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THE INFLUENCE OF GUIDED INQUIRY LEARNING MODELS TOWARDS STUDENT LEARNING OUTCOMES IN COST OF MATERIAL DYNAMIC FLUID IN CLASS XI SEMESTER I SENIOR HIGH SCHOOL 2 PERCUT SEI TUAN

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Abstract

This research aims to determine the effect of guided inquiry learning model to student's learning outcomes in the subject matter of momentum, impulse and collision in class X SMA N 1 Percut Sei Tuan. This research is a quasi experiment with group pre test-post test design. The population in the study was all students of class X MIA SMA N 2 Percut Sei Tuan. The research sample consisted of two classes with technique cluster random sampling that is, a class X MIA-3 as class experiment and X MIA-4 as the control class, each one amount to 30 students. The instrument used is achievement test in the form of 8 essay. Based on data analysis obtain that there is effect of guided inquiry learning model to student learning outcomes in the subject matter of momentum, impulse and collision in class X SMA N 2 Percut Sei Tuan.

Keywords: *guided inquiry, dynamic fluid, learning outcomes*

Introduction

Learning can be interpreted as an effort of the teacher as a facilitator to help students carry out learning activities. The objectives in learning can be achieved if the teacher is able to realize effective and efficient learning activities for students (Hosnah, et al., 2017).

One of the learning processes that can be given to students is to provide opportunities for students to share ideas in work groups, foster enthusiasm among students and phallize students to prove their curiosity and keep students comfortable and happy in the learning process.

During this time the physics learning process tends to be teacher-centered with a learning model that tends to be monotonous and does not involve students in finding a concept in the learning process. Such learning causes ignorance in students about the process and attitudes of the obtained physical concepts. Such learning causes ignorance in students about the process and attitudes of the obtained physical concepts. Physics learning is not just conveying concepts, facts, or principles by merely giving material by lecturing. Physics learning will be more impressed and felt real if students are directly involved in the learning process for example in experimental activities.

Researchers have conducted preliminary observations by giving questionnaires to students of SMAN 2 Percut Sei Tuan class XI as many as 30 people and conducting interviews with one of the physics teachers. Based on the results of the questionnaire obtained from students, it is known that students who like and are active in physics in class are only 20% because they can practice in arithmetic, then 65% of students who dislike and are less active in physics because they think physics is sometimes boring and not interesting to study. As many as 14% of students who do not like physics because they think physics is complicated or difficult to understand too many physics formulas that must be memorized and calculate a lot.

Students' lack of interest in learning about physics affects student learning outcomes. Based on the results of an interview conducted by the author to one of the physics teachers at SMAN 2 Percut Sei Tuan, it is known that not all student learning outcomes can exceed the KKM (Minimum completeness criteria) there are still some students who can exceed the KKM.

One effort that can be done by teachers in improving student learning outcomes is to design interesting physics learning activities, based on discovery and inquiry that directly involve students in learning activities so that learning is more student-centered rather than teacher-centered. The learning model in question is a guided inquiry learning model. The guided inquiry model is a model of inquiry learning in which the teacher provides sufficient guidance or guidance to students. Some of the plans are made by the teacher, students do not formulate problems or problems (Nuriyanti, et al., 2016). The role of the teacher in guided inquiry acts as the organizer and facilitator (Hutahean and Siagian, 2016). Guided inquiry is a learning model that can improve student learning outcomes by designing and discovering physics concepts on their own making the material last longer in students' memories (Sukma, et al., 2016).

The application of the guided inquiry model has been carried out by several researchers including Wahyuni, et al (2016) applying the guided inquiry model, obtained an average value of pretest and posttest in the experimental class respectively 43.67 and 77.00 while the average value pretest and posttest in the control class are 43.76 and 65.65, respectively. The increase in the value of the experimental class is higher than the control class. Nainggolan and Sinuraya (2016) who also examined the guided inquiry model said that the application of the guided inquiry model had a significant influence on student learning outcomes. Obtained the average value of pretest and posttest in the experimental class respectively 28.70 and 71.67 while the average value of pretest and posttest in the control class respectively 27.78 and 62.22.

