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The Efforts to Improving the Creative Thinking Ability Through Problem-Based Learning of Junior High School Students

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Abstract: **This study aims to improve students' creative thinking ability by applying problem based learning model. Problems were identified based on initial observation result that consist of initial test and interview with mathematics teacher for grade VII-3 in SMP N 1 Rantau Selatan. Initial ability test was done to know creative thinking ability and references to grouping students in problem based learning that will be done next. This research was Class Action Research , which is implemented in SMP N 1 Rantau Selatan. The subject in this research were the students of grade VII-3 academic year 2014/2015 that consists of 39 students. The objects of this research were the students' creative thinking ability which measured by four indicators, namely fluency, flexibility, originality, and elaboration, and problem based learning model. The level of capabilities planned in this research was ≥ 80% of the total students that followed the test. This research consisted of 2 cycles and from the first cycle consists of 2 meetings and the second cycle consists of 2 meetings. Student's creative thinking ability test was conducted at the end of each cycle. The results of this research could be seen : (1) The student's creative thinking ability test in cycle 1, completed by 22 students and not completed by 17 students, classical completeness was 56,41 %. (2) The student's creative thinking ability test in cycle 2, completed by 34 students and not completed by only 5 students, classical completeness was 87,18%.**

Keywords: **Classroom Action Research, Problem Based Learning, Creative Thinking Ability.**

I. INTRODUCTION

Basically education is a process to help people in developing their potential and thereby able to deal with any changes that occur. Through education a person will get a variety of good science science science and technology. Without an educated person will never know about the development of the outside world can not even compete in the outside world. Therefore, education is indispensable in everyday life. As well as that science will never be used up but will grow if used.

In the world of education, mathematics as a subject in school was considered quite an important role, both in shaping the patterns of thought and qualified students into its application in everyday life and also because mathematics is also a means to study something to think logically an systematically.

Problem mathematical faced by students are often not immediately able to find the solution, while the students are expected and required to be able to resolve the matter.Students seemed to just listen, copy or imitate what is given by the teacher. Students are not allowed or encouraged to develop her potential, and creativity (Lince, 2016). However, learning mathematics is still in the spotlight, that mathematics is seen is a difficult matter. Based on the experience of researchers at Teaching Experience Program in School shows that the student has a low learning spirit, and mastery of the mathematics learning of students is low. Learning mathematics in school, have tended to focus on the teacher (teacher centered). Teachers too dominating class , while students in the class only to be the object. Events that stand out are the

students just act as listeners, students are less engaged and motivated to learn something about the learning, so thinking ability is not creative that is just follow the steps or instructions that have been there before.

Students' creativity or creative thinking ability of students often become neglected in the teaching of mathematics. Generally people assume that creativity and math has nothing to do with each other, and generally think that most necessary logic in mathematics, while creativity is important in learning mathematics.

People engage in unique thinking because of an intrinsic desire to find new and better things. This is called creative thinking. The power of a nation depends greatly on the quality of new knowledge and unique information. Our societies require creative thinking more and more than in the past. Because of social changes, the Republic of Korea is paying more attention to the development of creativity. Until now, there has not been enough educational support to educate children who have high creativity and special talents in regular schools, and they have been neglected. They must not be overlooked, but their latent ability and creativity should be developed and supported at the national level. In order to do so, first, there should be research conducted in the area of creative thinking and the development of educational programs for children (Kyung Hwa Lee, 2005).

Issues regarding creativity can not be ignored given above is an aspect of creativity needs to be developed in education. Creativity plays an important role in a series of high - level mathematical thinking. Creative thinking can also be viewed as a process that is used when an individual bring in or bring up a new idea. The new idea is a combination of previous ideas that have never been realized. Understanding creative thinking is characterized by a new idea that emerged as a result of the thinking process.

II. CREATIVE THINKING

Creative thinking is mathematical thinking in solving mathematical problems. If in solving math problems routine, and students can complete in a manner different from that taught by teachers in the classroom, then these students can be said to be creative in mathematics (Lince, 2016). According to Briggs and Davis (2008) creative in mathematics is not a solution that is completely new, for example, when students find out the solution of a problem, it means the same creative to find a new answer. This leads to answers obtained by the students is the result of his own thoughts.

