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The Application of Problem Posing Learning Model to Improve Physics Learning Outcomes on Sound Wave Material

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ABSTRACT

This study aimed to find out how to apply the problem posing model to improve physics learning outcomes in class XI. This study used a descriptive statistical approach, and it was a gradual study. The stages used in this study were planning, implementing, observing, and reflecting. The subjects in this study were 30 students of class XI IA1 of Senior High School in Lhoknga. The improvement shown in the average score obtained by students and and the classical limitations from cycle I to cycle III, namely 40%, 54%, 94% and 50%, 70%, 90%. Learning outcomes obtained by students can be improved by: students practice to understand the material conveyed by the teacher and students practice to respond the learning conveyed by the teacher.

Keywords: Problem posing, learning, learning outcomes

INTRODUCTION

Learning is a fundamental thing that cannot be separated from social life. Along with the increase in community development and needs, the government is trying to improve a better quality of education. This intended to increase the creative and critical mindset of humans so that education is able to solve actual problems in life and produce good technology. Physics plays a crucial role to create new technology. Therefore, the mastery of physics concepts is very important in supporting the educational process. In learning physics, there were concepts and principles that cannot be accepted without comprehension and reason. Knowledge cannot merely transferred from a teacher to a student. It formed actively and creatively, not only passively received from their teacher.

Recently, Science education research has shown a shift to the constructivist direction. In constructivist learning, a teacher provides activities that stimulate students' interests and assist them in expressing their ideas to convey their scientific ideas. In learning, teachers play a role as a mediator and facilitator in shaping students' knowledge and

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comprehension. The task of a teacher is not only limited to teaching but also to understand the characteristics of each student. It will ease the teacher in adjusting the learning material according to their characteristics Musfah (2018: 67). To support this, education experts have developed a variety of learning systems that more focus on students, one of them is problem-posing model. Problem posing is positive and one of the learning models that oriented in the constructivist, unlike conventional learning which emphasizes memorization which tends to turn off children's reasoning and creativity in thinking (Hudojo, 1998).

Some previous research results showed that problem posing learning model increased the creativity (Taufik, 2015; Mahmudi, 2007; Puspita, et al, 2015; Wuloyo, 2013), conceptual comprehension (Nurjanah, 2015; Katminingsih, et al, 2016; Jabar, 2015), and the ability in questioning (Wardana, et al, 2017; Aprianti, 2016; Prawidaningrum, et al, 2017; Romadhoni, et al, 2016). Besides, problem posing model also increased student motivation and learning outcomes, students 'critical thinking (Wijaya, et al, 2016), and students' communication skills (Juano & Pardjono, 2016). In addition, It improved students' learning outcomes in each cycle (Abdul, 2015).

According to Afifa (2017), problem posing model is better than the lecture model because it can help students improve their learning outcomes. Students who taught using problem posing model had better learning outcomes than students taught using regular methods (Astra, et al, 2012). Problem posing is a learning model that requires students to arrange questions or solve problems into questions (Sembiring, 2016). To improve student learning achievement, one way that used is the application of problem posing approach (Rozy & Dwikoranto, 2010)

Problem posing learning model is suitable to implement in physics learning. This is because it emphasizes more on students' activeness in learning. Students carry out activities in the laboratory such as observing, recording the observations, analyzing and concluding the question submission designed by the teacher. In problem posing, students urge to be able to make questions and then exchange with other students. This will make learning physics more fun, because they are directly involved in the learning process.

At the high school level, the question submission aligned with the specific objectives of teaching that students have a broad view and logical, critical, careful, creative and disciplined attitude. In learning, teachers should implement the strategies that involve students mentally, physically and socially. Base on reality, the learning system applied at Senior high school in Lhoknga is more dominated by conventional learning. Students tend to be passive because they only receive material and practice questions from the teacher, it is not enough to support the mastery of the physics concepts. The lack of concept mastery in physics characterized by a low-level achievement in learning.

Problem of Research

According to the observations and interviews conducted at Senior high school in Lhoknga, it found that they experienced several problems during the teaching and learning process: (1) students were less motivated in learning physics, most of them were absent in physics class. (2) students assume that physics is not fun. (3) students assume that learning is unimportant. The researcher also directly observed those phenomena at the senior high school in Lhoknga.

Research Focus

According to other researchers namely (Toha & Megawati, 2015) states that problem posing is beneficial to help teachers motivate students and increase students' interest in learning physics as well as to improve learning outcomes.

METHODOLOGY OF RESEARCH

General Background of Research

This research is a classroom action research (CAR) and uses direct observation data on the learning process in the classroom. According to the characteristics of CAR, this study is a gradual study. Each stage or cycle includes planning, action, observation, and reflection.

