THE IMPLEMENTATION OF GUIDED INQUIRY LEARNING MODEL TO IMPROVE STUDENT'S LEARNING OUTCOMES AT CLASS XI SMA CERDAS MURNI

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ABSTRACT

The purpose of this research was to find out the difference of students' learning outcomes using guided inquiry learning model and conventional learning on static fluids topic at class XI SMA Cerdas Murni. The research method was quasi experiment. The population was all students at class XI SMA semester II SMA Cerdas Murni consist of 4 classes. The sample of this research conduct two classes and consist of 20 students, class XI-1 as experimental class and class XI-2 as control class and define by cluster random sampling. The result that was obtained: posttest average value in experimental class is 74.99 and posttest average value in control class is 65.33. Deviation standard in experimental class is 13.73 and in control class is 10.28. The average value of students' psychomotor in experimental class is 77.96, and the average value of students' affective in experimental class is 80.67. Normality test result of both samples is normal and homogeneous, the testing criteria was accepted H_0 if $-2.024 < t' < 2.024$ and refuse H_0 in other condition. Here, H_0 was refused because t' is 2.571 and H_a was accepted. So it can be concluded that the students' learning outcome using guided inquiry learning model is greater than conventional learning.

Keywords : Guided Inquiry Learning Model, Students' learning outcomes

INTRODUCTION

Learning process occurs through many ways and takes place all the time toward a behaviour changing in learners. The changing are in the form of knowledge, understanding, skills, and habits that acquired by the lerners. The main activities in teaching and learning are the emphasis on engaging students in learning,

One of the subjects that is taught in school, especially in high school is physics. Physics is the science that studies about natural phenomenon. Therefore, physics is one of the lessons that quite interesting because it relates directly to natural phenomena and knowledge can be applied in daily life.

But in fact physics is one lesson that has the lowest score. This is caused by the large number of students who do not like physics and they think physics is a difficult subject to understand, especially when faced with a complicated formulas and calculations. This fact is in accordance with the results of observations conducted by researchers in SMA Cerdas Murni. Researcher use questioner instrument to observe student interest in physics subject. From the observation result, there is 10 % student say that they don't like

physics, 58 % student say that physics isn't interest to learn and 32 % says that they like physics, just 5 % student say that they really like physics. Before learn physics, just 13 % student prepare themselves before learn physics, 25 % student sometimes do the preparation, 57 % student just see the title without do the preparation, and there is 9 % student don't do anything and there is 18 % student interest to solve physics problem by themselves, 41 % student interest to solve physics problem with discussion, 58 % student solve physics problem when the problem is easy and there is 8 % student don't want to solve physics problem. From the observation result above, researcher conclude that student in SMA Cerdas Murni isn't interest to learn physics and this will be influenced the student outcome in learning physics.

Researchers also interviewed three physics teachers in SMA Cerdas Murni. The teachers have the same answer when researcher asking about the student learning outcomes. They say that student learning outcomes that are generally still low at an average of 60, so it can be said score the average student does not achieve the expected criteria. The researchers observed that the physics teachers, especially in class XI SMA generally apply lecturing method more than the other methods in learning activities, in fact the method is not accordance with the purpose of learning. This is due to the teachers are not fully apply the appropriate methods for each materials. The teacher's role is more dominant, material presented by the teacher is more likely to lecturing method, the student learn or repeat the lesson only in exam time so the students do not understand the material overall, when the teacher gives the test higher than the material that has been written, the student can not answer it. This is caused by to students are not beeing regularly to solve a problem. This learning activities becomes a problem for students because some of them are not able to understand the material.

To improve students' learning outcomes, teachers can perform a variety method, for example using a method of effective teaching and learning in accordance with the objectives set in the curriculum. Inquiry is a model used in learning process, the main purpose of inquiry is to develop skill, intellectual, critical thinking and able to solve problems scientifically. Students are expected to investigate why an event took place then collect and process the scientific data to solve a problem. The advantages of inquiry learning model is make the students able to understand the ideas and basic concepts better than before, encourage them to think and work initiatively, objectively and formulate their own hypothesis, which makes the situation of the learning process become more interesting.

From previous research, Sitepu, (2012) in the research journal about the learning quality improvement in class entitled "*Penerapan Model Pembelajaran Inquiry Training untuk Meningkatkan Hasil Belajar Siswa Kelas VII-2 SMPN 1 Tiga Panahan*" obtained the learning outcomes in posttest I and II showed 68.2 and 76.56 as well as the activities of the students from the observations in cycle I and II.