III. PROBLEM-BASED LEARNING

Relative to the need for a mathematical model of learning that can improve students' understanding of a math problem. The use of problem-based learning model is one alternative to improve the creativity of students.

Joyce and Weil (1980: 1) said that a model of teaching is a plan or pattern that can be used to shape curriculums (long-term courses of studies), to design instructional materials, and to guide instruction in the classroom and other settings. As we describe models and discuss their uses, we will find hat the task of selecting appropriate models is complex and that the forms of “good” teaching are numerous, depending on our purposes.

Change in the way in which students are no longer as an object of study, but has been a subject of learning in the learning process becomes the starting point of the discovery of many models, or an innovative approach to learning. Ivor C Davis (in Rusman, 2013 : 229) argued that one of the often overlooked is the tendency to forget that the essence of learning is students’ learning instead of teacher’s teaching.

Problem-Based Learning (PBL) is a learning model that is characterized by the presence of the real problems that are not well structured as the context for the learners to learn critical thinking and problem-solving skills and acquire knowledge. Problem-based learning is one of the learning model associated with contextual learning. Learning means confronted with a problem, which then through problem solving, by through problems, students learn more basic skills.

Yelland (in Etherington, 2011 : 54) Problem-based learning is a student-centered method of teaching that involves learning through solving unclear but genuine problems. It is a constructivist, student-focused approach that promotes reflection, skills in communication and collaboration, and it requires reflection from multiple perspectives.

Polya (1978 : 206) stated that the intelligent problem solver often asks himself question similar to those contained in our list. He, perhaps, discovered questions of this sort by himself. or, having heard such a question from somebody, he is possibly not conscious at all that he repeats the same stereotyped question again and again.

Delisle (1997 : 7) stated that troblem-based learning (PBL) works well with *all* students, making its strategies ideal for heterogeneous classrooms where students with mixed abilities can pool their talents collaboratively to invent a solution. These techniques also lend themselves to an interdisciplinary orientation since answering a problem frequently requires information from several academic areas. By allowing children to direct their own activities and by giving them greater responsibilities, teachers show them how to challenge themselves and learn on their own. Teachers who use active learning say they have seen their students learn more material, understand more ideas, and enjoy school more.

Torp and Sage (2002 : 15) also argued that problem-based learning is focused, experiential learning (minds-on, hands-on) organized around the investigation and resolution of messy, real-world problems. PBL which incorporates two complementary processes, curriculum organization and instructional strategy—includes three main characteristics:

1. Engages students as stakeholders in a problem situation.
2. Organizes curriculum around a given holistic problem, enabling student learning in relevant and connected ways.

Creates a learning environment in which teachers coach student thinking and guide student inquiry, facilitating deeper levels of understanding.

Tan (2003 : 31) stated The goals of PBL are content learning, acquisition of disciplinerelated heuristics and development of problem-solving skills. PBL also includes the lifewide learning goals of self-directed learning, information-mining skills, collaborative and team learning, and reflective and evaluative thinking skills.

Arends (2012 : 411) stated The five phases of problem-based learning and required teacher behaviors for each phase:

Table 1.Syntax for Problem Based Learning Model

Phase	Teacher Behavior
Phase 1: Orient students to the problem.	Teacher goes over the objectives of the lesson, describes important logistical requirements, and motivates students to engage in problem-solving activity.
Phase 2: Organize students for study.	Teacher helps students define and organize study tasks related to the problem.
Phase 3: Assist independent and group investigation.	Teacher encourages students to gather appropriate information, conduct experiments, and search for explanations and solutions.
Phase 4: Develop and present artifacts and exhibits.	Teacher assists students in planning and preparing appropriate artifacts such as reports, videos, and models, and helps them share their work with others.
Phase 5: Analyze and evaluate the problem-solving process	Teacher helps students to reflect on their investigations and the processes they used.

By applying this model, the expected learning that takes place can be more meaningful and gives a strong impression on the students, and can certainly improve the ability to think creatively math of students so that the learning process is always demanding improvement efforts. Based on the description above, the researchers wanted to conduct a study entitled "Application of Problem-Based Learning Model to improve the mathematical creative thinking ability of junior high school student".

