IMPROVEMENT OF LEARNING ACTIVITIES AND ACHIEVEMENT OF STUDENT LEARNING OUTCOMES IN LEARNING PHYSICS USING INQUIRY TRAINING LEARNING MODEL

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ABSTRACT

Teaching and learning activities not only require students to obtain good cognitive learning outcomes but also require students to be able to play an active role in learning so that students have good attitudes and skills as well. Student activeness can be seen from the activities or activities during learning. Therefore, this study aims to determine the increase in student learning activities and student learning outcomes using the Inquiry Training learning model. This type of research is a quasi experiment. The instrument used was the observation sheet in accordance with the learning model applied and the learning outcome test in the form of an essay totaling 10 items. The results showed that an increase in student learning activities would affect the achievement of student learning outcomes.

Keywords: learning activity; learning outcomes; inquiry training model

INTRODUCTION

Physics education is the study of natural phenomena or phenomena and tries to uncover all the secrets and laws of the universe. Physics has an important meaning in technology development. Physics concepts are used by scientists to develop technology so that it benefits human welfare. For example, an airplane is a means of transportation used to cross several cities, provinces, islands and even countries. The importance of physics for human life encourages teachers to always try to improve student learning outcomes. In the context of physics, learning outcomes are intended not only on cognitive aspects but also aspects of attitudes and skills. The low learning outcomes of physics are caused by many things, including: a dense curriculum, material in textbooks that are felt too difficult to follow, ineffective learning media, inadequate laboratories, inaccurate use of instructional media chosen by the teacher, less optimal and Lack of alignment of students themselves, students are not much involved in the learning process and activity in the classroom is mostly dominated by teachers (Supardi, Leonard, Suhendi, & Rismurdiyanti, 2010). The results of a preliminary study conducted in class XI MIPA at SMA Negeri 12 Medan to 79 students, 25% of students stated that they did not like physics lessons on the grounds that physics lessons were difficult, full of calculations and so many formulas, 63% of students stated that learning physics normal, the meaning of students studying physics is limited to being a student of science. The questionnaire data also showed that 58% stated that the teaching and learning activities that had been taking place were listening, taking

notes, and doing questions. The tendency of this method to have an effect on student learning activities.

This method does not provide access to students to continue their activities independently. It appears that students rarely express their opinions in learning, as a result the teaching and learning process is only fixated on the teacher. The results of observations that have been made, students do not pay attention to the material presented by the teacher, as much as 59% of students do not understand the material that has been delivered by the teacher, because students lack understanding of the material often students have difficulty doing the assignments that have been given. The inability to do assignments causes students to think physics is a difficult and boring subject. This is what causes the low achievement of student learning outcomes. The low learning outcomes achieved by students are due to the less varied learning models used by teachers (Siahaan & Sahyar., 2016). The learning process applied by the teacher tends to be less meaningful and monotonous because students only listen to the teacher's explanation and are not actively involved in exploring knowledge. Teacher-centered learning makes students tend to be passive, so that teachers have difficulty conditioning learning which requires students to be more active, because students are only able to master the limited material presented by the teacher, discussion activities carried out by students during learning have not been fully implemented optimally. Students often lack the ability to visualize and interpret abstract physical concepts in meaningful ways (Balta, 2015). Students need to be involved to be more active during the learning process, so that in overcoming problems, students must be trained to do experiments. The experiment was carried out in addition to aiming to train students in finding and understanding concepts, but also aimed at forming teamwork so as to increase student motivation in carrying out active learning activities.

Responding to the above problems, it is necessary to make efforts to improve student learning outcomes and student understanding of physics concepts, so that the planned learning objectives can be achieved. What can be done is to implement an effective learning model, which can attract students 'attention, generate student motivation, involve students actively and pay attention to students' abilities. There are many effective learning models used to change the physics learning process from teacher centered to student centered, one of which is the Inquiry Training learning model. The inquiry training learning model was developed by Suchman (Joyce, Weil, & Calhoun, 2009) who believes that children are individuals who are full of curiosity about everything. This model is designed to bring students directly into the scientific process through exercises that can condense the scientific process into a short period of time. The effect is that the inquiry training learning model will increase understanding of science, productivity in creative thinking, skills in obtaining and analyzing information. The inquiry training model encourages teachers to make connections between the material being taught and students' real-world situations and also encourages students to make connections between their knowledge and its application in their daily lives. Students also find their own learning experiences so that students can construct their own understanding which has an impact on increasing student activity. Increasing student activity in learning can improve student learning outcomes. The inquiry training learning model is

also one of a series of learning activities starting with the presentation of problems to students and maximally involving all students' abilities to search and investigate systematically, critically, logically, and analytically. Students can formulate their own findings with confidence and will increase their understanding of science. Student learning outcomes using the inquiry training learning model are supported by several previous studies such as those conducted by Fitriani & Siregar, showing that the inquiry training learning model affects student learning outcomes and can increase student activity in the teaching and learning process. In addition, research conducted by Manurung & Sirait (2016) shows that the application of the inquiry training learning model is able to increase student learning activities in the high category and this model also affects student learning outcomes.

