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THE EFFECT OF INQUIRY TRAINING MODEL ASSISTED BY VIDEO TO LEARNING OUTCOMES ON MEASUREMENT TOPIC

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Abstract *The study aims to determine students learning outcomes during learning by using inquiry training learning models. This type of research is a quasi-experiment. The population in this study were all student of class X semester I consisting four class MIA. The sample of this study was taken two classes, namely class X MIA-1 as an experimental class total 35 students and class X MIA-2 as a control class total 35 students who were determined using class random sampling. The instrument used to determine student learning outcomes in the form of multiple choices obtained the number of valid questions as many as 15 items. To test the hypothesis used a different test (t-test). The research data shows the average score of experiment class pretest 33.7 with standard deviation 13.9, posttest 75.6 with standard deviation 12.4, while the average score of the pretest control class is 35.2 with standard deviation 13.7, posttest 61.5 with standard deviation 12.3. Both classes are normally distributed and the variance of both classes is homogeneous. The results of testing the hypothesis using the t-test, there is an effect of the inquiry training model on student learning outcomes in the subject matter of measurement.*

Keywords: *Inquiry Training, Learning Outcomes, Measurement.*

Introduction

Education is very important in human life. Through education, humans will grow and develop as a whole person. Education is expected to play an important role in the progress of a country and nation. If the higher the level of education of the people in a country, the higher the level of prosperity in the country. Besides that education can also be interpreted as a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society. Therefore, various efforts have been made to improve the quality of education. One of them is the development of research in the field of education, especially in the teaching and learning process (Wahyuni et al.,2011)

The low absorption of students can not be separated from the problems encountered in the learning process. One example is when students experience difficulties in learning. Learning difficulties are one of the symptoms that are characterized by various behaviors that are within themselves and outside of students. Characteristics of students when experiencing learning difficulties include: showing low learning outcomes; the results achieved are not balanced with the efforts that have been made; slow in doing learning tasks, and not doing homework (Lubis, 2017).

Physics is one of the abstract subjects of science. Therefore students must begin to develop the imagination to understand fundamental concepts in physics to improve maximum learning outcomes. The abstract concept of physics that must be absorbed by students in a relatively limited time makes physics a difficult subject for students so that many students are not maximized in the learning process. This is related to learning

activities that are often carried out by teachers in the classroom to only discuss physics questions. While students prefer physics learning with practical methods and demonstrations. The expected learning model is a model that helps students develop the intellectual skills needed to ask questions and find answers (Arends, 2013).

The process of learning physics is still focused on the teacher as information who plays a dominant role in each learning process. In the learning process students need to be encouraged not only to see and hear but also to do something to truly understand the concept and be able to apply it in everyday life. The teacher is the front row to print quality human resources. The teacher must be able to create the best teaching and learning atmosphere in the school. Teachers should have a variety of intellectual skills that are adequate, intellectual skills include mastery of conceptual skills from the material to be delivered and always prepare themselves to answer every question from students.

Learning to teach physics is an interaction or reciprocal relationship between teachers and students in the learning process. One of the goals of physics learning is the realization of the efficiency and effectiveness of learning activities carried out by students and educators. One way to function in the process of achieving learning goals in schools is to use a learning model. The learning model is a way of educators in compiling learning frameworks to achieve the learning objectives to be achieved. Accuracy in choosing a learning model can help students to generate interest and increase learning outcomes (Khadijah, 2013).

Student learning outcomes can be said to be successful if students can understand concepts in physics. For this reason, it is necessary to experiment as an introduction to the teaching and learning process and the use of instructional media in the teaching and learning process. Learning media is a tool for teaching and learning. Everything that can be used to stimulate the thought, feeling, attention and abilities (skills) of students so that it can encourage the learning process. The use of learning media in the teaching and learning process can generate new desires and interests, generate motivation and stimulation of learning activities, and even help students improve their understanding concepts.

One of the teacher's most important abilities is the ability to develop learning models creatively and innovatively. By using an interesting learning model following the learning material can improve learning outcomes students can also motivate students. The learning experience of students can be realized through the use of varied learning models and student-centered.

Based on the results of the preliminary study using questionnaires and interviews the researchers concluded that the learning process was not student-centered which resulted in students not playing an active role in gaining knowledge. The dominance of teachers in this learning causes students to wait for the offerings from the teacher rather than finding themselves. To address the problem above, there needs to be an effort made by the teacher to use a student-centered model in the learning process that is following the material presented.

Based on the problems that have been raised, the solution can be sought, namely by trying actions that can develop conceptual knowledge and scientific attitudes of students. One learning model that can be used is the Inquiry Training learning model. The Inquiry Training learning model is designed to bring students directly into the scientific process through exercises that can condense the scientific process into a short time. The purpose of the Inquiry Training learning model is to help students develop intellectual discipline and skills needed to improve questions and search for answers that are hidden from their curiosity (Joyce et al., 2011).