Based on the background that has been described, the author intends to conduct research that aims to determine the effect of guided inquiry learning models on student learning outcomes on the subject matter of

dynamic fluid class XI semester I of SMA Negeri 2 Percut Sei Tuan.

Research Method

The study was conducted at SMA Negeri 2 Percut Sei Tuan T.P 2018/2019. The population in this study were all students of class XI MIA SMA 2 Percut Sei Tuan in the first semester of T.P 2018/2019 consisting of 4 parallel classes. The research sample consisted of two classes, namely class X MIA-3 as an experimental class using guided inquiry learning models and X MIA-4 as a control class using conventional learning models.

This type of research was a quasi experiment or quasi-experimental design with two groups pre-test-post test design can be seen in Table 1.

Tabel 1. Two *Group Pre test-Post test Design*

Kelas	*Pretest*	Perlakuan	*Posttest*
Experiment	O_1	X_1	O_2
control	O_1	X_2	O_2

Keterangan:
O_1 = preliminary test
O_2 = final test
X_1 = the application of the guided inquiry learning model
X_2 = application of conventional learning

The researcher gives pre-test to the experimental class and the control class. The instrument used in this study was a student learning achievement test totaling 8 items in essay form. The pre-test data obtained were analyzed with the normality test, namely the liliefors test, the homogeneity test, namely the variance similarity test, after which the two-party hypothesis test was used to determine the students' initial ability in both groups of samples.

Researchers then conduct learning using guided inquiry learning models in the experimental class and conventional learning models in the control class. The researcher gave a post-test after being given different treatment in the two classes. Post-test data were analyzed using one-party hypothesis testing to determine differences in the final results whether there is an influence of guided inquiry learning models on student learning outcomes.

Result and Discussion

a. Results

Data from the results of this study in the form of student learning outcomes are pre-test and post-test scores, observations of student activities in the experimental class during the learning process.

The researcher first gives a pre-test on both classes in order to find out whether the initial abilities of students in both classes are the same or not. Based on the results of the study obtained the average value of pre-test students in the experimental class before being treated using a guided inquiry learning model of 15.64 with a standard deviation of 6.76, while in the control class obtained an average pretest score of students of 12.86 with a standard deviation 5.59. The pre-test results of the experimental class and control class students are shown in Figure 1.

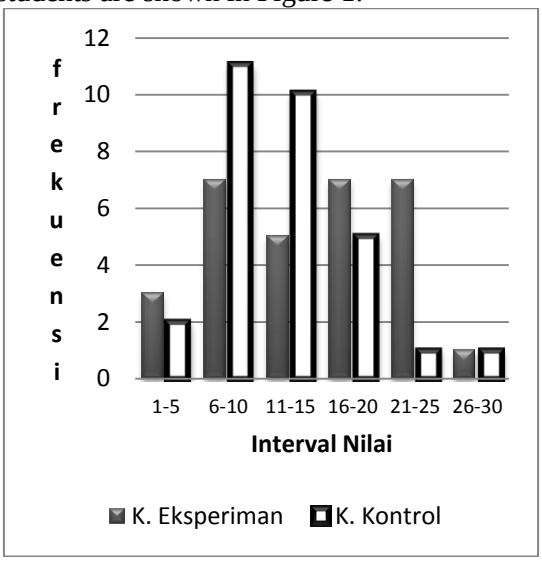

Figure 1. Pre-test Value Bar Diagram

After obtaining the pre-test value data from the two samples, the data analysis test is performed using the similarity test (t test) of the average pre-test with the terms of normal and homogeneous distribution. Based on the t test on the pre-test data, the value of tcount <ttable is 1.7748 <2.002 so that it can be concluded that the initial ability of students in the control class is the same as the initial ability of students in the experimental class.

The post-test results of the experimental class and control class students are shown in Figure 2 and Figure 3.

