THE EFFECTIVENESS OF USING PROBLEM-BASED LEARNING (PBL) LEARNING MODEL TOWARDS CRITICAL THINKING STUDENTS OF CLASS VII SMP

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ABSTRACT

The teacher still does learning so that it has not allowed students to develop independence through finding and thought processes. Therefore, critical thinking becomes very less. The purpose of this study is to find out the values of students' critical thinking learning using the PBL learning model and direct learning model and compare the effectiveness of PBL learning model and direct learning model to critical thinking skills of students of Class VII of State Junior High School 3 Kasihan (SMP Negeri 3 Kasihan) Bantul in Academic Year of 2017/2018. The population of this study is all of the students of class VII. The samples were taken by using a random sampling technique. As the experiment class was Class VII and as the control class was Class VII A. The data collecting of this study using the essay test. The data collecting instrument of this study by using the validity test and reliability test. The data analysis technique used a prerequisite analysis test. There are normality test and homogeneity test, and hypothesis test using a t-test. The result of a significant level of 5% and df =60 showed that: (1) there was a different ability between students' critical thinking, which used the PBL learning model with a direct learning model. The value of t_{count} = 2,682884 shows it> t_{table} = 2,0003 and (2) the PBL learning model more effective than the direct learning model toward students' critical thinking ability. This research showed that the t_{count} = 2,682884 > t_{table} = 1,6706.

Keywords: Problem Based Learning (PBL) learning model, direct learning model, critical thinking.

INTRODUCTION

Education has a very important role in improving the quality of human resources. Law Number 20 the Year 2003 concerning the National Education System Chapter 1 Article 1 Paragraph (1) states that Education is a conscious and planned effort to create an atmosphere of learning and learning process to actively develop their potential to have spiritual, religious, and controlling power. Self, personality, intelligence, noble character, and skills needed by himself, society, nation, and country. In this case, an effort is needed to improve the quality of Education of the nation itself. So it needs to be done improvements, changes, and renewal of aspects that affect the success of Education include the curriculum, facilities and infrastructure, teachers, students, and teaching and learning methods.

Mathematics is a basic science that has an important role in developing science and technology because almost all science and technology require mathematics. Mathematics is formed from human thought related to ideas, processes, and reasoning (Ruseffendi in Suherman, Erman, et al., 2003: 16). Mathematics learning in schools teaches and trains students to think logically, rationally, and critically to understand concepts and solve problems that exist in everyday life. Mathematics learning is not only learned by memorizing formulas, mathematics is not only required to count, but students are also required to be more capable of solving various problems.

One-way learning causes students not to play an active role because the teacher always guides it in class. Hence, students have difficulty understanding the material and paying less attention to the steps in working on the problems. Students are not accustomed to searching and finding their answers to a problem in question. Students have not been entirely given the freedom to think critically. Bono (in Marike Muskitta and Djukri, 2016: 59) states that Understanding thinking is a mental skill that combines intelligence with experience. Thinking means a mental activity to make decisions in solving problems. Starting from the activity formulating the problem to solving the problem, someone will do

the thinking activity. Hassoubah (in P. Dwijananti and D. Yulianti, 2010: 112) states that critical thinking is thinking reasoned and reflective by emphasizing decision making about what to believe and do.

To get students with good critical thinking skills, we need a learning model to explore students' critical thinking skills. Joyce (in Suci Wulan Sari, 2012: 35) states that the learning model is a picture of a learning environment that includes teacher behavior that includes curriculum material to instructional design material, including multimedia programs. One learning model that is suitable for exploring indicators of critical thinking skills is the Problem Based Learning (PBL) learning model. The problem-based learning model is one approach that challenges students to find solutions to problems from the real world that can be solved in groups. Hosnan (2014: 298) states PBL is learning that uses real problems (authentic) that are not structured (ill-structured) and are open as a context for students to develop problem-solving skills and critical thinking as well as building new knowledge.

The Problem Based Learning (PBL) learning model is characterized by real-life problems raised by students and teachers as something students must learn to train and improve critical thinking skills and gain knowledge of essential concepts. The PBL learning process applies more to the learning of concepts, processes, and problem-solving. The choice of the Problem Based Learning (PBL) learning model is used to play an active role in learning. The purpose of this research is to find out (1) whether or not there is a difference between students 'critical thinking skills using Problem Based Learning (PBL) learning models and students' critical thinking skills using direct learning models in class VII students of SMP Negeri 3 Kasihan, Bantul Regency Academic Year 2017/2018, (2) which one is more effective between the Problem Based Learning (PBL) learning model and the direct learning model of the critical thinking skills of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency Academic Year 2017/2018.

METHODS

This research uses a quantitative approach. This research was carried out in SMP Negeri 3 Kasihan, Bantul Regency, in-class VII students in the even semester of 2017/2018 in April 2018. The research was carried out by the schedule of mathematics lessons at the school. This research is included in experimental research. In this study, sampling using a random sampling technique to the class. Of the four classes, two classes were drawn through the drawing obtained by class VIIA and class VIIC. Furthermore, the two classes are drawn again to determine the experimental class and the control class. Obtained class VIIA as a control class and class VIIC as an experimental class. The experimental class in learning uses the PBL learning model, while the control class uses the direct learning model.

