padangcermin and the samples in this study were 40 students of class VIII A and 40 students of class VIII B of SMP Negeri 1 Padangcermin. To find out the results of this study, it was done by giving an essay test. From the results of the study, it can be concluded that there is an effect of the use of conservation of volume teaching aids on learning outcomes in class VIII even semester of SMP Negeri 1 Padangcermin where the average learning outcomes of students who use conservation of volume teaching aids are higher than the average learning outcomes of students who do not use props. volume conservation prop. Thus, learning that is accompanied by the use of conservation of volume props has a positive effect or can improve student learning outcomes.

Keyword: ***Education; volume conservation tools; learning outcomes***

1. INTRODUCTION

Education is very important in advancing the life of the nation. Because of its importance, the government establishes a national education system based on Pancasila and the 1945 Constitution.[1] Education is the main factor that must be improved in quality, the progress and decline of the civilization of society or the nation will lie in the level of education[2]. To improve the quality of education in this case it is necessary to increase student learning outcomes, in studying science to achieve these goals, in the teaching and learning process there must be adequate situations and conditions as well as appropriate methods in learning that can have a positive effect on learning effectiveness in

achieving goals[3]–[5]. education. In achieving these educational goals, various efforts and efforts have been made to improve quality, such as hiring teachers, increasing teacher salaries, improving curriculum and improving teacher abilities and skills as well as improving the quality of teaching and learning that is still teacher-centred, takes place rigidly and does not support the development of knowledge, attitudes and skills.[6], [7] student skills, conditions or tendencies of such lessons can affect the high and low student learning outcomes. A teacher must have sufficient competence as a learning manager and the teacher definitely wants the results obtained by his students to be good, as well as the mathematics teacher, because the mathematical structure of knowledge is clear, in mathematics there are many games but the reality is that the learning outcomes of geometry are the lowest on average compared to other subjects. So that students are able to develop learning materials received from teachers, there are several factors that must be developed in the world of education, one of which is the selection of an appropriate learning model approach to the teaching and learning process.

The process of learning mathematics in schools in general still uses a conventional approach, where the teacher explains the lesson material and students pay attention to the lesson material given by the teacher in the classroom. While relevant learning for learning in schools is a learning technique that emphasizes that students themselves will build their knowledge, while teachers must design learning activities to increase or change students' initial knowledge, besides that the process of learning Mathematics in schools also generally never uses teaching aids. to facilitate students in the teaching and learning process.

This approach is used because it is a learning concept that helps teachers relate the material they teach to students' real-world situations, and encourages students to make connections between their knowledge. The learning process takes place naturally in the form of student activities working and experiencing not the transfer of knowledge from teacher to student. A learning strategy is far more important than a result. One of the learning models from the knowledge of children or students is constructivism learning. While the learning model based on constructivism is learning that is oriented towards student activities.

2. RESEARCH METHODS

The research method is "the method used by researchers in collecting research data"[8]. Meanwhile, according to [9]research methodology is "a method or effort to find, develop and fill in the truth of knowledge, an effort which is carried out using scientific methods". According to the opinion above, the writer concludes that what is meant by research methodology is a method chosen by someone to conduct research so that with a certain methodology the research process is achieved according to the objectives that have been carried out. In this study, the author uses a quantitative method, where the final score of the variable is in the form of numbers which are then processed using a statistical formula to produce a value.

3. RESULTS AND DISCUSSION

Based on the explanation of the learning model used in this study, one of the techniques used in data collection is the use of test techniques in the form of essay questions. After the test questions are distributed to the respondents collected as a whole, then each answer from the respondent is given a score. The score of each answer is given in accordance with the existing provisions, namely:

1. If the student does not give an answer, a score of 0 (zero) is given.
2. Can write down things that are known, asked and the formula used is given a score of 3
3. Can run the formula correctly is given a score of 6
4. Answering correctly is given a score of 10

The author gives a question of 10 items. Of the 10 items distributed, the highest score was 100 and the lowest number was 0. From the withdrawal of test questions distributed to respondents, it can be seen in the data table of student scores who were given material using teaching aids and material provided without using the props contained in the appendix.

4.3.1 Experiment Class Data Normality Test

Based on the results of calculations using the Chi squared formula, it is obtained = 7.47 for = 0.05, it is obtained = 7.81, and For = 0.01 is obtained = 11.30. This normality test has test criteria, accept Ho if . Thus, it can be seen that Ho is accepted, which means the sample is normally distributed.

4.3.2 Normality Test of Control Class Data

Based on the results of calculations using the Chi squared formula, it is obtained = = 4.11, for = 0.05 it is obtained = 7.81 and for = 0.01 is obtained = 11.30. This normality test has test criteria, accept Ho if . Thus, it can be seen that Ho is accepted, which means the sample is normally distributed.

