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THE EFFECT OF INQUIRY TRAINING LEARNING MODEL ON STUDENT CRITICAL THINKING SKILLS IN SMA NEGERI 1 STABAT

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Abstract

This study was conducted to determine the effect of the Inquiry Training Model on students' critical thinking skills. This research design uses two group pretest-posttest technique. All of Student Class X in SMA Negeri 1 Stabat was the population of this research. Then two classes were selected as samples of the study, one class as an experimental class is taught using the Inquiry Training learning model while the other class as a control is taught using a conventional learning model. The research data collection instrument was in the form of 5 validated essay tests which would later be analyzed using the t test. The results of the study indicate that the inquiry training learning model has a significant impact on increasing students' critical thinking skills compared to students learning with conventional models on momentum and impulse material.

Keywords: Inquiry Training, Critical Thinking Skill, Momentum and Impulse

Kurniawati (2014) states that in addition to mastery of concepts, the purpose of learning Physics is to develop thinking skills. Critical thinking allows students to analyze their thoughts in making choices and draw conclusions intelligently. Critical thinking skills are part of higher order thinking skills. The ability to think critically is a way of reflective thinking that is focused on decision making, problem solving and communicating or conveying his thoughts critically, educators are expected to be able to optimize their students' abilities especially in terms of critical thinking (Maryono, 2017). Thus, this mental process will bring up students' critical thinking skills to be able to master physics in depth.

Based on interviews conducted by researchers with Mr. Edi Irawan as a physics teacher at SMAN 1 Stabat, information was obtained that learning physics in the classroom was more dominant by providing material and theoretical physics. The teacher emphasizes more that physics is intended to understand formulas and solve problems. The learning method given by the teacher is less varied because it is dominated by conventional learning, the lecture method. During the learning process students rarely conduct experiments due to unsupported physics laboratory facilities. This results in students being less active, so the lessons become boring. As a result, students are less able to understand, apply and analyze concepts of physics well, so students tend to focus their lessons on the teacher and this triggers the low activity and student learning outcomes in the subject of physics. The low physics learning outcomes can also be seen from the average grade X

physics exam in the 2018/2019 academic year reaching an average of 65. This value is not as expected because the Minimum completeness Criteria value (KKM) is 75. Conditions like this should be immediate improved because learning physics is not just knowing mathematics, but further students are expected to be able to understand the concepts contained in it, understand problems and solve them mathematically.

Izaak (2016) states that in learning science, students not only learn a number of theories and principles, but also must analyze how to obtain facts and principles. Learning has the nature of planning as an effort to teach students. That is why in learning, students not only interact with the teacher as one source of learning, but may interact with the whole learning source used to achieve the desired learning goals (Istarani, 2017). Conditions like this must be corrected immediately, one of which is a teacher must be able to choose the learning model that is used appropriately in conveying every concept being taught.

The learning process not only requires mastery of the material / content of learning but also mastery of skills, both skills in the selection of models, strategies, approaches, methods, selection of media used, or skills in the implementation of learning itself. Teaching and learning activities of a scientific discipline requires the teacher to have a learning model that can make students learn actively, efficiently, and effectively, as well as the achievement of learning objectives (Sani, 2014).

Applying the right learning model can make physics more enjoyable and able to lure students to be more active during teaching and learning activities taking place. The benefits of an appropriate learning model can increase abilities, interests, make it easier for students to understand physics materials and ultimately can improve student physics learning activities and outcomes. The teacher should encourage students to think actively by creating learning conditions that require students to be active in their opinions, so as to provide deeper learning outcomes. One learning model that involves students' active role is the Inquiry Training learning model where students will get a better understanding of Science, especially Physics and will be more interested if students are actively involved in learning activities.

Joyce (2009) states that inquiry training is a learning model developed by Richard Suchman that aims to educate students about a process in researching and explaining unusual phenomena. In line with Joyce's opinion, Anam (2017) states that the inquiry model aims to help students understand, then identify carefully and thoroughly, then end by providing answers or solutions to the phenomena under investigation. In other words, students will no longer be within the scope of learning but will be encouraged to be able to do science. Inquiry Based learning is a popular way of

learning science to make students active in learning, where students play an active role in the learning or research process (Fernandez, 2017). According to Anam (2017) the main emphasis on inquiry-based learning is no longer centered on the teacher (teacher centered instruction), but on the development of students' critical reasoning. According to Joyce (2009) the inquiry training model is designed to train students in scientific research so that it is expected to foster and develop curiosity in students, develop intellectual abilities in inductive thinking, research skills, ability to reason and develop theories. So, the application of inquiry training models in the learning process really involves students to actively think and find the understanding they want to know, while the teacher only acts as a facilitator whose task is to provide conditions for learning, manage the learning process, organize teaching and learning activities and assist in evaluating student progress.

Research using the inquiry training learning model (Inquiry Training) has been conducted by researchers before. Research related to the use of inquiry training learning models (Inquiry Training) is a study conducted by Kurniawati (2014) based on the results of the study note that there are differences between students' critical thinking skills taught with inquiry training learning models (Inquiry Training) with students who learn by conventional. Research related to the use of inquiry training learning models (Inquiry Training) was also conducted by Damanik (2014) based on the results of the study revealed that student learning outcomes have increased. This shows that in learning physics, students not only memorize formulas, listen to lectures, and read textbooks, but students are required to play an active role directly in teaching and learning activities.

