

EFFECTIVENESS OF PROBLEM - BASED LEARNING MODEL LEARNING DEVICES

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Abstract

The purpose of this study is to find out what problems are faced by teachers when developing a Problem based learning (PBL) model of learning tools to improve students' critical thinking skills. This research was conducted at SMAIT Daarul Hikmah Bontang class X¹ and X². The sample of this study was 25 teachers in the school, the sample of this study was 5 teachers who taught exact subjects. Primary data collection using observation sheets related to Problem based learning (PBL) Model learning devices containing 25 questions. The results of the study show problems related to compiling learning tools through a problem-based learning model(PBL) it was found that some teachers had problems with references and did not understand learning models that were relevant to learning materials in schools, assessment instruments as supporters related to the problems faced when compiling a problem based learning (PBL) model of learning tools . 80% student learning outcomes experienced a more significant increase after using the problem based learning (PBL) model.

Keywords: *Problem based learning (PBL) Learning Devices , Critical Thinking Skills*

Education is the main factor for the future of the nation today with support from various parties, for example from teachers, infrastructure and learning tools that support students to be more active. When viewed broadly, the problems that often occur in the world of education today are the skills of teachers in developing support for the learning process, especially in education at the provincial and district levels.

The real problems seen in the school world today are very worrying so that there is a need for new innovations to create education that is eligible to compete in the future so that it is necessary to make observations regarding any problems experienced by teachers in implementing active learning and being able to improve critical thinking skills and motivation student learning. The condition of education in the city of Bontang, which is one of the cities in the province of East Kalimantan, is concerning for the skills of teachers in implementing learning whose problem-solving skills are lacking in regional potential in classroom learning. Likewise, learning that implements the potential of the area in the Bontang area.

The results of observations and interviews in the field related to the learning process that has been carried out at 5 Bontang High Schools , stated that many teachers have difficulty in preparing learning tools such as syllabus, lesson plans, media, handouts , LKPD, and evaluation for all subjects based on the 2013 curriculum. In particular, the average Biology teacher has never had a good understanding of how to develop learning tools and only takes learning tools via the internet. The results of further observations obtained that the teacher's lack of understanding related to learning models that can trigger student learning motivation, especially on material related to problem solving. So far, the tools developed are only as a requirement to meet administrative demands so that teachers are not able to provide optimal learning and have an impact on critical thinking skills and student learning outcomes. The problem that occurs next is the lack of understanding of teachers in implementing the potential of the area as a source of learning in school learning. Bontang City has regional potential that can be used as a learning resource.

One of the learning models that are very supportive to improve students' critical thinking skills is *problem based learning* (PBL) where this learning model is a cooperative learning model that provides steps on how to come up with problem-based topics associated with classroom learning materials, *problem based learning* (PBL).) is very suitable for subjects related to environmental problems such as biology subjects. It is known that Biology learning emphasizes on providing direct experience that can be obtained from everyday life, the surrounding environment, and society that is full of technology.

The *problem based learning* (PBL) learning model is very supportive of Biology learning, especially on material related to environmental problems so it is very important for teachers to be able to develop *problem based learning* (PBL) learning tools . To facilitate teaching and learning activities in the classroom, it is very necessary to provide examples of the environment around the school so that students do not grope when understanding the learning concepts explained by the teacher.

The results of observations in 5 high school schools in the city of Bontang related to the problems faced by teachers when developing learning tools through problem based learning (PBL) models to improve students' critical thinking which was implemented through the Environmental Change model, it was concluded that there were still many teachers who did not understand how to do an innovation in compiling learning tools so that efficient and not burdensome steps are needed on the part of the teacher.