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IV. METHOD

This research was conducted in SMP Negeri 1 Rantau Selatan. The time of this research was held in odd semester of academic year 2014/2015. The subject in this classroom action research were students of grade VII - 3 SMP Negeri 1 Rantau Selatan as many as 39 students. the researcher choose this class to be subject because in initial ability test, get very low score for the creative thinking ability. Object of this research was mathematical creative thinking ability of students in solving mathematical problems that is taught by problem-based learning model.

The type of this research is class room action research (CAR). This research purpose to help students still have problems in their creativity to solve math problems, especially about the geometry such that the researchers tested through Problem Based Learning (PBL) Model. According to the type of research that is used is action research (classroom action research), then this study has several phases that constitute a cycle. Each cycle is implemented in accordance with the changes that will be achieved. In this study, if the first cycle is not successful so students' mathematical creative thinking ability is not achieving mastery, continued in the second cycle and the cycle will stop if the students' mathematical creative thinking ability achieve mastery increases. In this study only up to 2 cycle planned course, and every cycle there are 2 meetings. The steps for each cycle consists of 5 steps; Action Plan, Implementation, Observation and Evaluation, Data Analysis, and Reflection.

In more detail, the procedures for implementing classroom action research based on the plot, described as follows:

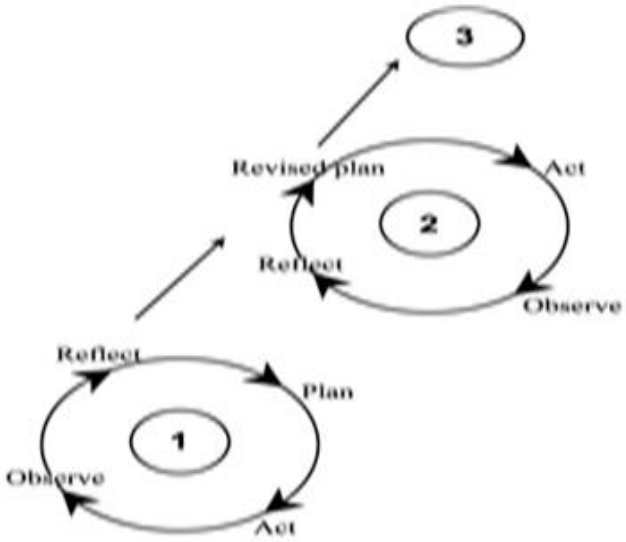

Figure 1 Procedures of Action Research

The research method as the technique for collecting data in this study divided into two method; non test method and test method. The non test method is uded to collect data of students' activity. Meanwhile, the test method is used to collect data of students' mathematical creative thinking ability.

Analysis of the research is divided into several phases; Reduction, Data Analysis, Deduce. The reduction activity aims to see students' answers errors and problems experienced by students in solving problems and what action was taken to repair these errors. The data analyzed in this research is quantitative data and qualitative data, data analysis will be performed after the action. The data analysis used are mathematics creative thinking ability test, increasing of students' mathematical creative thinking ability, observation of students' and teacher's activity, and observation of students' response. Meanwhile the deduction phase aims to take some conclusion. This conclusion will influence as basic to the next cycle and whether still continue to the next cycle or not.

In this research the increasing of mathematical creative thinking ability of students is having increased if:

1. There are minimum 80% of students get score minimum B- or in medium criteria of creative thinking ability in the test.
2. Teacher's ability to manage learning in the class minimum in good category

V. RESULTS

1. Cycle 1

a. Observation Result of Teacher's Activity

Observation result of teacher's activity in cycle 1:

Table 2. Observation Result of Teacher's Activity Cycle 1

No	Indicators	Meeting		Score Total	Score Percentage
		I	II		
1	Skill to Open Learning	4	4	8	80,0%
2	Phase I: Orientation of students to the problem	3	3	6	60,0%
3	Phase II: Organizing students to learn	3	4	7	70,0%
4	Phase III: Guiding individual and group inquiry	4	4	8	80,0%
5	Phase IV: Developing and presenting the work	3	4	7	70,0%
6	Phase V: Analyze and evaluate the problem-solving process	3	4	7	70,0%
7	Efficiency using of time	4	4	8	80,0%
8	Skills to Close Learning	3	4	7	70,0%
Total		**27**	**31**	**58**	580,0%
Average		**3,375**	**3,88**	**7,25**	72,5%

