The Influence of Inquiry Model by Scientific Aproach of Student Evaluation of Physics

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Abstract. The low student learning outcomes caused by the lack of student activity in the teaching and learning process is the background of this research. The problem in this study is whether there is an effect of the Inquiri learning model with a scientific approach on the physics learning outcomes of eighth grade students of SMP Swasta IT Madani. The population in this study were all students of class VIII totaling 120 people, with a total sample of 60 people consisting of 2 classes, with class VIII 1 being taught using the Inquiri model and class VIII 2 being taught using the conventional learning model. As a data collection tool, a test of students' physics learning outcomes was used in the form of 20 multiple-choice questions, which had been tested for validity and reliability. The results of the research carried out obtained the average and standard deviation for classes taught using the Inquiry model were X1 = 15.77 and S1 = 3.500 while for classes taught using the conventional model were X2 = 13.56 and S2 = 3.095. For the t-test using a significant level of a 0.05 and degrees of freedom 58 obtained tcount = 2.732 and a table with the same significant level of degrees of freedom seen from the distribution table obtained tiabel = 1.672..

Keywords: Inquiry, Scientific Aproacc, Evaluation, Physics.

1 Introduction

Education is one of the most important thing for this country is to improve the standard of living of its people so that they are able to compete globally. Indicators of whether a country is advanced or not are strongly influenced by the level of success and equity in education for its people. According to data from UNESCO (United Nations Educational, Scientific and Cultural Organization) referring to data collected obtained from the Education For All (EFA) Global Monitoring Report 2013, that the Education Development Index (EDI) places Indonesia in 64th position out of 127 countries.

Physics is one of the disciplines in science, which should be can prioritize the development of scientific attitudes (scientific attitude) such as curiosity (curiosity), the habit of looking for evidence before accepting a statement (respect for evidence), a flexible and open attitude with

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scientific ideas (flexibility), the habit of asking critically (critical reflection) and attitude sensitive to living things and the surrounding environment (sensitivity to living ngs and environment). In the physics learning model, there is a need for learning that uses a scientific approach (Scientific Approach). However, in the teaching and learning process of Physics students tend to be bored with abstract learning with explanations of formulas so that they do not understand the concept. For this reason, it is necessary to develop a learning model that is needed and in accordance with the learning of Physics which is a branch of the field of Science.

Based on the results of previous research conducted by Indri (2013) regarding "The Influence of Guided Inquiry Learning Models on Student Learning Outcomes on the concept of Vibration and Waves" states that learning using the inquiry method has a significant influence on student learning outcomes and this research deserves to be continued.

For this reason, I as a researcher are interested in conducting a research entitled "The effect of the inquiry learning model with a scientific approach (Scientific Aproach) on student physics learning outcomes".

2 Research methods

2.1 Research design

This research is categorized in associative research which aims to determine the relationship between two or more variables. In this study, a theory will be built that serves to explain, predict, or control a symptom (Sugiono, 2004:12).

In this study, there are two variables that connect the form of the relationship between variables, namely causal. This can be described as follows:

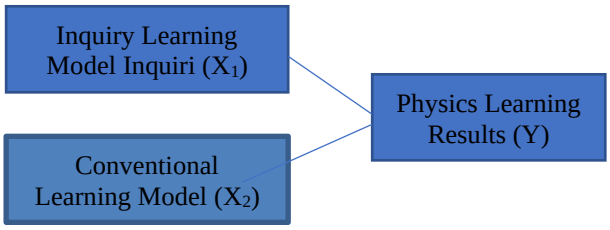

Figure 1. Causal/cause-effect relationship, X affects Y

Where:

(X1) = Inquiry learning model treatment

(X2) = Conventional learning model treatment

Y = Student physics learning outcomes

2.2 Populatin and sample

Population. The population in this study were all of 7th grade students in the second semester of SMP Swasta IT Madani for the 2021-2022 academic year, totaling 120 students consisting of 4 classes.

Sample. Determination of the sample in this study is determined by random sampling, which is taking randomly from the existing class. The random sampling system carried out by researchers is by drawing two lots. So that there are 30 students in class VIII-1 as the Inquiry learning model class with a scientific approach and class VIII-2 as many as 30 students as the conventional learning model class and Indicators

1.Variables There are 2 types of variables in this study, namely independent and dependent variables with the following information:

a. The independent variable (X1) is the inquiry learning model with a scientific approach
b. The independent variable (X2) is the Conventional Learning Model
c. The dependent variable (Y) is the result of learning physics on the subject of vibrations and waves

2. Indicators. Indicators are descriptions or conditions of research to clarify indicators. So in this study the indicators are:

a. The independent variable indicator (X1) is lesson plans using the inquiry learning model with a scientific approach.
b. The independent variable indicator (X2) is lesson plans using the conventional learning model.
c. The dependent variable (Y) is the test score of students' physics learning outcomes on the subject matter of Vibration and Waves

2.3 Research Instruments

To measure physics learning outcomes, tests are used. The test used is in the form of multiple choice or multiple choice consisting of 25 questions with 4 answer choices. With a score of 1 if the answer is correct and 0 if the answer is wrong, so that the maximum score obtained by students is 25

3 Result and Discussion

Research activities in the classroom are carried out using guided inquiry learning models and conventional learning models, with at the end of the activity a physics learning outcome test is given. using 4 indicators in the cognitive domain, namely remembering, knowing, understanding, and applying.