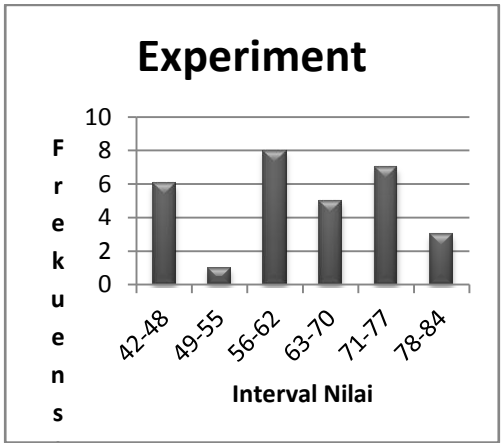

Figure 2. Experiment Class Post-test Results

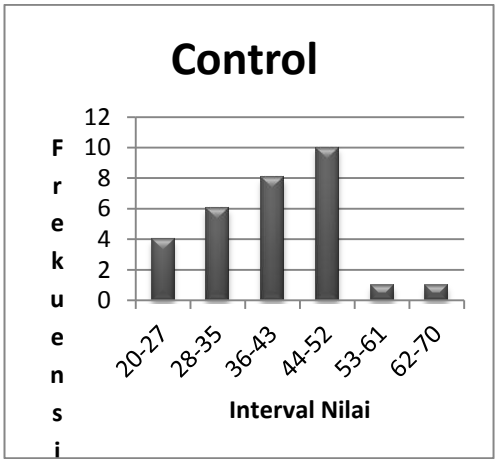

Figure 3. Control Class Post-test Results

Figures 2 and 3 show the differences in the post-test results of the experimental class and the control class, where the highest acquisition of control class students is in the 50-58 value range, while the experimental class is in the 62-70 value range. The post-test results of the experimental class had an average value of 63.67, while the control class had an average value of 40.12. Hypothesis testing of post-test data is done using the t test. Testing is used to determine whether there are differences due to the influence of the application of guided inquiry learning models to student learning outcomes on the subject matter of momentum, impulses and collisions. Based on the one-party t test on the post-test data obtained tcount> ttable is 4.7673> 1.671 so it can be concluded that the guided inquiry learning model has a significant effect on student learning outcomes on the subject matter of dynamic fluids in SMA Negeri 2 Percut Sei Tuan.

Increased student learning activities in the experimental class can be seen through the observation of student learning outcomes shown in Table 1.

Table 2. Increased Student Learning Activities Average

Aktivitas	**Value at Meeting**		
	I	**II**	**III**
Formulate the problem	62,2	62.2	75,2
Collecting data-verification	53,3	58,8	71,4
Gather experimental data	48,89	55,5	78,1
Analyzing experimental data	48,9	57,8	69,5
Formulate conclusions	57,2	59,9	61,4
Average	**44,3**	**58,8**	**71,08**

b. Discussion

The study was conducted at SMA Negeri 2 Percut Sei Tuan using two different learning models for the two sample classes, in the experimental class using the guided inquiry learning model and the control class using conventional learning models. The results showed that there was a significant influence between student learning outcomes with guided inquiry learning models and conventional learning on the subject matter of dynamic fluid class XI semester I of SMA Negeri 2 Percut Sei Tuan T.P 208/2019. The average student pretest score in the experimental class was 15.6 and the average posttest score was 63.67 and in the control class the average student pretest score was 12.86 and the average posttest score was 40.12.

The success of the guided inquiry learning model is because the inquiry learning model is able to make students design or design investigations, analyze results and provide conclusions. This guided inquiry learning model is also able to motivate students to learn by providing opportunities

for them to construct their own meaning and develop a deep understanding.

This is obtained because in the learning process with the guided inquiry model, the activeness and involvement of students is maximally more emphasized (Nainggolan and Sinuraya, 2016). Guided inquiry is a learning pattern that provides direct experience for students in learning because they do it themselves and also pay attention to each variable during practicum in the laboratory. The application of the guided inquiry model will place students at the center of learning activities, students not only learn about something but students actively find, do, observe, and experience a learning activity. Sanjaya (2001) says that because of learning experiences, each individual can build knowledge that is useful for himself and the community.