Scores obtained from each observer is converted in the form of percent namely:

$$SR = \frac{Sum\ of\ Score}{Maximal\ Score} x\ 100\%$$

Based on the observation data in the table above observers, known that the average percentage of teacher's activity towards group investigative learning was 72,5%. With referenced to the criteria that have been defined as follows:

90% ≤ SR < 100% : Very Good

80% ≤ SR < 90% : Good

70% ≤ SR < 80% : Medium

60% ≤ SR < 70% : Bad

SR < 60% : Very Bad

It can be concluded that the teacher's activity in carried out the process of problem based learnig model at cycle 1 is conducted enough.

b. Observation Result Of Students' Activity:

Which became the focus of observer's observation towards students' activity in this research are six category of observation. Result of observation toward to student's activity in learning for two meetings is stated in percentage.

Observer's observation results towards students' activity in cycle 1 can be seen in Table below:

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Table 3. Observation Result if Students' Activity Cycle 1

No	Category of Observation	Student's activity every meeting (%)		Average (%)	Tolerance limit (%)
		1	2		
1	Listening/paying attention teacher's explaining	17,50%	11,25%	14,38%	5% ≤ PWI ≤ 15%
2	Reading book or other relevant sources	15,00%	15,00%	15,00%	5% ≤ PWI ≤ 15%
3	Writing teacher's explaining, noting from book or friends, finishing problem, concluding result of group	22,50%	17,50%	20,00%	10% ≤ PWI ≤ 20%
4	Discussing/asking between student with teacher or between student with student	22,50%	27,50%	25,00%	15% ≤ PWI ≤ 25%
5	Presenting result of group	6,25%	12,50%	9,38%	10% ≤ PWI ≤ 20%
6	Student's action that is not relevant with learning and teaching activity	16,25%	16,25%	16,25%	0% ≤ PWI ≤ 5%

c. Creative Thinking Ability Test 1

Based on the scores of students' answer obtained from students' creative thinking ability test, can described that the level of students' creative thinking ability and students' mastery learning as follows

Students follow creative thinking ability test 1 in the end of cycle 1 after attending the learning as many as 2 meetings. Problem is given by 4 questions in essay form, with a maximum score for each item are 25 points. These points are allocated for each creative thinking indicator in accordance with the lattice of problems. The four indicators of creative thinking are Fluency, Flexibility, Originality, and Elaboration.

From four indicators of the creative thinking can be seen where the indicator is more controlled by the student in completing the creative thinking ability test, as shown in the table and diagram below.

Table 4. The Percentage of Completeness for Each Indicator Cycle 1

Indicator	Total	Percentage
Fluency	22	56,41%
Flexibility	15	38,46%
Originality	10	25,64%
Elaboration	22	56,41%

Overall results of creative thinking ability test 1 quantitatively can be seen in the following table

Table 5. The Result of Creative Thinking Abilities Test Cycle 1

Score	Predicate	Criteria	Total	Percentage
3,67 - 4,00	A	Very High	2	5,13%
3,34 - 3,66	A-	High	7	43,59%
3,01 - 3,33	B+		9	
2.67 - 3,00	B		1	
2,34 - 2,66	B-	Medium	3	7,69%
2,01 - 2,33	C+	Low	3	35,90%
1,67 - 2,00	C		7	
1,34 - 1,66	C-		4	

1,01 - 1,33	D+	Very Low	3	7,69%
0 - 1,00	D		0	
Total			**39**	**100,00%**

So it can be seen from the table above the value of each student of given 4 problems. There are 2 (5.13%) students who has very high creative thinking ability, 17 (43.59%) who have high creative thinking, 3 (7.69%) students who have medium creative thinking ability, 14 (35.90%) students who have low creative thinking ability, and 3 (7.69%) students who have very low creative thinking ability.

Classically, level of students' creative thinking ability in cycle-1 can be seen in the table and diagram below.

Table 6. The Percentage of Completeness for Creative Thinking Abilities Test 1

Score	Total	Percentage
> 2,33	22	56,41%
≤ 2,33	17	43,59%

The number of students who received scores >2,33 as many as 22 students or 56.41%, and which is below the value ≤2,33 as 17 students or 43.59%. When viewed from the results of preliminary tests carried out before the research taken place, then there is an increase. However, this increase is not significant, because the number of students who obtain a minimum category as medium are 22 students or 56.41% from 39 students who took the test, while when referring to criteria set is contained at least 80% of students must have a level of creative thinking ability minimal in the category of "medium (>2,33)". Cycle-1 will be continued to cycle-2.

