

The Effect of Problem-Based Learning Model Increase The Creative Thinking Skill and Students Activities on Elementary School

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Abstract

The objective of this research is to know the effect of problem-based learning model towards creative thinking skill and students activity. The research was conducted on the social problem material. The research method was Quasi Experimental Design. The sampling technique was cluster random sampling. The data collected in the form of observation sheet instrument of students' activity and instrument of creative thinking skill. Data were analyzed by using the independent t-test to test the comparasion or difference. In testing the effect, it used N-gain. The results of the research shows that there is a difference of influence of creative thinking skill; it is seen from the average of N-gain pretest and posttest of the students. The result of t-test in the experimental class reveals that the average score of pretest is 51.45, while in the posttest is 87.90, so the experimental group has an improvement of 26%. It is obtained t_{value} is higher than t_{table} ($2.917 > 2.000$). The achievement of students activity in the experimental class improves, with the average score of observations that reaches very well criteria. The conclusion of this research is the problem-based learning model has an effect on the creative thinking skill and the students activity.

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INTRODUCTION

Developing students' potential in creating an idea in science is not easy. In order to develop the potential of science and technology of students today, it is necessary to improve the skill in various fields of education (Suyanto *et al.*, 2012). One of the fields that need to be improved is social studies. That is similar to Murnawianto *et al.*, (2017), that the education of social studies is able to improve the thinking skills needed in the 21st century.

One of the skills required is a skill in creative thinking. Such skills are used primarily in introducing problems and designing experiments, so it is needed by students (Aktamis & Erign, 2008). Creative thinking skills are also needed to create an alternative problem-solving (Suyanto *et al.*, 2012). It's because to solve a problem is not enough only rely on intelligence, but also use creative thinking skills (Sulistiarmi *et al.*, 2016). Creative thinking skills are required for students in the future (Yunianta *et al.*, 2012). Creative thinking skills are influenced by students' learning activities in the classroom.

Learning activities use all the potential of individuals so that there will be changes in certain behaviors. So in conducting the learning activities, the students should use all the potential they have so that their knowledge develop optimally (Rusman, 2011). Furthermore, the student learning activity is an activity undertaken by students in learning activities both physical and mental which is influenced by the environment condition (Arini, 2007). The similar definition also said by Purbiyanti (2017), that the learning activity is an activity or action both physically and mentally conducted by individuals to build their knowledge and skills in effective learning activities. However, students are lack of creative thinking skills and learning activities.

The creative thinking skills and students' activities can certainly be generated through appropriate learning models. The appropriate social studies learning model for elementary school children is a learning model that adopts a student's learning situation to real-life situations in the community. Students are given the

opportunity to use the instruments and learning media that exist in their environment and apply them in everyday life. Nevertheless, sometimes learning at school also still has not developed those skills.

Learning method that is able to apply creative thinking skill is problem-based learning. This learning model is an active learning model. In simple terms, problem-based learning is defined as a teaching process that enables students to actively engage in the learning process. Kuswidyarko (2017) stated that problem-based learning model can train problem-solving skills in learning activities so that student learning outcomes can improve. Furthermore, the students who very well creative thinking skill will affect their learning outcomes, it will obtain learning outcomes in a high category (Haryani, 2015).

The study regarding on problem-based learning model towards the creative thinking skill and students activity is rarely conducted. Fitriyono's research results (2015) revealed that problem-based learning can increase the students' learning interest, the learning becomes more meaningful, help the students in solving real-life problems, and support future career. In addition, students activity in problem-based learning provides motivation towards the students because they train students to think critically, analyze and improve the high-order thinking skills (Nugraha, 2017).

The purpose of this study are to know the effect of problem based learning model increase/enhance the creative thinking skill and students activity. Also, to know the significant difference at the student activity before and after the learning process using problem-based learning model.

METHODS

The research design was using Quasi-Experimental Design in the form of Nonequivalent control group. The study was conducted in two classes which are given different treatment, the experimental class will be treated by using the Problem Based Learning

model while in the control class were treated by using the direct learning model. The research procedure consists of the initial observation stage, the research planning stage, the implementation stage, and the data analysis stage.

The sampling technique was cluster random sampling with the number of 42 students. There were two classes of 4 graders which were used as sample, they are 4th graders of State Elementary School 1 *Pahesan* as experimental class and 4th graders of State Elementary School *Tungu* as control class.

Data collection technique used in this research was observation technique with the instruments in the form of observation sheet of students activity and test technique with the instrument in the form of test of creative thinking skill.