The initial process of learning with student guided inquiry is confronted with a problem by inviting students to pay attention to the reality associated with the concept. The aim is to stimulate students to formulate problems which further test their hypotheses by conducting scientific activities to find the concepts being studied.

Guided inquiry can improve student learning outcomes because in the early stages of the learning process students are faced with problems by inviting students to pay attention to the reality associated with the concept so that students find the concepts being studied. Students also work in groups to collect experimental data obtained from the experimental process and observations in groups to collect data which is then analyzed, so students are trained to find concepts from the data obtained. Data that has been collected by students is analyzed and the hypotheses that have been prepared are tested. The next activity is to present the results of group discussions and other groups respond to the results of group discussions that are being presented. The teacher's role in the presentation phase is to align and confirm the conclusions given by students and make conclusions together with all students. The learning process with students' guided inquiry is faced with problems to stimulate students to formulate problems which then test their hypotheses to carry out scientific activities to find the concepts being studied (Kuhthau, et al., 2007).

The guided inquiry learning model allows students to better understand the subject matter through the process of observing, asking, and trying, associating and communicating the material being learned during the learning process. The learning model is one of the important aspects that affects student learning outcomes. The learning model used in teaching a subject matter appropriately then student learning outcomes also tend to be better. The observations of researchers during conducting research, it appears that the enthusiasm and understanding of students who are taught with guided inquiry learning models are better when compared to students who are taught using conventional learning models. The difference is seen from student learning outcomes and student activeness during the learning process. The results of this study are supported by previous research conducted by Wahyuni, et al (2016) who applied the guided inquiry learning model which concluded that there was an influence of the guided inquiry learning model on student physics learning outcomes. The average value of the physics learning achievement test with the guided inquiry learning model is higher than the control class with the conventional learning model.

Improved student learning outcomes are also supported by an increase in student learning activities. Learning activities in the experimental class have increased while using the guided inquiry learning model, namely the average value of student learning activities from meeting I namely 44.33 with the least active category, meeting II with an average value of 58.86 with quite active categories, meetings III with an average value of 71.08 with the active category. This is due to guided inquiry emphasizing questions and ideas that motivate students to prepare students to think deeply about an object or problem displayed by the teacher so they can succeed in learning activities (Hutahaean and Siagian, 2016).

The increase in learning outcomes obtained by students is influenced by increased student activity in the learning process with the guided inquiry learning model also in accordance with Hamalik's

statement (2010) that an increase in student learning activities will improve student learning outcomes. The learning process using the guided inquiry learning model involves students actively finding their own answers to problems through experiments conducted, so students are more enthusiastic and motivated to learn and the classroom atmosphere also becomes more lively and with enthusiasm that students have in the learning process. The learning process with guided inquiry will provide free space for students to realize their potential and display their respective characteristics because of learning patterns that provide direct experience for students in learning (Simbolon and Sahyar, 2015). This is supported by Hosnah, et al (2017) in his research also showing that there is a significant influence of the guided inquiry learning model on the learning outcomes and learning activities of high school students. Research by Nuriyanti, et al (2016) also states that student learning outcomes and activities in the learning process of physics using the guided inquiry learning model have increased.

After conducting research, the obstacle that researchers face is that researchers cannot carry out experiments in the laboratory. This is because the laboratories at school are used as study rooms. Students are less conducive in doing pratikum. This is because there are some students who like to seek attention with a variety of behaviors and jokes that make other friends laugh and make noise. Researchers are also lacking preparation to conduct experiments.

Conclusion

a. Conclusion

Based on the results of research and analysis of the data obtained it can be concluded that there is a significant effect due to the guided inquiry learning model on student learning outcomes in the subject matter of dynamic fluids in class XI of SMA Negeri 2 Percut Sei Tuan.

b. Suggesstion

The suggestion that researchers can propose is that further researchers prepare the tools used when they want to conduct experiments so that the learning process is more effective even though they don't conduct experiments in the laboratory. Researchers are more assertive towards students who cause noise in the classroom so that the learning process is more conducive. Can also interact with the physics teacher at the school when they enter the classroom so that students are more conducive and disciplined.

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