The Enhancement of Multimedia Based Inquiry Training Learning Model on Student's Achievement

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Abstract

This is Classroom action research. Model that used is Inquiry training learning model. To enhance the student's achievement also used multimedia. Multimedia is a mediator that make a teaching learning process become interesting and be fun. It would also be very efficient at done if assisted with Inquiry training learning model in the process so that teachers and students will get better results, faster and can provide them with a creative and easy to understand. The main targets of inquiry learning model are (1) the maximum student involvement in the learning process, (2) the directionally of activities in a logical and systematic learning objectives, (3) develop a confident attitude of students about what was found in the inquiry process. The result of research get the level of student's activity in experiment class is good criteria, good attitude and have enhancement on student's achievement in every cycle.

Keywords: Inquiry Training Multimedia, Student Achievement

1. Introduction

Education is the one of important things to make a good human resources for the development of this nation. The quality of education in Indonesia is still low. Indonesia is now conducting a variety of ways in order to realize an intelligent nation to increasing the human resources. One of them by changing the curriculum. Now the prevailing curriculum is the curriculum of 2013. According Permendikbud No. 70 of 2013,curriculum of 2013 aims to prepare humans Indonesia to have the ability to live as individuals and citizens who believe, productive, creative, innovative, and affective and able to contribute to the society, nation, the country and the world civilization. Method in the curriculum of 2013 is a scientific approach. a learning process that is designed so that learners are actively constructing concepts, laws or principles through the stages observed (to identify or find the problem), to formulate the problem, propose or formulate hypotheses, blunting the data with a variety of techniques, analyzed data, draw conclusions and communicate the concept, law or principle "discovered". the scientific method is a technique to formulate questions and answer them through observation and conducting experiments. Teachers can no longer apply the concept lectures or known as conventional learning models in curriculum of 2013.

There are many teachers at various levels of primary and secondary education (general and vocational) manage learning activities in class by learning one direction between teacher and student, so that the interaction between students and teachers and students with student doesn't take place effectively and efficient in achieving the learning objectives set (Lia 2015). Pupil be passive or not active, feel bored and even sleepy when it is in the classroom. the lecture model is not very effective when used in teaching and learning physics, especially physics for senior high school. In physics there are so many formulas and abstract things that can not be understood only by reading alone. How can the student pay attention to the teacher if the teacher always talk away in teaching and learning process. So the model of teaching and learning must change into model that attractive to the student.

Inquiry-based learning can improve scientific process skills and attitudes of students (Haris 2016). That is in the process of learning students should be involved in it. Students are learning the constructor and teacher is the facilitator in science teaching. Students should have experience with "real world" classroom by attending to theoretical and practical activities (Passart 2014). In this case the student can look for the problem and resolve the issue through himself. Inquiry learning should include the basic abilities of conducting a scientific investigation as well as an understanding of how scientists do their work (Alan 2005).Inquiry learning model is learning that requires students to solve problems through investigation activities that increase the skills and knowledge independently (Vera 2016). That's why scientific method was relevant to inquiry training learning to improve the knowledge. (Pandey 2011) concluded that inquiry training model have statistically significant effect over conventional teaching method on academic achievement of students (Ali 2014). So inquiry training learning can give effect to student achievement which can be seen from the learning outcomes.

The use of models in an efficient and effective inquiry will reduce the dominance of teacher during the learning process and the boredom of students receive lesson will reduced (Jefri 2014). So to make students pay attention and teaching learning process be a student center needed not only model but be added a media, such as: power point, video, text and images along with other very assist teachers in teaching and learning process, so teaching and learning process become attractive. Multimedia is a mediator that make a teaching learning process

become interesting and be fun. Mayor said that the material presented in verbal form, such as using printed text or spoken text and by pictures that the material is presented in pictorial form, such as using static graphics, including illustrations, graphs, diagrams, maps, or photos, or using dynamic graphics, including animation or video (Peter, 2002). Teachers used multimedia in teaching and learning process in order to achieve the learning achievement. Curriculum of 2013 has been applied scientific approach that is perfect if related with inquiry training models which refers to experiments conducted by the students themselves and be very efficient at done if assisted with multimedia in the process so that teachers and students will get better results, faster and can provide them with a creative and easy to understand. That's why author take the problem to conduct research about the enhancement of multimedia based inquiry training learning model on student's achievement.

2. Inquiry Training Learning

Inquiry learning model is a series of learning activities that involved the maximum throughout a student's ability to find and investigate the systematic, critical, logical, analytical, so that they can formulate their own findings with confidence. The main targets of inquiry training learning model are (1) the maximum student involvement in the learning process, (2) the directionally of activities in a logical and systematic learning objectives, (3) develop a confident attitude of students about what was found in the inquiry process. Inquiry training learning model is designed to engage student directly into scientific process in relatively short time. The inquiry training learning model can improve the understanding of science, productive creative thinking and students become skilled in obtaining and analyzing information (Joyce and Weil, 1992;198).