Data analysis techniques consisted of pretest data analysis, instrument data analysis, and the effect of problem-based learning model of creative thinking skill and students activity. Analysis of pretest data was used to determine whether the sample was normally distributed. Analysis of instrument data in the form of learning media validation and items analysis of creative thinking skills with validity test, reliability test, difficulty level, and discriminating power to obtain valid questions. The independent analysis of t-tests to analyze the differences in creative thinking skills, and an N-gain test to analyze the improvement of creative thinking skills.

RESULTS AND DISCUSSION

The Results of Student's Creative Thinking Skill

The research conducted resulted in two data, they are the data of initial test score and final test score data of social studies learning process. The pretest and posttest results of the experimental class and control class are relatively high or there are many differences. This can be seen from the comparison of learning mastery of experimental class and control class.

In the experimental class, it is achieved 51% of minimum learning mastery while in the

control class is 53%. The posttest results show that experimental class learning outcomes are much better than control class. In the experimental class, it reaches 87% of minimum learning mastery while in control class achieves 67%. The average score of creative thinking skills of experiment and control class as shown in Table 1.

Table 1. Average Creative Thinking Score of The Experiment and Control Class

Data	Class	The lowest score	The highest score	The average score of learning mastery (%)
Pre test	Experiment	36	66	51
	Control	32	68	53
Post test	Experiment	78	100	87
	Control	55	83	67

Based on Table 1 shows that the cognitive results of the experimental and control class before and after implementing the learning process between the experimental class and the control class show that there are relatively large differences. After learning, the results of cognitive tests in the experimental class were much higher than the control class. This is seen from the comparison of the average learning outcomes of the experimental class with the control class. The result of pretest in experimental class is obtained on average 51, while in control class, it obtains 53. The post-test result in experimental class is 87 meanwhile in control class is 67. The enhancement of the learning process was applied can be seen from n-gain analysis is shown in Table 2.

Based on n-gain analysis results of learning outcomes of experimental class in pretest-posttest, it is classified in high gain. Meanwhile, in the control class includes low gain. The effect of problem-based learning treatment was analyzed by independent sampe t-test. The t-test results show $t_{\text{value}} > t_{\text{table}}$ ($2.32 > 1.67$). The results of the t-test analysis show that the creative thinking skill test results of the experimental class students are better than the control class. Based on the data it can be concluded that problem based learning has an effect on the student's creative thinking skill.

Table 2. Results of n-gain Analysis

Group	The average of pretest score	The average of post-test score	Maximum score	Gain score	Gain score criteria
Eksperimen	54.50	82.75	100	0.750	High
Kontrol	53.33	69.76	90	0.448	Low

Furthermore, the achievement of the creative thinking skill of the student can be seen on Table 3.

Table 3. The Achievement of Creative Thinking Skill

Indicator	Score	
	Control class	Experiment class
Formulate the problem	126	132
Build the basic skills	31	81
Provide further explanation	49	64
Determine the action	110	141

Table 3 shows the achievement of the control group's creative thinking skill indicators. Based on the above table shows that there is a difference between the creative thinking skill of the experimental class and the control class. Differences indicating that the experimental class got a better average score because the syntax/ steps contained in the problem-based learning model can train students' creative thinking skill.

Students Activity with PBL Model

The data collection of students learning activity result is conducted through observation technique by using observation sheet instrument of students activity. Observation of students activity is conducted in experimental group by using Problem Based Learning model and control group by using direct learning model. Students Activity Indicators were: (1) Readiness of students to follow lesson, (2) Students observe learning video, (3) Make statement or hypothesis, (4) Collect the data and information, (5) Interpret the information, (6) Prove statement formulation, (7) Students draw conclusion. The students' activity score of the experimental class in the first meeting shows the average percentage in the learning process of all students is 64%, it is classified in the high criterion. At the sixth meeting, the result of student activity observation shows the average percentage of the learning process of all students by 91% then it belongs to a

very high criterion. While for the control class, in the first meeting, the average percentage of the student's learning process is 61% and at the sixth meeting is 78%, they are classified in the sufficient category.

Students Learning Activities Before and After Implementing Problem Based Learning Model

Based on the results of statistical analysis by using one sample t-test, it indicates that there are significant differences in students activity before and after treating the learning process by using problem-based learning model.

Based on the analysis by using SPSS 20 computer program, the result of one-sample t test on the students' activity of social studies in the experimental class get significance value of 0,000 with the average score of initial and the final learning activity of social studies are 48.64, and 7.75, respectively. Its means H_0 is rejected and H_a is accepted, because of the significance value < 0.05 . Thus, there is a difference between students learning activities of social studies before and after implementing the learning process by using problem-based learning model. While the result of one sample t-test on student's learning activity of Social Studies in the control class gets significance value of 0,000 with the average score of initial and final learning activity of social studies are 48.61 and 56.93, respectively. Hence, H_0 is rejected and H_a is accepted because of significance value < 0.05 . Thus, it means that there is a difference between students learning activities of social studies before and after implementing the learning process by using problem-based learning model.