One of the efforts to improve critical thinking skills is to actively involve students in the learning process, one of the relevant learning tool models for this context is the *problem based learning* (PBL) model, which is a student-centered cooperative learning model, which places students into in heterogeneous groups seen from differences in skills and different backgrounds in terms of gender, ethnicity, and religion for problem solving on a topic. Based on the problems above, the researchers conducted research related to the problems faced by teachers when developing learning tools based on regional potential through *a problem based learning* (PBL) model for environmental change materials. Problems that are very worrying are clearly seen in the school world today so that new innovations are needed to create education that is worthy of competition in the future so that it is necessary to make observations regarding any problems experienced by teachers in implementing active learning and being able to improve critical thinking skills and learning motivation. student. This research is "the effectiveness of learning tools through Problem based learning (PBL) models to improve students' critical thinking skills?"

The purpose of this article is to determine the effectiveness of developing learning tools through the Problem based learning (PBL) model to improve students' critical thinking skills.

METHOD

This research was conducted at SMAIT Daarul Hikmah Bontang City class X¹ and X². The sample of this study was 25 teachers in the school, the sample of this study was 5 teachers who taught exact subjects. Primary data collection using observation sheets related to *Problem based learning* (PBL) Model learning devices containing 25 question points, Critical Thinking. Data collection for implementation is the results of pretest and posttest in class X students. The data analysis technique of pretest and posttest results uses the average score of students. (Sugiyono, 2014)

DISCUSSION

The research that has been carried out at SMAIT Daarul, Bontang, got the results as outlined in the following table:

Learning tools through the PBL model

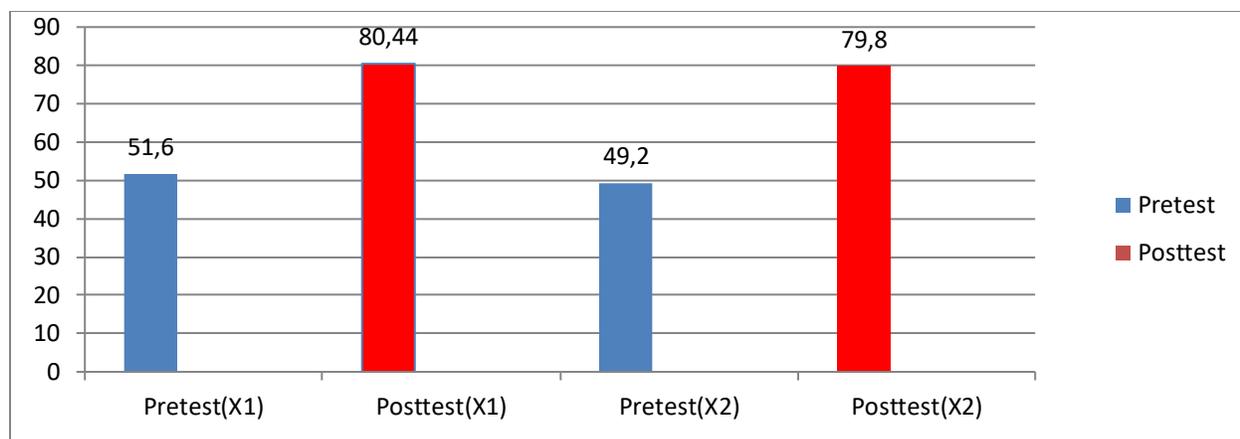
No	Learning Tools	Assessment criteria			
		Very difficult	Less Difficult	Difficult	Not hard
1	Syllabus	2 persons	2 persons	1 person	
2	RPP	3 people	2 persons		
3	Handouts	4 people	1 person		
4	Media	2 persons	2 persons	1 person	
5	LKPD	5 people			
6	Evaluation	4 people	1 person		

Source: Research Results 2019

Based on the results of observations related to teacher problems when compiling learning tools based on regional potential through *problem based learning* (PBL) models, it was found that some teachers stated that they were constrained by references and lack of understanding related to learning models that were relevant to learning materials in schools, assessment instruments as related supports. problems faced when compiling learning tools based on regional potential through *problem based learning* (PBL) models . (Amir, 2010). The six assessment indicators that have observed the problems faced by teachers vary so that in the development of learning tools, perceptions should be embedded and determine learning objectives so that it is easier to develop learning tools based on *problem based learning* (PBL) models .