In this study, there are two variables that connect the form of the relationship between variables, namely causal. This can be described as follows

Table 1. Statistics of students' physics learning outcomes

	Experiment	Control
Sample Size	30	30
Highest Score	20	18
Lowest Score	10	8
Ideal Score	25	25
Average score	17,73	13.33
Deviation Standard	3,50	3,30

Table 1. shows the data on students' physics learning outcomes. Based on the sample studied, it was found that the physics learning outcomes of students in the experimental class showed an average score of 17.73 and in the control class of 13.33. For the standard deviation in the experimental class is 3.5 and in the control class is 3.30.

Table 2. Scores for Student

Interval	Experimental		Control		Category
	Freq.	%	Freq.	%	
8-9	0	0	3	10	Very low
10-11	2	6,67	6	20	Low
12-13	2	6,67	5	16,67	Fair
14-15	2	6,67	8	26, 67	
16-17	3	10	4	13 , 3	High
18-19	13	43.33	4	13, 3	
20-21	8	26.67	0	0	Very High

Table 2 shows that the physics learning outcomes of experimental class students for the very low category 0 and high category 8. control scores of students' physics learning outcomes 3 students in the moderate category and very high category 0.

The categorization and percentage of physics learning outcomes of students in the experimental class and control class can be seen in the following diagram:

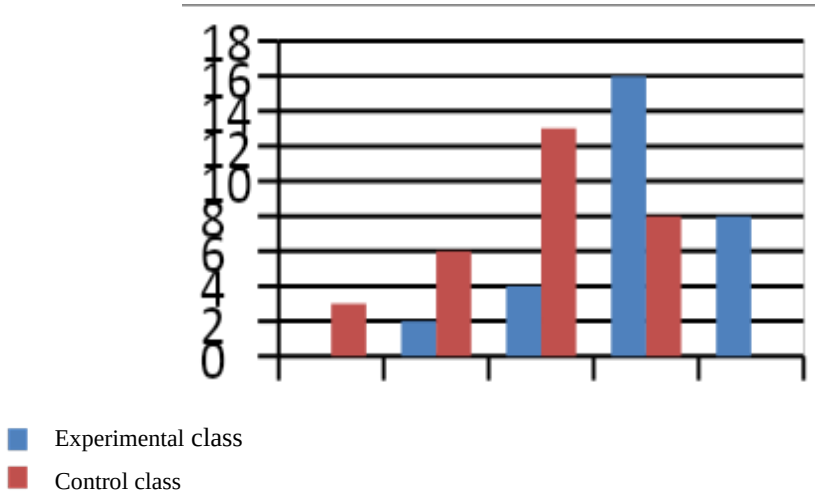

Figure 1. Diagram and Percentage of Students' Physics Learning Outcomes Experimental and control class

As for the research data that has been carried out, it can be seen that for the normality test, the value of X2 count < X2 . So it can be concluded that between the experimental class and the control class the scores of students ' physics learning outcomes are normally distributed. For Chi-Square analysis of physics learning outcomes scores, it can be seen in the following table:

Table 3. Normality Test Results of Physics Learning Outcomes Scores Experimental and Control Class

Variable	$2_{\text{hitung}}X$ α = ,Table and	Students$_{\text{Class}}$= in3. of,0.1238	Normal distribution or not
Experiment	7.815	0.139	Normal
Control	7.815	Scientific	Normal

Table 3 shows Approach (Scientific Aproach) Lcount = 0.1238 and Conventional Learning Model L = 0.139 with L for both 0.161 (Lo < L) , it is stated that the two student learning outcomes for the two models are normally distributed. The two variances are homogeneous with the provisions Fhinmg <Fbbel = 1,281 <1,923. The results of students' physics learning using the Inquiry learning model with the Scientific Aproach approach and the Conventional Learning model with the t test results showing the t value? tabdl that is 2,732>1,656 states H, accepted. . From the description of learning outcomes above, it can be seen that learning using the Inquiry learning model with a scientific approach is better and more efficient than conventional learning models and has a significant influence in improving students' physics learning outcomes, especially on the subject of vibrations and waves. However, the researcher realizes that there are limitations or shortcomings that allow students to be less serious in completing the tests given so that they do not describe the actual learning outcomes.

Based on the research results obtained from data analysis and hypothesis testing, the following conclusions can be drawn:

Physics learning outcomes of students who are taught using the Inquiry Learning Model with a Scientific Approach (Scientific Approach) have the highest score of 20. The physics learning outcomes of students who are taught using the Conventional Learning Model has a score of 18. The t-test criteria, namely thitumz>tabe, then the alternative hypothesis (Ha) is accepted. From the results of the statistical calculation of the t-test, it turns out that thiaum> tube or 2.732> 1.656 then the alternative hypothesis (ha) is accepted. So it can be concluded that there is a significant effect between the Inquiry learning model and the Scientific Aproach approach on student physics learning outcomes on the subject matter of Vibration and Waves in Class VIII SMP Swasta IT Madani.

4 Conclusion

Based on the research results obtained from the results of data analysis and hypothesis testing, it was found that the learning outcomes of students taught by the inquiry learning model with a scientific approach were better than the learning outcomes of students taught by conventional learning. These results indicate that there is an effect of the Inquiry model with a scientific approach on student learning outcomes. Student learning outcomes in the experimental group were above average and better than student learning outcomes in the conventional group. These results indicate that there is an effect of the scientific approach on student learning outcomes and there is an interaction effect between the inquiry learning model and the scientific approach in influencing student learning outcomes. These results indicate an interaction that the inquiry learning model with a scientific approach has a better effect than conventional learning. This means that the inquiry learning model with a scientific approach affects student learning outcomes while studying with conventional learning does not affect significantly affect learning outcomes.

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