Different result on the experiment class and control class because the problem based learning implementation is able to optimize the learning outcomes and the creative thinking skill (Bilgin, 2009). The similar opinion also given by Selcuk's (2010) that the problem based learning was given better influence in stimulation and

developing creative thinking skill of the student on the high school. Furthermore, the problem based learning model can improve the success of the student skill and makes activities more fun, entertaining, and meaningful.

The differences in the improvement of creative thinking skills in the class which is taught by using the problem-based learning model with the class which is taught by using direct learning model, based on the hypothesis test of *independent t test* by using SPSS 16.0 for Windows. Through *the Independent t test*, it can be seen that the score of learning result, in this case, the creative thinking skill on pretest obtains the Sig (2-tailed) value of $0.000 < 0.05$. In the decision-making of *the Independent t-test*, if the value of significance or sig. (2-tailed) < 0.05 then H_0 is rejected and H_1 accepted, which means that there are differences in pretest and posttest scores between the experimental and control classes. the N-gain of the experimental class and the control class has a sig (2-tailed) value of $0.002 < 0.05$. If in the decision-making of the *Independent t test*, if the significance value of sig. (2-tailed) < 0.05 . Then H_0 is rejected and H_1 is accepted, which means there is N-gain difference between the experimental class and the control class.

Based on the above explanation, it can be concluded that there is an effect of students' creative thinking skill of experimental class which applying problem-based learning and the control class which is taught by using direct learning model. The various types of components in the environment of students that can stimulate them to learn. This means that there is a need for a capacity to identify information in creating students who can solve social problems. In this problem-based learning, the social problems can make students become more ready to face life in the community.

To be able to measure students' learning outcomes in the form of creative thinking skills, teachers can do product evaluation. So that the results of learning in creative thinking have been achieved. Susanto (2013, 6-11) categorizes the learning outcomes in three parts; First, the understanding of concepts (the cognitive aspect) is the ability to explain and interpret something.

So they do not only know but they really understand by being able to give pictures, examples, and explanations

The conclusion of implementation of problem-based learning model are it can improve more student's creativity than direct learning model. Moreover, also the problem-based learning model can make the learning process become more active, creative and fun. According to Fatchurrahmah (2017) problem-based learning is an effective approach, but it must be adjusted to the level of cognitive structure of students. So one of the learning models that can be used to make students experience their own learning process is a problem-based learning model.

The result of data analysis shows the difference of students activity improvement through the implementation of problem-based learning model than direct learning model. The average score of students activity in the experimental class has increased from the first to the sixth meeting. Based on the average results of observation, it indicates that the improvement of students activity on the problem-based learning model is higher than the direct learning model.

By connecting creative thinking skills, students are expected to master the concept and apply it in everyday life. Zaini et al, (2008) in Ambarsari et al. (2012), argued that students will easily remember the acquired knowledge independently longer than the information he or she gets from listening to others. So creative thinking is great to develop for students.

Based on the above explanation, it can be concluded that the problem based learning model makes students able to be more active and responsive in facing the existing problems in the environment, also they will be more creative than the direct learning. Through the problem-based learning model, students are able to determine the concept of learning and associated with existing applications in real life.

The effect of problem-based learning model in improving creative thinking skill between experiment class and control class is calculated by using N-gain formula. Improved creative thinking skills is classified in the high category with a percentage of 27% and in the

medium category as much as 73%. While in the control class which is taught by using direct learning model only get 4%, and it is classified in the high category and others as much as 96% belongs to a medium category.

The above description shows that the improvement of creative thinking skills of students by using problem-based learning model is higher than students who only use direct learning model. Learning-based learning can improve motivation, creativity and provide experience on problem-solving by using technology (Sumarni et al., 2016).

Based on the explanations, it can be concluded that the problem-based learning model is able to give influence to improve students' creative thinking skill.

Through Problem Based Learning, students have the skill to think creatively and learning activities that appear from reading, writing, observing so that it can be used as means to live in the society and solve the problems faced in daily life related to social problems.

CONCLUSION

Based on the theoretical review and analysis of the results of research that has stated in the previous chapter, it can be concluded that; problem-based learning model has a significant effect on the creative thinking skill and students activities. Problem-based learning model makes the learning process more active, creative and fun. Through the problem-based learning model, students are able to determine the concept of learning and associated with existing applications in real life.

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