2.1 Syntax of Inquiry Training Learning

Inquiry training have five phase, the first phase is the student confrontation. With the puzzling situation. Phase two and phase three are the data-gathering operations of verifications and experimentation. In these two phases, student ask a series question to which the teacher replies yes or no, and they conduct the series of experiments on the environment of the problem situation. In the fourth phase, student organize the information they obtained during the data gathering and try to explain the discrepancy. Finally, in the fifth phase, student analyze the problem solving strategies they used during the inquiry.

Table 2.1. Syntax of The Inquiry Training Learning Model

Phase	Syntax	Activity
First	Confrontation with the problem	1. Explain inquiry procedures 2. Present discrepant even
Second	Data gathering- verification	1. Verify the nature of object and condition. 2. Verify the occurrence of the problem situation.
Third	Data gathering- experimentation	1. Isolate relevant variables 2. Hypothesize and test causal relationships.
Fourth	Organizing, formulating and explanation	Formulated rules of explanations
Fifth	Analysis of the inquiry process	Analyze inquiry strategy and develop more effective ones

2.2   The Advantages and Disadvantages of Inquiry Training Model

2.2.1 Advantages of Inquiry Training Learning Model

1. Model of learning is inquiry training learning is learning that emphasizes the development of cognitive, affective and psychomotor learning through a balanced way so that this model is considered more meaningful.
2. This learning model can provide a space for students to learn according to their learning styles .
3. Inquiry training learning model is a model that is considered in accordance with the development of modern psychology that assume learning is the learning process of behavior change, relate to the experience
4. Inquiry training learning model is able to serve the needs of students who have above average ability. That is, students who have good study skills will not be hampered by weak students in learning.

2.2.2 Disadvantages of Inquiry Training Learning Model

Besides having the advantage, inquiry training learning model has weakness, including :

1. If the inquiry is used as a learning model, it will be difficult to control the activities and success of students.
2. This model is difficult to plan because it collided with learning by students in study habits.
3. Sometimes in implementing it, takes a long time so it is often difficult to adapt them to the teachers appointed
4. During the learning success criteria determined by the ability of students to master the subject matter, the learning model is difficult to implemented by each teacher.

3.   Research Method

The research is conducted in Senior High School (SMA N) 1 Panyabungan that were active in the Academic Year 2016/2017. The time of this research is adjusted suitable with the schedule allocated in the senior high school when the target materials of Elasticity are being taught at the same time, the research is conducted without interfere the students and the teachers activity in the selected school. Samples in this research are Class X^1 as experiment class that consist of 36 student respectively. Samples technique are cluster random sampling. This research's method using classroom action research (CAR).

3.1 Classroom Action Research (CAR)

Generally the CAR consist of four interconnected stage and sustainable : (1) Planning, (2) Acting, (3) Observing and (4) Reflecting. Cycle of CAR can see below.

Picture 3.1. Cycle of CAR
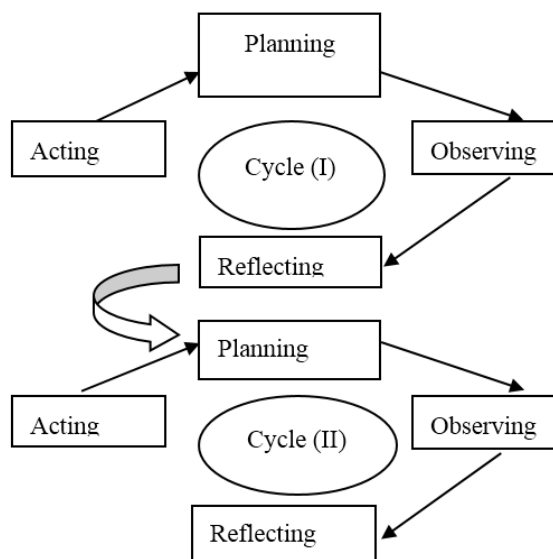
 But, earlier this stage is preceded by a pre-CAR stage that includes :
1.   Identity of problem
2.   Analysis of problem
3.   Problem formulation
4.   Hypothesis of Action Formulation.