2. Cycle 2

a. Observation Result of Teacher's Activity

Here are the results of observations of the activities of teachers in the second cycle.

Table 7. Observation Result of Teacher's Activity Cycle 2

No	Indicators	Meeting		Score Total	Score Percentage
		III	IV		
1	Skill to Open Learning	5	5	10	100,0%
2	Phase I: Orientation of students to the problem	4	5	9	90,0%
3	Phase II: Organizing students to learn	4	4	8	80,0%
4	Phase III: Guiding individual and group inquiry	4	5	9	90,0%
5	Phase IV: Developing and presenting the work	4	4	8	80,0%
6	Phase V: Analyze and evaluate the problem-solving process	4	5	9	90,0%
7	Efficiency using of time	5	5	10	100,0%
8	Skills to Close Learning	4	5	9	90,0%
Total		**34**	**38**	**72**	720,0%
Average		**4,25**	**4,75**	**9,00**	90,0%

Scores obtained from the observer (observer) is converted in the form of percent namely:

$$SR = \frac{Total\ score}{Maximal\ Score} x\ 100\%$$

Based on the observation data in the table above, known that the average percentage of teacher's activity towards problem based learning was 90%. With referenced to the criteria that have been defined as follows:

90% ≤ SR < 100% : Very Good

80% ≤ SR < 90% : Good

70% ≤ SR < 80% : Enough

60% ≤ SR < 70% : Bad

SR < 60% : Very Bad

It can be concluded that the teacher's activity in carried out the process of problem based learnig model at cycle 2 is conducted enough.

b. Observation Result of Students' Activity

Which became the focus of observer's observation towards students' activity in this research are six category of observation. Result of observation toward to student's activity in learning for two meetings is stated in percentage.

Observer's observation results towards students' activity in cycle 2 can be seen in Table below:

Table 8. Observation Result of Students' Activity Cycle 2

No	Category of Observation	Student's activity every meeting (%)		Average (%)	Tolerance Limit (%)
		3	4		
1	Listening/paying attention teacher's explaining	17,50%	13,75%	15,63%	5% ≤ PWI ≤ 15%
2	Reading book or other relevant sources	15,00%	15,00%	15,00%	5% ≤ PWI ≤ 15%
3	Writing teacher's explaining, noting from book or friends, finishing problem, concluding result of group	20,00%	20,00%	20,00%	10% ≤ PWI ≤ 20%
4	Discussing/asking between student with teacher or between student with student	23,75%	25,00%	24,38%	15% ≤ PWI ≤ 25%
5	Presenting result of group	17,50%	21,25%	19,38%	10% ≤ PWI ≤ 20%
6	Student's action that is not relevant with learning and teaching activity	6,25%	5,00%	5,63%	0% ≤ PWI ≤ 5%

c. Creative Thinking Ability Test 2

After completion of learning implementation by applying problem-based learning models in cycle 2 during the two meeting, it conducted a test to measure students' creative thinking ability.

From four creative thinking indicators can be seen where the indicator taht more mastery by the student in completing the creative thinking ability test, as shown in the table and diagram below.

Table 9. The Percentage of Completeness for Each Indicator Cycle 2

Indicator	Total	Percentage
Fluency	34	87,18%
Flexibility	24	61,54%
Originality	28	71,79%
Elaboration	35	89,74%

Overall the results of creative thinking ability test 2 quantitatively can be seen in the following table 10.

Table 10. The Result of Creative Thinking Abilities Test Cycle 2

Score	Predicate	Criteria	Total	Percentage
3,67 - 4,00	A	Very High	3	7,69%
3,34 - 3,66	A-	High	7	71,79%
3,01 - 3,33	B+		11	
2.67 - 3,00	B		10	
2,34 - 2,66	B-	Medium	3	7,69%
2,01 - 2,33	C+	Low	1	10,26%
1,67 - 2,00	C		0	
1,34 - 1,66	C-		3	
1,01 - 1,33	D+	Very Low	1	2,56%
0 - 1,00	D		0	
Total			**39**	**100,00%**

So it can be seen from the table above the value of each student of given 4 problems. There are 3 (7.69%) students who has very high creative thinking ability, 28 (71.79%) who have high creative thinking, 3 (7.69%) students who have medium creative thinking ability, 4 (10.26%) students who have low creative thinking ability, and 1 (2.56%) students who have very low creative thinking ability.