Sample of Research

The subjects in this study were 30 students of class XI-IA1 at Senior High School in Lhoknga and the problem posing learning model used in physics learning.

Instrument and Procedures

The data obtained from students learning outcomes and students' responses through the activities in managing learning. The data collected through the learning tools that prepared, namely the syllabus, lesson plans (RPP) and observation sheets to observe teachers' skills in managing class. while the response sheet is given to obtain student responses.

Data Analysis

Data analysis technique is how to manage data using descriptive statistics. While the completeness criteria are the indicators of research success. After collecting the data, the researcher analyzes them by using the formula of division and multiplication.

RESULTS AND DISCUSSION

This class action research will get results from each phase or cycle that carried out. The results of this study then described, analyzed, and reflected to determine the strengths and weaknesses in each learning cycle. These results seen from each lesson delivered to students and the lesson plan (RPP) improvements made by the teacher.

The results indicated that the average completeness score of students increased from the first cycle to the third cycle. Improved learning outcomes presented in graphical form in Graph 1.

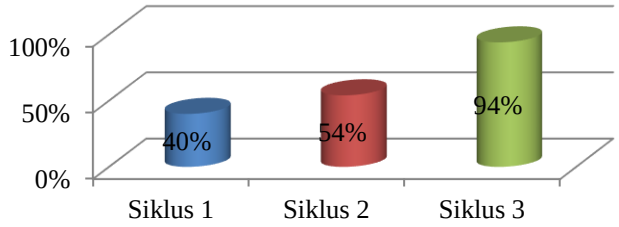

Figure 1. The Percentage of Individual completeness

In addition to individual completeness, classical completeness also increased from the first cycle, second cycle and third cycle.

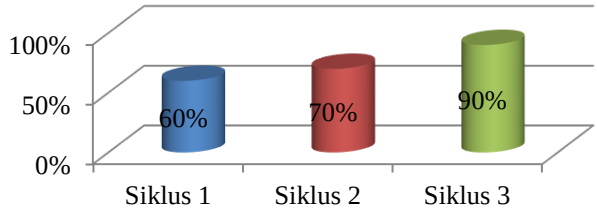

Figure 2. The Percentage of Classical completeness

Based on the results and data analysis that carried out, it summarized that there was an improvement in teacher skills managing learning by applying Problem Posing learning models.

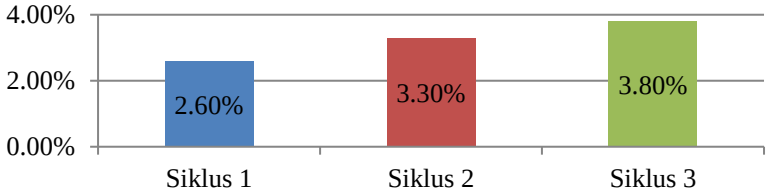

Figure 3. Teacher skills in managing learning

Based on the results of research and data analysis, it showed that students' responses to the learning process by applying Problem Posing learning model were very good. The details illustrated in the graph:

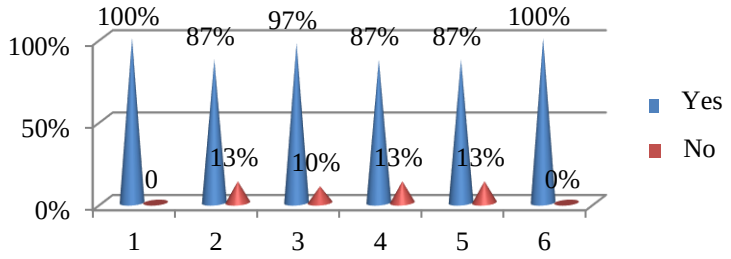

Figure 4. Percentage of learning responses

The chart above explains that most students were satisfied with Problem Posing learning process. They also gave very positive responses. This showed that students were enthusiastic about the learning presented. The learning model motivates students to increase their attention and get them involved in a fun and meaningful learning experience. It encouraged students to carry out learning activities as observed by observers. The high response of students indirectly helped them to get a concept comprehensively.

Based on previous research conducted by Elda Efriani stated that during problem posing implementation, students were able to work in groups. This shown from the analysis of data that group average score improved (Efriani, et al, 2015).

CONCLUSIONS

The improvement shown in the average score obtained by students and and the classical limitations from cycle I to cycle III, namely 40%, 54%, 94% and 50%, 70%, 90%. Learning outcomes obtained by students can be improved by: students practice to understand the material conveyed by the teacher and students practice to respond the learning conveyed by the teacher.

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