The improvement that will be made is to create an effective classroom atmosphere by conducting monitoring in each group while the discussion process is underway and providing and ensuring tools and materials for complete experiments as support in teaching and learning activities and optimizing the time allocation step by step so that the learning plan runs efficiently.

Method of Research

This research is a quasi-experiment study. The population of this study was all students of class X MIA consisting of 4 classes. The research sample was carried out using two-class random sampling techniques. Where the first class is used as an experimental class (class X MIA-1) using the inquiry training learning model and the second class is used as a control class (class X MIA-2) with conventional learning. The number of students in each class is 35 students.

The data obtained are tabulated and then averaged. Before analyzing the data, the values of each sample group are first determined and then the data is processed using the following steps: calculating the average value and standard deviation, normality test using Lilliefors test, homogeneity test using F test, average similarity testing pretest use a two-party t-test and hypothesis testing using one-party t-test on posttest data.

Result and Discussion

Before the treatment in the study, a preliminary test is given to determine the student's initial ability in the two sample groups. Based on the data obtained the average value of the experimental class pretest amounted to 33.7 with a standard deviation of 13.9 while the average value of the pretest in the control class was 35.2 with a standard deviation 13.7. The researcher gave a different treatment wherein the experimental class using the inquiry training learning model and the control class using conventional learning. The average posttest score of the experimental class was 75.6 with a standard deviation of 12.4 while the average value of the control class was 61.5 with a standard deviation of 12.3. This means that student learning outcomes in the experimental class increased by 41.9 and in the control class by 26.3.

The results of the second class pretest can be seen in the figure.