Classically, level of students' creative thinking ability in cycle 2 can be seen in the table and diagram below.

Table 11. The Percentage of Completeness for Creative Thinking Abilities Test 2

Score	Total	Percentage
> 2,33	34	87,18%
≤ 2,33	5	12,82%

Based on the analysis of data showed that the test results of students' mathematical creative thinking ability I and II on the subject of rectangle and square, students who were complete are 34 students, students who were incomplete are 5 students. From these results it can be concluded that student learning outcomes due classically has reached 87.18%. Thus the implementation give a successful actions and the cycle stopped.

Based on the implementation of the actions taken can be shown a comparison between the results of the implementation of the cycle I and the cycle, II as in the table below

Table 12. The Difference Between Cycle I and Cycle II

Category	Cycle I	Cycle II
Complete	22 students	34 students
Incomplete	17 students	5 students
Completeness Classical	56.41%	87.18%
Teacher's Activity	72,5% (Enough)	90% (Very Good)
Students' Activity	Inactive	Active

Based on the above table it can be concluded that all successful indicators of this research has been reached. Students are able to understand the material through the SAS and the teacher's explanation.

Based on the results and discussion of this study, then in this study compiled the following matters: (1) Before provision of action, the students were given a test that purposed to determine the extent to which students' mastery and knowledge of the subject matter rectangle and square. From the initial capability tests showed that student' creative thinking ability in

solving mathematical problems related to subject matter rectangle and square still very low, (2) Based on the problem obtained after the initial test, the researchers conducted learning of the cycle I by using Problem Based Learning Model (PBL). In this cycle the students were grouped into six groups consisting of 6-7 persons and each group shared Student Activity Sheet (SAS). From the first creative thinking test obtained 22 students who have achieved the level of mathematical creative thinking ability that resesearch expected while 17 students have not reached the level of mathematical creative thinking ability. The percentage of students who obtained a value > 2.33 was 56.41%, (3) In the second cycle of learning by using a Problem Based Learning Model (PBL), which in this cycle member of each group is repalced so that all group were more heterogen in their ability and each group shared Student Activity Sheet (SAS). Obtained from the second creative thinking ability test, 34 students have achieved the level of mathematical creative thinking ability as expected while 5 students have not reached the level of mathematical creative thinking ability as expected. The percentage of students who received score value > 2.33 was 87.18%, (4) In the implementation of group discussions among students, the discussion was still predominantly dominated by students who have high ability while students with moderate and low ability were more likely to pay attention to information from their friends, (5) Category of students' activity in cycle I is there is 1 category of students' active activity under the tolerance limit, and cycle II is all category of students' active activity is in the tolerance limit, (6) Before giving the learning action with PBL, students were familiar with teacher-centered learning so that they found it difficult to follow the lessons presented by the teacher, especially at the initial meeting in the cycle I, (7) Teacher's activity in first cylce is 72.5 % or in enough category, and in second cycle is 90 % or very good category.

VI. DISCUSSION

Based on the result of research that conductd by researcher in increasing students' mathematical creative thinking ability through the Problem Based Learning (PBL) model showed that there was increasing of stuents' mathematical creative thinking ability. This meant that students needed to force the activity in discussion, asked to their friend that understood the material as the first point in mathematics learning using Problem Based Learning (PBL) model.

The effectiveness of learning model in this study is viewed from mastery of learning objectives that measured from completeness of student learning outcomes and student activity during the learning takes place. First, completeness student learning outcomes measured by tests given in each end of cycle. The results of tests on a cycle-1 obtained by the percentage of student mastery of 56.41%. It is still far from completeness criteria referred to Chapter 3. It is very possible, because the problem based learning model applied was new for students, so students need to practice thinking ability to be able to understand the problems that are given adapt to new learning model that is applied.

Furthermore, the learning cycle-2 students were beginning comfortable with learning model used. Interactions are more prevalent, and students more dared to ask and discuss with friends in one group. From the results of tests on cycle 2 obtained by the percentage of student mastery of 87.18%. Based on these results it can be concluded that the use of problem-based learning model can improve the completeness of student learning outcomes.