The results of the research above show that teachers still have many difficulties in developing learning tools, both syllabus, lesson plans, *handouts* , media, LKPD and evaluation, this is because many teachers have not implemented classroom learning using varied and interesting models for students. If the teacher's ability to develop learning tools through *problem based learning* (PBL) models, learning will be better and students will be more active, it is supported by the theory *Problem-Based Learning* learning model is a student-centered learning model and supported by constructivist learning theory (Etherington, 2011). Learning *Problem-Based Learning* (PBL) is a way of building and teaching with the use of the problem is not structured as a stimulus and focus on learning (Hmelo & Barrows, 2006). The learning process begins with the discovery of a problem that serves as a focus or stimulus for the application of problem solving or reasoning, as well as for the information or knowledge needed to understand the mechanism of a problem and how it can be solved (Hamdan et al, 2014).

Seeing the results of the implementation of the devices that have been developed, they are presented through the bar chart below.



Bar chart 1. Pretest and Posttest results of Class X . students

Based on the bar chart that shows the results of the pretest and posttest of class X students, there is a very significant difference where the results of the pretest of the two classes that are sampled in this study have not met the KKM, this is due to the lack of understanding of students regarding the concepts that have been conveyed by the teacher so that many students did not answer the pretest. Based on this, teachers are required to make changes to improve students' critical thinking skills through active and innovative learning, of course, by using learning tools that have been developed with *problem based learning* (PBL) models . Savery, (2006) states problem-based learning is a learning model that prioritizes a student-centered approach that empowers students to conduct research, combines theory and practice, applies student knowledge and skills to solve real problems. Sumarmi, (2012) defines problem-based learning as a learning approach that focuses on students by directing students to become independent learners who are actively involved in group learning.

The PBL model has several advantages over conventional learning models and other learning models. One of the advantages of the PBL model according to Trianto (2009) "the PBL model is a learning environment that activates most of the principles that can improve learning such as active, cooperative, feedback". The advantages of the PBL learning model are also stated by Sumarmi (2012). The PBL learning model is useful for: 1) developing students' thinking skills so that they are not only additional thinking when knowledge is added, but here the thinking process is a series of skills such as collecting information or data, reading data and others whose application requires practice and habituation; 2) fostering the development of a curious attitude or wanting to know more, and an objective, independent, critical, and analytical way of thinking both individually and in groups; 3) students are able to deal with problems in the surrounding environment so that they try to mobilize all abilities to obtain problem solving.

The effectiveness of the PBL learning model on students' critical thinking skills can then be seen from the results of research conducted by Masek and Yamin (2011). The research shows that 1) the PBL learning process theoretically supports the development of students' critical thinking according to the applied design, 2) the empirical evidence generally convinces that the PBL learning model affects students' critical thinking skills, 3) some evidence shows that several variables also affect the model. PBL learning in cultivating students' critical thinking skills, such as age, gender, academic achievement, and educational background, calls for further research work.

Critical thinking is important in every aspect of our lives, because critical thinking is a process whose purpose is to help us to decide what we should believe and what we should do (Ennis, 2016). Affirming that in reality our lives depend on it, because the way we live life depends on what we believe

to receive. We more carefully evaluate the decisions we choose and separate relevant issues from those who disagree with us. Having the determination to make decisions and bringing relevant information to our decisions is part of the critical thinking process. The development of learning tools through the *Problem based learning* (PBL) model is carried out by exploring the concept and increasing references related to the PBL model. So that it can create active and innovative learning.

CONCLUSION

Based on the results and discussion above, it can be concluded that the problems faced by teachers during the process of developing learning tools through problem based learning models are the lack of understanding related to problem based learning (PBL) theory and the lack of teacher ability to determine learning objectives to adapt the model to be used. The six assessment indicators that are focused on in this research, namely syllabus, lesson plans, media, hand out, KLPD and evaluation have varied challenges so it is necessary to embed perceptions related to formulating goals and concepts used.

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