METHODS

The research was conducted at SMA Negeri 12 Medan, Jl. Cempaka Raya No. 75, Medan-Helvetia. The study population was all class XI MIPA students of SMA Negeri 12 Medan in the first semester of T.P 2018/2019, consisting of 6 classes. The research sample was 33 students of class X MIPA-2. Pre-test in class before learning begins. The instrument used in this study was a learning outcome test in the form of an essay of 10 items. The pre-test data on student learning outcomes serves to determine the students' initial ability before the inquiry training learning model is carried out which is then used to compare it with the student's final score or the student's post-test score. Then do the learning using the Inquiry Training learning model. Inquiry Training learning model has five phases that can improve student learning activities and student learning outcomes. The phases include confronting the problem, data collection-verification, data collection-experimentation, processing - formulating explanations, and analyzing the inquiry process. During the learning process, the researcher observes student activities according to the observation sheet that has been determined in accordance with the inqury training learning model. Furthermore, the researcher gave a post test. Then student learning activities and student learning outcomes were analyzed from the students' post test and pre-test data.

RESULT & DISCUSSION

Specifically, the average acquisition of student learning activities in accordance with the phases of the inquiry training learning model can be seen in table 1.

Table 2. Learning activities according to the inquiry training phase

Aspect/Section	I	II	III
confronting the problem	52.59	73.08	82.04
data collection-verification	56.67	72.04	78.05
data collection-experimentation	62.59	83.70	95.93
processing - formulating explanations	52.59	72.59	87.78
analyzing the inquiry process	57.04	68.89	87.96

Acquisition of student learning activities shows the average acquisition of learning activities at each meeting for each indicator. At the first meeting, in general

students still looked confused with the application of the Inquiry Training learning model, because they were not used to it and were not familiar with the learning model, there were still many students who were afraid to ask questions and were reluctant to be actively involved in learning. At the second meeting, students had begun to dare to ask questions, had begun to be skilled at formulating hypotheses from a problem and several groups had started to be good at analyzing experimental data. At the third meeting the students were very active and independent in the learning process. The following are the criteria for assessing learning activities for the observation sheet instrument: The indicator of student learning activity scores increases in every meeting. This is in line with research conducted by Anggi and Sinuraya (2016) which states that the inquiry training learning model, apart from affecting learning outcomes, can also increase student activity during learning. Learning activities are student activities that support learning success which is an interaction between students and teachers to achieve learning learning objectives, not memorizing a number of facts or information. Activities are not intended to be limited to physical activities, but also include activities that are psychic such as mental activities (Sanjaya, 2011). After the learning activities were carried out, then a post-test was given with the same number of questions. And obtained an average post-test score of 82.45 with a standard deviation of 4.85. So it can be concluded that there is a significant effect on student learning outcomes if given treatment using the Inquiry Training learning model in physics learning. This study is also supported by the results of research by Arisa & Simamora (2014), which states that there is a significant effect due to the inquiry training learning model on student learning outcomes. In addition, there is an increase in student learning activities at each step of the inquiry training learning model.

The inquiry training learning model was applied in this study and the researcher found several advantages and disadvantages. The advantages include: causing active students to study in groups by involving their minds in finding and conducting experiments; give enthusiasm for initiative; creative; and active because of a growing sense of inquiry and a desire to succeed; generate self-confidence for students; increase motivation to learn; and provide meaningful learning experiences. This inner satisfaction encourages wanting to make more discoveries, especially in relation to it in everyday life, so that interest in learning increases. If students become active participation in learning, it means that the teacher has good knowledge (Slameto, 2010). The constraints faced by the researchers were the limitations of practicum equipment that made the group division a little so it was more difficult to control less active students. But overall students are active in the activities carried out. The implementation of the physics learning inquiry training model can run well, seen from the post-test average score which is better than the pre-test average value. As well as student learning activities which also increase and are in the active category. However, there is still much that needs to be addressed, both in terms of planning, equipment, and in terms of implementation.

CONCLUSION

Based on the results of the research and data analysis obtained, it can be concluded that the inquiry training learning model can improve student learning activities in the active category. Student learning outcomes in physics learning

using the inquiry training learning model gave an average post-test score of 82.45, better than the pre-test student average score of 40.30.

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