4.3.3 Test of Homogeneity of Variance

Based on the results of calculations using the similarity test of two variances, it is obtained = I.28 for = 0.05, it is obtained = 1.69, and For = 0.01 is obtained = 2.11. In this homogeneity test has test criteria, accept Ho if . Thus, it can be seen that Ho is accepted, which means the sample is normally distributed.

4.3.4 Similarity Test of Two Means

The pairs of hypotheses are:

Ho 1: (There is no effect of using volume conservation teaching aids on learning outcomes of geometry for class VIII students in the even semester of SMP Negeri 1 Padang cermin.
Ha 1: (There is an effect of using volume conservation teaching aids on learning outcomes of geometry for class VIII students in the even semester of SMP Negeri 1 Padang cermin.

The test criteria are:

Accept Ho if t t t otherwise Ho is rejected.
$n_1 = 40$ $n_2 = 40$
= 66.38 = 58.55

S12 = 124.86 S22 = 78.25
Sg2 = 101.555
S = 10.08
The calculation of this data can be seen in the appendix of the data analysis of the similarity test of the two averages.

Furthermore, hypothesis testing is carried out using the following formula:
from the calculation obtained the following values:
= 3.48
By looking at the list of G, the value of t is obtained as follows:
= 1.99
= 2.65
It turns out that for 0.05 and 0.01, thit > tdaf so that the Ho hypothesis is rejected, meaning Ha is accepted.

"So there is an effect of using volume conservation teaching aids on learning outcomes of geometry for class VIII students in the even semester of SMP Negeri 1 Padang cermin.

4.3.5 Test the Difference of Two Means

The formula for the hypothesis:
Ho 2: 1 < 2
(Average learning achievement of geometric geometry of students who are taught using conservation of volume aids is lower than the average of learning outcomes that do not use conservation of volumes).

Ha 2: 1 > 2
(Average learning achievement of geometric geometry of students who are taught by using the conservation of volume aids is higher than the average learning outcomes of those who do not use conservation of volumes).

The statistical formula used is the same as the similarity test of the two averages from the calculation obtained thit = 3.48

The test criteria are:

Accept Ho if thit < t(n1+n2-2) and reject Ho if thit has other values:
For the significance level of 0.05 (0.05) and 0.01 (0.01) obtained:
= (0.95)(78)
= 1.67
= (0.99)(78)
= 2.38

It turns out that for thit > tdaf Ho is rejected, it means that Ha is accepted at a level of significance of 0.05 or 0.01, the price of thit is greater. Thus statistically it can be said that: "The average learning achievement of geometric geometry of students who are taught using the conservation of volume teaching aids is higher than the average learning outcomes of those who do not use the conservation of volume teaching aids". Thus, the use of conservation of volume teaching aids has an important effect or can improve the learning outcomes of geometric geometry.

The research that has been carried out by the authors obtained data analysis in the form of each student's score and the average value obtained. Based on the results of the study, out of 40 students in class VIII A as the experimental class, the highest score achieved by students was 85, while the lowest score obtained by students was 45. From the data, it can be seen that all respondents had an average score of 66, 38 Meanwhile, of the 40 students in class VIII B as the control class, the highest score achieved by students was 75 while the lowest score obtained by students was 40. From the data, it can be seen that all respondents had an average score of 58.55. From the results of hypothesis testing using the statistical formula t-test, the value of t = 3.94 is obtained. From the distribution table of t at a significant level of 5% it is known that t = t = 1.994 and t = 1.67 and at a significant level of 1% it is known that t = t = 2.65 and t = 2.38 this means t > t. So with this it can be concluded that there is an effect of using volume conservation teaching aids on the learning outcomes of geometric shapes for class VIII students in the even semester of SMP Negeri 1 Padangcermin and the average geometric learning achievement of students taught using conservation of volume props is higher than average. average learning outcomes that do not use the conservation of volume props. Thus, it can

be concluded that the use of volume conservation teaching aids has a positive effect or can improve student learning outcomes.

4. CONCLUSION

Based on the analysis of the data that the authors obtained from the analysis and discussion, it can be concluded: There is an effect of the use of conservation of volume props on the learning outcomes of geometric geometry in class VIII even semester of SMP Negeri 1 Padangcermin where the average student learning outcomes of geometric shapes using the tool The conservation of volume display is higher than the average result of learning geometric shapes for students who do not use the conservation of volume visual aid. Thus, learning that is accompanied by the use of conservation of volume props has a positive effect or can improve student geometry learning outcomes.

Suggestion

Based on the results of existing research and conclusions, in order to improve the quality of mathematics subjects, especially geometric geometry at the junior high school level, on this occasion the author conveys several suggestions:

To get better learning outcomes, teachers should use teaching aids more often to increase students' interest in learning. In addition, it is expected that teachers in the field of mathematics studies to improve student learning outcomes, teachers must be able to motivate students to feel happy in learning mathematics, in every activity. learning takes place. And to improve students' mathematics learning outcomes, it is necessary to provide teaching aids in each lesson related to these teaching aids.

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