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**The Influence of Open Ended Approach with Cooperative Learning Type
Co-op Co-op towards Problem Solving and Creative Thinking
Ability In Mathematic Students**

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Abstract

The problem solving and creative thinking ability is one of main problems in students. Therefore, there is a need of methods in mathematics learning in order improve the problem solving and creative thinking ability. One of the mathematics methods that can improve the problem solving and creative thinking ability is Open Ended Approach with Cooperative Learning Type *Co-op Co-op*.

This research was conducted to examine whether there are differences the problem solving and creative thinking ability of students that study using Open Ended Approach with Cooperative Learning Type *Co-op Co-op*. This research was a quasi-experimental research and the design was Postest Only Design With Nonequivalent Group. The research was conducted in May through June 2012 with 49 students as sample. The instruments used in this research consisted of testing to Problem Solving and creative thinking. The data was analyzed using the t-test.

The results showed that there were differences in Problem Solving and creative thinking of mathematics between students who were taught using Open Ended Approach with Cooperative Learning Type *Co-op Co-op* with students were taught using conventional approach. Based on the findings of the research, the application of the Open Ended Approach with Cooperative Learning Type *Co-op Co-op* can be used as an alternative learning method that can be applied in an effort to improve the Problem Solving and creative thinking ability.

Key Words: Open Ended Approach, Cooperative Learning Type *Co-op Co-op*, The Problem Solving, and The Creative Thinking Ability.

A. Introduction

Every students must have some mathematics ability such as the understanding in concept, the problem solving, the creative thinking, the critical thinking and communication mathematics in the islamic junior high school (MTs). But, the students of junior high school in Indonesia have low

achievement in mathematics. The low achievement in mathematics can be seen at in the The Trends International Mathematics and Science Study (TIMSS) and Program for International Assessment (PISA) to VIII class junior high school. In the TIMSS 2007, Indonesian got level of 36 from 48 countries in mathematics survey participants. In PISA test of math 2009, Indonesian got level of 61 from 65 countries.

Mathematics have an important role in the our life. In fact, the type of Mathematics roles in our life is like calculating income, total expenditure and many other. The problem solving and the critical thinking are high thinking ability. But, many students don't have this ability. Because of the importance of the problem solving and the creative thinking in mathematics, the students must have good understanding in its concepts. In addition, the teachers must have a learning strategy to improve the problem solving and creative thinking ability.

Strategy is used to facilitate students in learning process so that the students can optimize the achievement in mathematics including the problem solving and the creative thinking ability. In fact, The students in MTs Nurul Hidayah, Sungai Salak had some problems in problem solving and the creative thinking. Based on the interview with the mathematics teacher, Mr. Zainal Abidin, that the teacher had tried to improve the achievement in mathematics including the problem solving and the creative thinking ability by giving many exercises to students, but most of the students cheat their friend's works.

The researcher did observation at 8 February and the researcher saw if the teacher explained learning material although the students only heard the explanation of the teacher. Some students asked the question to the teacher or gave any response when the teacher explained. There were symptoms of low problem solving and the creative thinking ability in mathematics from the observation, such as if the student was given questions about the problem solving, most of the students had difficulties in completing it and most of the students did question on just sticking to one way.

Based on the above symptoms, the learning process must be improved and renewed. One of the efforts that can be done is by using learning model or approach. One of model that can improve the problem solving and the creative thinking ability is open ended approach and cooperative learning type Co-op Co-op. The purpose of open ended approach is to help the development of creative activities and mathematics thinking of the students through the problem solving simultaneously (Suherman, 2001: 114). According to Downey cited by Trianto that the essence of good thinking ability is the problem solving.

The purpose of cooperative-learning type co-op co-op is to give the opportunity to the students to work together to find solution and share the mathematic problem solving in mathematics to other students. So, the researcher gave the research title of : *“The Influence of Open Ended Approach with Cooperative Learning Type Co-op Co-op Towards Problem Solving and Creative Thinking Ability In Mathematic Students”*.

The Formulation Problem

1. Is there any influence of Open Ended Approach with Cooperative Learning Type *Co-op Co-op* towards Problem Solving In Mathematics?
2. Is there any influence of Open Ended Approach with Cooperative Learning Type *Co-op Co-op* towards Creative Thinking Ability In Mathematics?

The Research Purpose

Based the formulation, the purpose of this research is to examine and analyze:

1. The Problem Solving In Mathematic students that were taught by Open Ended Approach with Cooperative Learning Type *Co-op Co-op* with conventional approach.
2. The Creative Thinking Ability of the students that were taught with Open Ended Approach with Cooperative Learning Type *Co-op Co-op* and conventional approach.