3.2 Rubric of Student ability and Learning Activity

Observation in this research is observation to the research sample that done to know, to observe, to record student activity, student's achievement and attitude during learning process in class, used for every cycle , and doing by observer. The guidance of student activity observation use rubric that included 6 activity indicator based on inquiry training learning model as follows on table 3.2. By this observation result then calculated the value of the criteria of student ability on table 3.2.a

Table 3.2 Criteria of Student Learning Activity

Criteria	Score			
	4 Very good	**3 Good**	**2 Enough**	**1 Less**
Purpose of experiment	Identify the specific purpose and characteristic	Identify the purpose	Identify the several purpose	Wrong to identify the Purpose
Tools and material	Listing all the tools and material	List only for material	List several material	Wrong to list material
Hypothesis	Predicted the real fact and making hypothesis	Predict the real fact	Predict several fact	Guess
Procedure	Listing all the step and specific detail	Listing all the step	Listing several step	Wrong to list the step
Result	Recording the data, organizing and make in graph	Record the data and organize	Record the data	Wrong result
Conclusion	Understand the concept and make new hypothesis for another application and situation	Understand the all the concept	Understand the several concept	Wrong conclusion

$$Percentage \ = \frac{The \ score \ student \ get}{\max imum \ \ score} \ x100\%$$

(1)

Table 3.2. Criteria of Student Ability

| Criteria	Percentage
Very good	86 % - 100%
Good	76% - 85 %
Enough	60% - 75%
Less	55% - 59%

4. Discussion and Result

Based on the activity that had done at every cycle, about two cycles on this CAR as the effort on enhancement the student's achievement on learning at grade xi using inquiry training learning model explained in report result as follow :

Table 4. The Score Average of Every Test

Result for Score Test	Average of Score Test
Pre-Cycle	55.4
First Cycle	68.75
Second Cycle	86.75

The average of 36 students in pre-cycle based on the result is 55.4 because the minimum score for physics is 65 so in this section we can see that the student have the low value at the less category, after teaching and learning process in first cycle we get the value is 68,75 in enough category and it show that from the pre-cycle to first cycle have enhancement but still there is a student that in the lower completeness in this study and the second cycle after doing teaching and learning with multimedia based inquiry training learning model get 86,75 in good category. In the second cycle still there is a four students that have in lower completeness but its explain that the average have enhancement on student's achievement. We can see the graph of the score average of every test on graph 4.1

Graph 4.1 The Score Average of Every Test
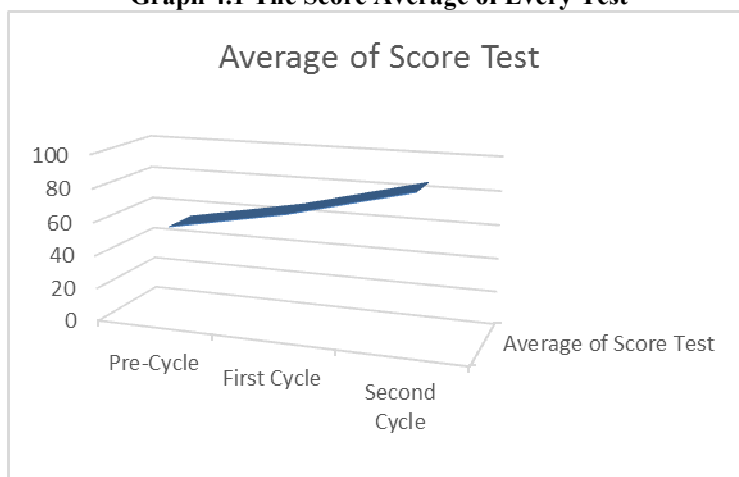
During the process of inquiry learning takes place, the activity of students seemed more excited and passionate because researchers are always motivating students. But still there are student activities that appear in the learning process but not observed by the observer because of limited aspects assessed in the observation sheet. From the observations made by the observers found that activity of the students gets positive increase. At the pre cycle the student activity obtained 6.12 and the first cycle get 6.84 and the second cycle the average of student activity obtained 8.84, so its included to good category. The results showed that there were significant differences between the pre-cycle results of the experimental class with first and second cycle. Student involvement in teaching and learning process is proven to increase student achievement toward the subject matter which corresponding with Pandey (2011) and Akpulluku (2011) Implementation of inquiry training learning model pursued the basics of scientific thinking on students because the learning process to lead the students more creative in solving problems. So it can be concluded that there is significant enhancement using the Multimedia Based Inquiry Training Model.

5. Conclusion

Based on the result above show that Inquiry training learning model can be used to encourage students to be more active and the attitude of student also increased. Not only that, the knowledge have enhancement in learning through Multimedia Based Inquiry Training Learning Model on Physics. It can see from the completeness of student from the pre-cycle until to the second cycle. It's look that the enhancement Multimedia

Based Inquiry Training learning model has mastery level concept of surplus high because the experimental class was able to answer with more achievement test. So, after doing this research concluded that multimedia based inquiry training learning model have enhancement on student's achievement.

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