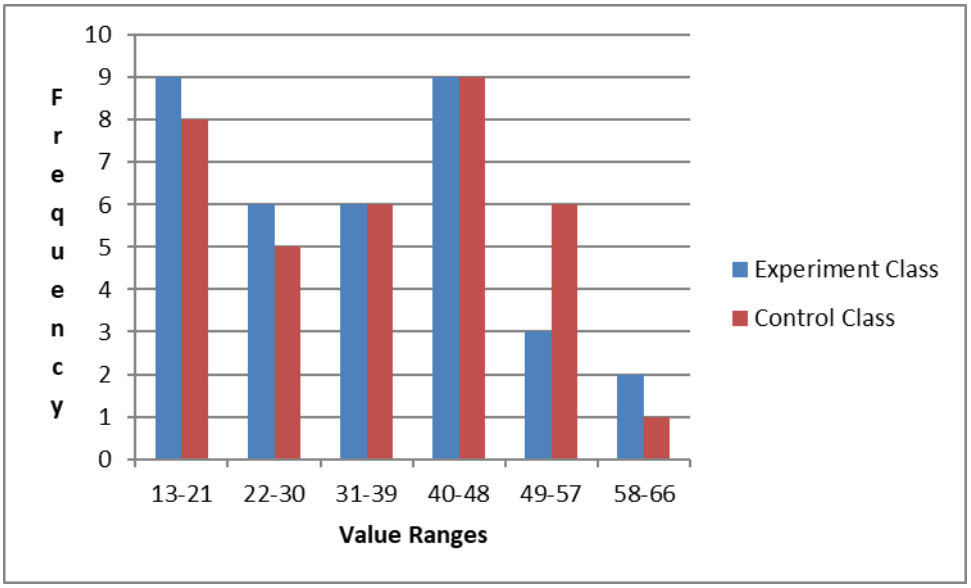

Figure 1. Data of Pretest Experiment and Control Class

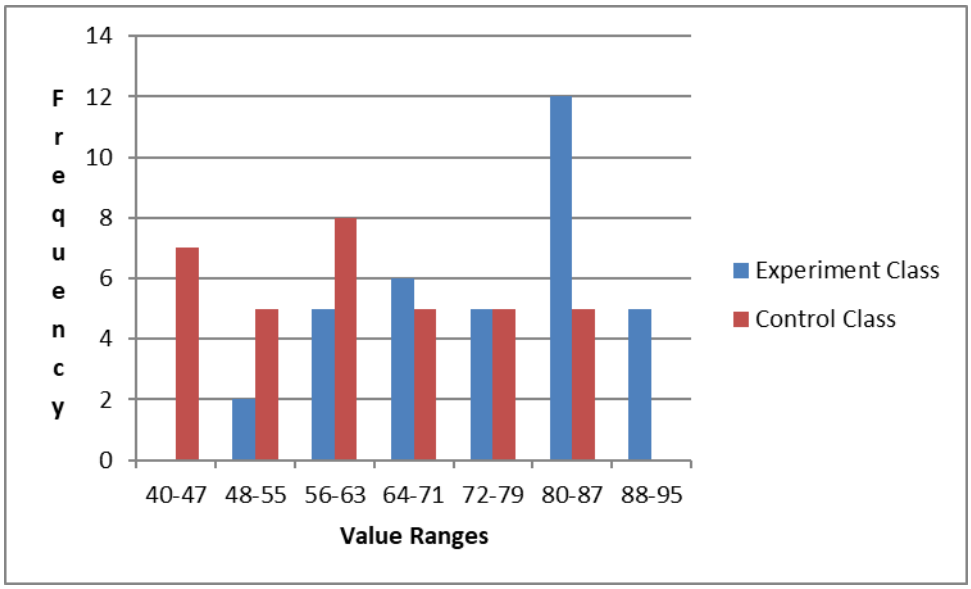

Figure 2. Data of Posttest Experiment and Control Class

Normality test with Lilliefors test with $L_{count} < L_{table}$ criteria with $\alpha = 0.05$ can be interpreted as normally distributed data. Based on the results of the normality test with the Lilliefors test the pretest data shows that the experimental class $L_{count} < L_{table}$ or $0.1201 < 0.1497$ and the control class $L_{count} < L_{table}$ or $0.1120 < 0.1497$, it can be interpreted that the results of the pretest data are normally distributed. Homogeneity test using F test for pretest data obtained that $F_{count} < F_{table}$ is $1.032 < 1.776$ with $\alpha = 0.10$, it means that the pretest data is homogeneous. After normal homogeneous data, the average similarity test can be done using a two-party t-test. Based on the two-party t-test it was found that the initial abilities of the two classes were the same. The researcher gives a different treatment wherein the experimental class learning is given by using the inquiry training learning model while the control class is given conventional learning. The inquiry training learning model applied to the experimental class showed that the average value of the experimental class posttest was 75.6 with a standard deviation of 12.4. Whereas in the control class applied conventional learning is 61.5 with a standard deviation of 12.3

Hypothesis testing for posttest data is tested by a one-party t-test. The posttest score of the experimental class was 75.6 and the control class was 61.5. Hypothesis testing results $t_{count} > t_{table}$. Price of $4.763 > 1.668$, means that learning outcomes using inquiry training learning models is better than conventional learning models on the subject matter of measurement or there is a significant effect of the inquiry training learning model on student learning outcomes on the subject matter of measurement.

The inquiry training model can affect student learning outcomes in learning where this model provides an opportunity for each student to be actively involved in the teaching and learning process and aims to practice the students abilities in researching, explaining phenomena, and solving scientific problems and building their knowledge through exercises conducted in learning, this is following the results of research Vaishanav (2016).

The results of the study which says that applying the inquiry training learning model can improve student learning outcomes in line with research Desi and Makmur (2014) which states that there is a significant influence of the inquiry training

learning model on the learning outcomes of senior high school. Research by Hutabarat and Juliani (2017) states that inquiry training learning models can improve students learning outcomes compared to conventional learning. The results of Sani and Handayani (2018) show the average value of completeness of learning outcomes in the experimental class using inquiry training learning models is better than the control class with conventional learning models, and an increase in student's activity at each meeting. The results of Purwanto and Arini (2015) show the influence of inquiry training learning models with experimental methods on students learning outcomes, increased student learning outcomes are higher in experimental classes that use inquiry training learning models than control classes with conventional learning. Research Ginting and Hasibuan (2017) states that students learning outcomes in the physics learning process using inquiry training learning models have increased.

The application of the inquiry training learning model can improve student learning outcomes, but there are still obstacles encountered during the learning process. Constraints faced are the lack of mastery of class and time management which is not appropriate in the learning process and some students are still confused and not serious in learning to use the inquiry training learning model because this model has never been applied to them in the school.

The inquiry training learning model can also increase student learning activities. This is support by Hamalik (2006) stating that student activity has increased during learning taking place using the inquiry training model. During the research took place at the first meeting until the second meeting was found that in the first stage, namely formulating the problem, the researcher gave the problem, the researcher gave the problem to the students so that students could respond to the questions given by the researcher, at the first meeting the students still looked confused and were less active in giving responses, there were still many quits, but at the second meeting, students have begun to give responses, so begin to argue or give questions with stimulus learning

Nevertheless, these constraints can be minimized to get better learning outcomes with the same learning model. Collaboration between researchers and subject teachers at the school to join so that during the research the teacher can see firsthand the atmosphere and teaching and learning activities. Besides this, it is also useful for researchers so that researchers can exchange ideas or share information with subject teachers, furthermore, in developing the results of the practicum that will be presented, at the end of the meeting the researcher urged each student to bring literature related to the material to be discussed at the next meeting to add references to student learning.

Conclusion and Suggestion

Student learning outcomes using the inquiry training model on the subject matter of measurement SMA Negeri 12 Medan has increased, with an average pretest of 33.7 and a posttest of 75.6. There is a significant effect of the inquiry training learning model on student learning outcomes on the subject matter of measurement. The next researcher is expected to be better able to focus students when the teaching and learning process takes place so that the learning atmosphere becomes more conducive and must be more clever in responding to students who are difficult to arrange in group formation so that the groups formed are as expected.

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