RESULTS AND DISCUSSION

The research results obtained in the study are:

Table 1. Acquisition of Pretest Score for Experiment Class and Control Class

Description	Pretest	
	Experimentation Class	Control class
Sample	30	32
Lowest score	26,67	26,67
Highest Scores	48,89	44,44
Average	36,96333	35,3475

Table 2. Posttest Score for Experiment Class and Control Class

Description	Posttest	
	Experimentation Class	Control class
Sample	30	32
Lowest score	42,22	42,22
Highest Scores	77,78	75,56
Average	60,73433	53,95719

Table 3. Normality Test Results for Experiment Classes and Control Classes

Description	Posttest	
	Experimentation Class	Control class
Sample	30	32
χ^2_{count}	5,614	7,478
χ^2_{table}	11,0705	11,0705
Information	Normal	Normal

The homogeneity test for two free samples uses the following equation (Suparman: 52).

$$F = \frac{S_1^2}{S_2^2}$$

In testing the data variance's homogeneity with a significance level of 0.05 in the experimental class and the control class, the F_{count} value is less than the F_{table} value. ($F_{count} = 1{,}424508 < F_{table} = 2{,}065578$). With testing criteria, H_0 is accepted if $F_{count} < F_{table}$.

Table 4 shows that the F_{count} is in the H_0 reception area; thus, the data shows the two classes sampled from a homogeneous population.

Table 4. Homogeneity Test Results

Description	Posttest	Info.
F_{count}	1,424508	Homogeneous
F_{table}	2,065578	

Hypothesis testing of two parties with H_0 criteria is accepted if $t_{count} < t_{table}$ at the real level α = 0.05 and (df $n_1 + n_2 - 2$ and for other prices t is rejected. From the t distributions list, the price of t_{table} = 2,0003 while t_{count} = 2,682884 is obtained. This means that H_0 is rejected, and H_1 is accepted. Thus, it can be concluded that there is a difference between the ability to think critically using the Problem Based Learning learning model and the critical thinking skills of students who use the direct learning model of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency.

Hypothesis testing one party with the criteria H_0 is accepted if $t_{count} < t_{table}$ at the real level α = 0.05 and (df $n_1 + n_2 - 2$ and for the other price t is rejected. From the t distribution list, the price of t_table = 1.6706 while t_calculation = 2.682884 is obtained. This means that H_0 is rejected, and H_1 is accepted. Thus, it can be concluded that the Problem Based Learning model is more effective than the direct learning model of the critical thinking skills of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency.

Both samples were given different treatments. For the experimental class, the Problem Based Learning model is applied while the control class applies the direct learning model. The critical thinking skills of students who use the PBL learning model are more effective than students who learn with a direct learning model. This is because learning Problem Based Learning (PBL) student activities and cooperation with friends and interaction with teachers increase so that the classroom atmosphere is more conducive to learning. The teacher acts as a facilitator while students as the center of learning. Students appear to be more active in participating in learning in class and easy in understanding the material. PBL model is learning that focuses on the selected problem, so students not only learn the concepts but

also learn or find methods to solve those problems. Learning like this requires students to think for themselves, ranging from identifying problems to solving problems. Students are required to find their answers; the teacher only gives direction so that their ability to think critically is better trained.

Whereas indirect learning students tend to look passive and more active teachers. According to Agus Suprijono's theory, which has been put forward in a theoretical study, direct learning refers to a teaching style where the teacher is actively involved in carrying out the lesson's content to students and teaching it directly to the whole class. This learning places more emphasis on students to listen to any material delivered by the teacher because the teacher directly controls the whole learning process. The data they obtained was partially provided by the teacher, not looking for themselves. In this case, students are less focused on the material delivered by the teacher. Some students do not pay attention to problem-solving steps and are more engrossed in chatting or playing. Moreover, when given a task by the teacher, most students can not complete the task correctly. Based on the results obtained, it can be seen that the PBL learning model is effective in improving the critical thinking skills of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency in the academic year of 2017/2018.

CONCLUSION

Based on the research results on the effectiveness of the use of the Problem Based Learning (PBL) learning model for the critical thinking skills of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency in the Academic Year of 2017/2018, the following conclusions are obtained:

1. There is a difference between the students 'critical thinking abilities using the Problem Based Learning (PBL) model and the students' critical thinking abilities using the direct learning model of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency. This is indicated by the results of testing the hypothesis of two parties, namely the value of t_{count} = 2.682884 and t_{table} = 2,0003. It appears that $t_{count} > t_{table}$.
2. The Problem Based Learning (PBL) learning model is more effective than the direct learning model for the critical thinking skills of Grade VII students of SMP Negeri 3 Kasihan, Bantul Regency. This is indicated by the results of testing the one-party hypothesis t, the value of t_{count} = 2.682884 and t_{table}= 1.6706. It appears that $t_{count} > t_{table}$.

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