Other research conducted by Zebua, (2012), entitled "*Strategi Pembelajaran Inquiry pada materi pokok Hukum Newton di kelas X SMA Gajah Mada Medan T.P. 2010/2011*",

obtained the pretest average value in experimental class is 47.71 and the posttest average value in experimental class is 73.29. While the pretest average value in control class is 43.29 and the the posttest average value in control class is 66.86. Based on these data, there are some improvement in student's learning outcome using inquiry learning model in subject matter of Newton's Law. Research conducted by Yunus, et al, (2013) obtained that the implementation of physics inquiry based learning can improve student learning outcomes auditory.

Learning outcomes of students taught with inquiry learning model significantly different from taught with conventional learning, with the average value of the test in the experimental class is 70.68 while the control class with an average value of 66.46. The analysis results the standard deviation between inquiry and conventional significance level of 1% (0.01) is t_{tabel} = 2.64 while t_{count} = 3.80, so that H_o is rejected and H_a accepted. The students who learn in the inquiry learning model is able to learn well, where students can express their own opinion according to their experience with a percentage of 12.1%, whereas in the conventional learning students can not express their opinion better, this can be proven when the students are asked how to overcome the land, water, air and sound pollution with a percentage of 12% (Kamal, et al, 2011). Based on some of these research, it can be concluded that the use of guided inquiry learning model can assist students in learning the scientific method and foster research skills such as working in groups, writing, and verbal expression, experience in solving problem and the other abilities.

Based on that problems, he author interested in applying guided inquiry learning model to improve students' learning outcomes, especially in the static fluids topic. Thus this study is formulated by the title "The Implementation of Guided Inquiry Learning Model to Improve students' Learning Outcomes on Static Fluids Topic at Class XI SMA Cerdas Murni Academic Year 2013/2014".

RESEARCH METHODE

This research was conducted in SMA Cerdas Murni at class XI on April academic year 2013/2014. Population of this research is all students in class XI SMA Cerdas Murni academic year 2013/2014 that consist of 4 classes, and each classes consist of 20-25 students. The sample that would be taken is choosen by cluster random sampling. The sample is divided into two classes consisting of one class as experimental class and the other class as control class.

This research is involves two different treatments for the experimental class and the control class, where the two classes are treated differently. The experimental class treated with guided inquiry learning model and the control class treated with conventional learning.

To determine the student's understanding of the concept is done by giving test on both classes before and after treatment, which are called pretest and posttest.. The design of the research is as in table 3.1 :

Table 3.1. Design of Research

Class	Pretest	Treatment	Posttest
Experimental	X_1	P	X_2
Control	X_1	Q	X_2

Description :
X_1 = Pretest
X_2 = Posttest
P = Learning using guided inquiry learning model
Q = Learning using conventional learning

The selection of data aimed to observe whether the samples come from normal distribution population or not. The test used is Liliefors test and Homogeneity test, to know the homogenity of both samples used formula as follows (Sudjana, 2009) :

$$F_{count} = \frac{S_1^{\,2}}{S_2^{\,2}} \quad \text{..... 1)}$$

Description:
$S_1^{\,2}$ = Variance in experimental class
$S_2^{\,2}$ = Variance in control class

If $F_{count} \geq F_{table}$, H_o is refused (have different variance) where the $F_{table} = F_{(1-\propto)(n-1)} < F < F_{\frac{1}{2}\propto(n_1-1,n_2-1)}$ obtained from the distribution list F with α = 0.1.
Hypothesis test use t-test with formula (Suryabrata, 2002) :

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

S is combination of standard deviation can be calculated with formula :

$$S^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

Where :
$\bar{x}_1$ = Average value in experimental class.
$\bar{x}_2$ = Average value in control class.
n_1 = Total of sample in experimental class.
n_2 = Total of sample in control class.
S^2 = Variance
$S_1^{\,2}$ = Variance in experimental class
$S_2^{\,2}$ = Variance in control class
t = t distribution

Testing criteria is accept H_o if $-t_{1-\frac{1}{2}\alpha} < t < t_{1-\frac{1}{2}\alpha}$ where $t_{1-\frac{1}{2}\alpha}$ we get from t list with dk = n_1+n_2-2 and probability (1- $\frac{1}{2}\alpha$). To another value of t H_0 is not accept. Value of t_{count} compare with t_{table} get from t table list to α = 0.05. If $-t_{1-\frac{1}{2}\alpha} < t < t_{1-\frac{1}{2}\alpha}$ on the level α = 0.05 and independent degree dk = n_1+n_2-2, so have the same initial ability of student. (Joyce, 2004)

RESULT OF RESEARCH

The result of research show that the students' learning outcome in static fluids topic that used guided inquiry learning model is greater than conventional learning in class XI SMA Cerdas Murni. The result obtained that the posttest average value in experimental class was 74.99 with deviation standard was 13.30. while the posttest average value in control class is 65.33 with deviation standard was 10.28.