Duran (2016) argues that based on his research the physics learning inquiry training model is designed to train students so that it is expected to increase student creativity, academic achievement, critical thinking and problem solving skills. Thus, the inquiry exercise model can be defined as a learning model that makes students active throughout learning, improves their scientific processes using skills, and enhances their critical thinking skills through discussion and experimental activities. The increase in student activeness is due to students starting to adjust to the learning model applied, namely the inquiry training model, so that the learning process becomes better and students have actively participated in the learning process. The research aims to find out whether there is an effect of physics learning using conventional learning and Inquiry Training learning models on students 'critical thinking skills and to find out whether physics learning using Inquiry Training learning models can improve students' critical thinking skills on the subject matter of momentum and impulses.

METHODS

The study was conducted in class X SMAN 1 Stabat Academic Years 2018/2019. The study population was all students of class X SMAN 1 Stabat, totaling 186 students consisting of 6 classes. The research sample was taken by cluster random sampling technique. Class X MIA 5 totaling 36 students as a control class and Class X MIA 6 totaling 36 students as an experimental class. Student learning outcomes are obtained by giving tests to both classes before and after being treated. This type of quasi experiment research (Eviyona & Sani, 2018) with pre-test-posttest design as shown in table 1.

Table 1. *Pretest-Posttest Design*

Class	Pretest	Treatment	Posttest
Experiment	Y_1	X_1	Y_2
Control	Y_1	X_2	Y_2

Information :

Y_1 = Pretest

Y_2 = Posttest

X1 =Treatment by applying the *Inquiry Training* model

X2 =Treatment with conventional learning

Data collection tool in this study is an essay learning achievement test which consists of 5 questions. Hypothesis testing is done using the t test. Before data analysis is performed, the scores of each sample group are first determined and then the data is processed using the following steps:

a) Test for normality

b) Homogeneity test.

c) Hypothesis testing

- Ho: Student learning outcomes in the experimental class are the same as student learning outcomes in the control class
- Ha: Student learning outcomes in the experimental class are greater than student learning outcomes in the control class.

d) Draw conclusions

RESULT AND DISCUSSION

Research Result

Based on the results of the study, before being given the treatment of learning to the two sample groups, obtained an average of pretest students in control class 24.02 and experimental class 23.19. After being given different learning treatments, the control class was given conventional learning and the experimental class was given learning by the Inquiry Training learning model, then the average posttest for the control class was 71.38 and the experimental class was 76.66.

The normality test data of the pretest and posttest control class and experiment using the Lilliefors test. Homogeneity test of pretest and posttest of control class and experiment using two variance similarity tests. Based on the results of this test the data of the two sample groups are stated to be normally distributed and homogeneous so that it is feasible to test the hypothesis.

Table 2. Pretest t Test Result

Class	Average	t_{count}	t_{table}	Information
Experiment	23,19	-0,38	1,99	Same initial ability
Control	24,02			

In Table 2 above, the calculation of the average value of the pretest of the experimental class and the control class, obtained the value of $t_{count} < t_{table}$, then H_o is accepted and H_a ¬ rejected. So it can be concluded that the initial ability (critical thinking ability) of students in the experimental class is the same as the control class before being given treatment.

Table 3. Posttest t Test Result

Class	Average	t_{count}	t_{table}	Information
Experiment	76,6	2,48	1,66	The critical thinking ability of the experimental class is better than the control classl
Control	71,3			

In Table 3 above, the calculation of the average value of the experimental class posttest and the control class, obtained the value of $t_{count} > t_{table}$, then H_o is rejected and H_a ¬ accepted. So, it is concluded that there are differences in student learning outcomes in the experimental class compared to the control class due to the influence of the inquiry training learning model higher than conventional learning on the momentum and impulse material in class X in SMA Negeri 1 Stabat T.P 2018/2019.

Discussion of Research Results

The t test was supported by the rubric of assessing student learning activities using the Inquiry Training learning model. Based on the assessment criteria of observation of student activity shows the learning process using the Inquiry Training model of student activity classified as active categories. This is in line with research conducted by Siswanto et.al. (2016) which shows that the classroom atmosphere in learning using multirepresentation-based group investigation learning models in general has very good criteria. Learning can take place in accordance with the objectives of learning, student-centered learning.

Duran (2016) argues that based on his research physics learning inquiry training model is designed to train students so that it is expected to increase student creativity, academic achievement, critical thinking and problem solving skills. Therefore, the inquiry training model can be used as a learning model that makes students active throughout learning, improves their scientific processes using skills, and enhances their critical thinking skills through discussion and experimental activities. The increase in student activeness is due to students starting to adjust their learning activities to the learning model that is applied, namely the inquiry training model, so that the learning process becomes better and students actively participate in the learning process.

Learning with the application of the inquiry training model has a positive association with initiative, creative and active. This is because students feel more enthusiastic about learning and understanding the subject matter well. Based on the results of tests that have been achieved by students and the results of observations of student activities that have been carried out, the learning process has experienced an increase in learning outcomes (critical thinking skills). The increase in student activity is due to several factors, namely: 1. Students begin to familiarize themselves with the inquiry training learning model, so students can follow the course of the teaching-learning process. 2. Growing enthusiasm, creative and responsibility of students to follow the lesson. The application of inquiry training model runs well because there is exposure to learning objectives, students and groups can work together, exchange ideas in solving problems, present the results of discussions and lead in making conclusions. Based on data analysis, it can be said that learning with inquiry training learning model has an influence on students' critical thinking abilities.

CONCLUSION

Based on the results of research and discussion, it can be concluded that there are significant differences in the application of inquiry training learning models to improve students' critical

thinking skills on the momentum and impulses material, compared to conventional learning at SMAN 1 Stabat. This research shows that learning with inquiry training learning model has an influence on students' critical thinking skills.

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