Second, the percentage of ideal time students' activity based on the results of the data analysis in cycle 1 and cycle 2 showed that the application of problem-based learning effective enough to make students to be actively involved during the learning process, and it is certain that the student centered learning. This is in line with the cognitive constructivist perspective on which the problem-based learning that many people borrow Piaget's opinion (in Arends, 2008) which says that students with any age are actively involved in the process of getting information and construct their own knowledge. Trianto (2009:29) argues that the Piaget's development theory represents constructivism, which views cognitive development as a process in which children actively construct systems of meaning and understanding reality through the experiences and their interactions.

In this study, creative thinking ability questions that tested to students includes all indicators of creative thinking ability, namely fluency, flexsibility, originality, and elaboration. These questions are designed so that it creates a mystery or puzzle for students. This is in line with the opinion of Slavin (Arends, 2008: 42) which suggests that the test questions should provide a challenge and not just make a simple answer, and requires variety of alternative solutions. This is in accordance with the first and second syntax of the PBL namely orienting students to the issues and organize students to examine related to the problems encountered, which will provide opportunities for students to engage in dialogue and

debate, which ultimately will provide opportunities for students to pull out ideas that owned by students. This is consistent with the view Vigotsky who said that social interaction with others encourage the formation of new ideas and enrich the intellectual development of the students. Trianto (2009:38) argues that Vygotsky argued like Piaget, that students establish knowledge as a result of the thoughts and activities of the students themselves through language. Vygotsky's theory, more emphasis on the social aspects of learning. According to Vygotsky that learning will occur if the child works or handle tasks that have not been studied, but these tasks are still in their range called the zone of proximal development, which is the level of development area slightly above development area of the someone now.

The result of this research in line with the relevant research which is done before this research. The relevant research is by Putra, dkk. (2012) from Universitas Negeri Padang. This research for eighth grade student SMP Negeri 2 Basa Ampek Balai Tapan by it's research's design is pretest-posttest control group only. The result of this research show that the increasing of student's creative thingking that learn by problem based learning model is better than of student's creative thingking that learn by conventional. Than, can be concluded that student's creative thingking is better after implemented problem based learning model. The second relevant research is by Nasution, et, al (2015) who conclude that creative thinking ability of seventh grade SMP N 4 Padangsidempuan in mathematics learning is increasing after applying problem based learning model.

VII. CONCLUSIONS

Based on the research results presented in the previous section can be concluded that the application of problem-based learning model in learning on the subject of Rectangle and Square can increase students' creative thinking abilities of Grade VII-3 of SMP Negeri 1 Rantau Selatan. It is known from the result of students' creative thinking ability test in cycle 2 higher than cycle 1. Percentage of many students who have minimal ability "medium" of 56,41% in cycle 1 increased to 87,18% in cycle 2. And Learning by using Problem Based Learning Model also could make students' activity in the learning was good category

VIII. SUGGESTIONS

Based on these results, the authors propose some suggestions for learning mathematics, especially in secondary schools, namely:

1. Learning mathematics with problem-based learning model can be used as an alternative learning effective in improving students' ability to think creatively. But in the early learning, teachers will have difficulty in preparing the child to make the process of cooperative learning, student is difficult to accept the learning changes they have done so far with constructivism learning through problem-based learning model. Therefore, it is suggested that before learning to do, the teacher to familiarize the learning with cooperative learning so that students will be accustomed to the learning process

2. To support the successful implementation of problem-based learning model required teaching materials an interesting, for the student activity sheet should be designed based on the contextual issues are close to everyday students and challenge students to solve.

3. Besides improving the students' creative thinking abilities, problem-based learning model also can stimulate the activity of students in learning and can assist students in forming a positive perception towards learning mathematics. Therefore this kind of learning is advisable to be developed further other mathematics items and different levels of education.

4. This research only reveals the role of problem based learning model in increasing students' creative thinking abilities, To complete the study of the role of problem-based learning model as a whole needs to do further research to see a role model of problem-based learning to improve problem-solving abilities, reasoning, and mathematical connections.

5. The results of this research can be used as input for the school to improve students' activity during the learning process.

6. The results of this research can also be used as input for the school because it can give a positive response to the students' learning activities through the application of problem-based learning.

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