B. Research Method

1. Research Type

This research was quasi-experiment and the design research was *Posttest-only Design with Nonequivalent Group*. This design has one experiment class and it is given posttest without pretest. A control class is without treatment and without pretest.

2. Population and Sample

The population in this research was all eight class students of MTs Nurul Hidayah Sungai Salak academic year 2011/2012 that amounted 76

students and separated into three classes. The name of the class is VIII.1 with 27 students, VIII.2 with 25 students, VIII.3 with 24 students. The sampling technique was random sampling with random class. The sample of this research was VIII.2 class as experiment class and VIII.3 class as control class.

3. Procedure

a. Planning

Researcher prepared lesson plan and the data collection instrument.

b. Implementation

- 1) The teacher gave appreciation and motivation.
- 2) The teachers explained the indicator and learning system using open ended approach and cooperative learning type co-op co-op.
- 3) The teacher gave student assignment sheets.
- 4) The teacher gave an open problem in the student assignment sheets.
- 5) The students did an open problem independently
- 6) If the student can't do problem, the teacher will help scaffolding.
- 7) The teacher coordinated the students in the study group.
- 8) In the study group, the students discussed open problem.
- 9) The teacher asked the students to give presentation about an open problem.
- 10) The other students gave response , expressed opinion and asked group presentation.

11) The teacher gave positive feedback to students and reinforcement in the form oral, written, gesture, or gift to student.

12) The students and the teacher made conclusion about learning material.

c. Evaluation

The teacher gave a test about learning material by problem solving and creative thinking ability test.

4. Instrument

a. The Instruments in conducting the Research :

- 1) lesson plans (RPP)
- 2) the student assignment sheets (LKS)

b. The collected data from :

- 1) The problem solving test
- 2) The creative thinking test
- 3) Observation
- 4) Documentation

5. Data Analysis

The quantitative analysis was used "t" test.

C. Research Finding and Discussion

1. The Problem Solving.

The result of "t" test can be seen in table 1:

TABLE 1
"T" TEST

t_{hitung}	$-t_{tabel} 5\%$	$t_{tabel} 5\%$	Result
3,4422	-2,01	2,01	H_0 rejected

Table 1 showed that $t_t = 3,4422$, If t_t was compared with t_0 in the significant level 5% is $-2,01 < 3,4422 > 2,01$. Therefore, the result of calculation can be concluded that H_a is accepted and H_0 is rejected. So, the mathematic problem solving using open ended approach with cooperative learning type co-op co-op had more positive influence than the mathematic problem solving using conventional approach because the mathematic problem solving in the experiment class was higher than the mathematic problem solving in the control class.

2. The Creative Thinking.

The result of "t" test can be seen in Table 2:

TABLE 2
"T" TEST

t_{hitung}	$-t_{tabel} 5\%$	$t_{tabel} 5\%$	Result
7,6419	-2,01	2,01	H_0 rejected

Table 2 showed that $t_t = 7,6419$, If t_t was compared with t_0 in the significant level 5% is $-2,01 < 7,6419 > 2,01$. Therefore, the result of calculation can be concluded that H_a was accepted and H_0 was rejected. So, the creative thinking using open ended approach with cooperative learning type co-op co-op had more positive influence than creative thinking using conventional approach because the creative thinking in the experiment class was higher than the mathematic creative thinking in the control class.

Discussion

Sugiyono said that the treatment group is better than control group, so treatment was given to treatment group have positive influence (Sugiyono: 2012, 159). From the positive influence of the implementation of open ended approach with cooperative learning type co-op co-op, so it can increase the problem solving and creative thinking ability.

The purpose of open ended approach is to help the development of creative activities and mathematics thinking of the students through the problem solving simultaneously (Suherman, 2001: 114). According to Downey as cited by Trianto that the essence of good thinking ability is the problem solving.

The purpose Cooperative learning type co-op co-op is to give the opportunity to the students to work together to find solution and share the mathematic problem solving to other students. So, there are many solution in problem solving of mathematics that will be found by the students. Therefore, the implementation of Open ended approach with Cooperative Learning Type Co-op Co-op had positive influence to increase the problem solving and the creative thinking ability.

D. Conclusion

1. There was an influence of open ended approach with cooperative learning type co-op co-op towards the problem solving.
2. There was an influence of open ended approach with cooperative learning type co-op co-op towards the creative thinking ability.

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