Students' learning outcomes in affective domain of experimental class using guided inqiury learning model at meeting I was 71.67, meeting II was 81.33, and meeting III was 89, so the average value of students' affective in experimental class was 80.67. While, students' learning outcomes in affective domain of control class using conventional learning at meeting I was 64.67, meeting II was 73.67, and meeting III was 79.67, so the average value of students' affective in control class was 72.67. Both experimental

and control class were in good category but affective of student in experimental class has increasment because the learning process using the Guided Inquiry Learning Model which is student center learning, so the student more active in the learning process. As general Guided Inquiry Learning Model make student become responsible with their behavior. For control class the students have low affective because conventional learning make teacher as center of learning.

Students' learning outcomes in psychomotor domain of experimental class using guided inqiury learning model at meeting I was 70.28, meeting II was 78.89, and meeting III was 84.72, so the average value of students' affective in experimental class was 77.96. While, students' learning outcomes in psychomotor domain of control class using conventional learning at meeting I was 69.79, meeting II was 72.50, and meeting III was 77.71, so the average value of students' affective in control class was 73.33. Both experimental and control class were in good category but in experimental class using guided inquiry learning model, student is more active and students are directly involved in the learning activity (students center learning). Because the model is designed to bring students directly into scientific process into small periods of time and the training has resulted in an increased understanding of science, more creative thinking, and skills for obtaining and analyzing information as students establish facts, build concepts, and then generate and test explanations or theories when doing the experiment. The psychomotoric of student in control class have lower value, because they do not do the experiment, and just doing the exercise given by researcher. So the psychomotoric of student in control class become low.

The student's learning outcome Cognitive, Affective, and Psychomotor domain on static fluids topic using guided inquiry learning model is greater than conventional learning in class XI SMA Cerdas Murni.

The result of cognitive domain showed acquisition value of the average pretest in the experimental class is 42.33 with a deviation standard is 11.90 and the average posttest value is 74.99 with a deviation standard is 13.30. While the values obtained in the control class average pretest is 41.33 with a deviation standard is 12.72 and the average posttest value is 65.33 with a deviation standard is 10.28. From the data, average posttest value in experimental class is greater than control class. The increasing of posttest value is caused by the treatment given to the students. In experimental class given treatment using guided inquiry learning model and control class given the treatment using conventional learning.

The observation result in psychomotor domain showed activeness of students during the learning greatly affects the value of learning outcomes. The activity of student can be seen more spesific from doing worksheet in the experimental class and in control class, the activity of students can be seen when the researcher doing the teaching activity and giving problems. When students active in the learning activities then the learning outcomes become higher. There is different activity of students' in experimental class and control class. The average

value of students' activity in experimental class is higher than control class. It also that cause the average value of posttest value in experimental class is greater than control class.

The observation result in affective domain showed that the attitude of students during the learning activities affects the value of learning outcomes. From this research, if the students have good attitude in the learning activities so the learning outcomes becomes greater. The attitude of students in experimental and control class are in good category, but the average value of affective domain in experimental class is greater than control class, the students team work in experimental class make students have greater attitude.

During the implementation of the research showed that guided inquiry learning model has benefical because the model is designed to bring students directly into scientific process into small periods of time and the training has resulted in an increased understanding of science, more creative thinking, and skills for obtaining and analyzing information as students establish facts, build concepts, and then generate and test explanations or theories. Thus, the students are active learners involved in exploration, questioning, problem solving, inductive reasoning, invention, labeling, and discovery.

CONCLUSION

Based on the research result, data analysis, and discussion can be concluded that :

(1) The average value of students' learning outcomes using guided inquiry learning model is higher than the students' learning outcomes using conventional learning. (2) Students' activity as long as using guided inquiry learning model increased, from the first meeting up to the third meeting. The category of students' activity is good. And students' affective as long as using guided inquiry learning model also increased, from the first meeting up to the third meeting. The category of students' affective is good. (3) Based on the results of data analysis, the processing of hypothesis test using t-test get that $t_{count} > t_{table}$, so it can be stated that the students' learning outcome in static fluids topic using guided inquiry learning model is greater than conventional learning in class XI SMA Cerdas Murni.

SUGGESTION

Based on the research result and discussion before, researcher give suggestions as follows :

(1) For the next researcher, should use the time effectively thus the syntax in guided inquiry learning model can achieved and occurs well. (2) For the next researcher, should prepare observer for each group to get accurate data and to observe the students' affective better if researcher take daily notes of students from class teacher. (3) For the next researcher, should give more attention and guidance to students who passive in the learning proces.

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