

CHAPTER I

PRELIMINARY

1.1. Background

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.

Education has an important role in human life skills, education can affect the development of the Human Resources in all aspects of the personality and life. Trianto (2011 : 1) says that education is capable of supporting the development of future educational atmospheres is to develop the potential of learners, so concerned is able to face and solve life problems that it faces.

Arikunto (2011:115) argues that the purpose of education can be formulated on three levels. First, the general objectives of education. This goal determines whether or not something the program is held. In the daily practice in schools, the goal is known as the General Instructional Objective. Second, the purpose of which is based on behavior. In the period of the past twenty years, many attempts have been made to find a method that can be used to analyze or classify a view associated with the activities of daily education. The definition of a successful education is in the form of behavior. This is what taxonomy. There are three kinds of behavior are known in general, namely cognitive, affective, and psychomotor (which in this case I use the term skill). Third, the purpose of which is more clearly defined operationally.

Trianto (2011:1) explains that Law No. 20 of 2003 on the national education system serves to develop skills and form the character and civilization

of dignity in the context of the intellectual life of the nation. Education aims to develop potential students to become a man of faith and fear of God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become citizens of a democratic and responsibilities.

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 and systematically.

Abdurrahman (2009 : 251) said that many people who view mathematics as a field of study that is most difficult. Nonetheless, everyone should learn it as a means to solve the problems of everyday life. Such as language, reading, and writing, mathematics learning difficulties should be addressed as early as possible. If not, the student will face a lot of problems because almost all fields of study require the appropriate mathematics.

Mathematics is one of the areas of study that have an important role in education. It can be seen from the number of hours these subjects than other subjects. Mathematics lessons in the implementation of the education provided to all levels of education starting from elementary school through college.

Mathematics is a science that is necessary to be taught. Cockroft (in Abdurrahman, 2009 : 253) argues that mathematics should be taught because (1) is always used in every facet of life, (2) All fields of study require appropriate mathematical skills, (3) is a powerful means of communication, concise and clear, (4) Can be used to present information in a variety of ways, (5) Enhancing the ability to think logically, precision, spatial awareness, and (6) Provide satisfaction with the efforts to solve challenging problems.

Mathematics as a science base, both aspects of its application as well as aspects of reasoning, has an important role in the effort to control science and technology. For that mathematics needs to function as a vehicle for school growth

and develop the intelligence, ability, skill and for shaping the personality of students. Cornelius (in Abdurrahman , 2009: 253) also suggests five reasons for studying mathematics because mathematics is (1) a means of clear and logical thinking, (2) a means to solve the problems of everyday life, (3) the means to know the patterns of relationships and generalization of experience, (4) the means to develop creativity and (5) a means to raise awareness of cultural development.

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 in August - November 2013 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.

Munandar (1999:7) also revealed the same picture appears in the field of education. More emphasis on rote learning and looking for a right answer to the questions given. The process of high thinking are rarely trained, including to think creatively.

Before doing research, researcher make observation at July 8th 2014, the researcher observe learning process in the class, and the researcher find the students are less interested in learning mathematics, and in interview with some students, answers that researcher got is the way of teacher to teach is boring and

another answer is the students don't like mathematics subject because assumed difficult. At the observation, researcher also find that model of learning that is used by the teacher is not appropriate with goal of mathematics learning which is make students be active in learning process and the learning model is not supporting to make students have good mathematical creative thinking ability. Indicators of creative thinking ability is fluency, flexibility, originality, and elaboration. Indicator fluency is giving a lot of of ideas and flows of thought is fluent. Indicator flexibility is giving ideas which is not uniform, able to change the way or approach. Indicators original is giving answers that are not common, different than the other, which is rarely given most people. Indicator elaboration is developing and enriching an idea, specifying the details of idea and answers.

Lack of mathematical creative thinking ability is also evident from the results of initial ability tests are given at the beginning of the observation to the students of class VIII - 1 SMP Negeri 1 Rantau Selatan totaling 38 students, obtained 100 % of all students are in the low category of creative thinking skills, with a mean value average 23.24. The test given can be looked at appendix 6 page 101, with the alternative solution at appendix 7 page 102 and the guidance of scoring at appendix 8 page 109. This test shows that students are not able to think creatively in solving mathematical problems.

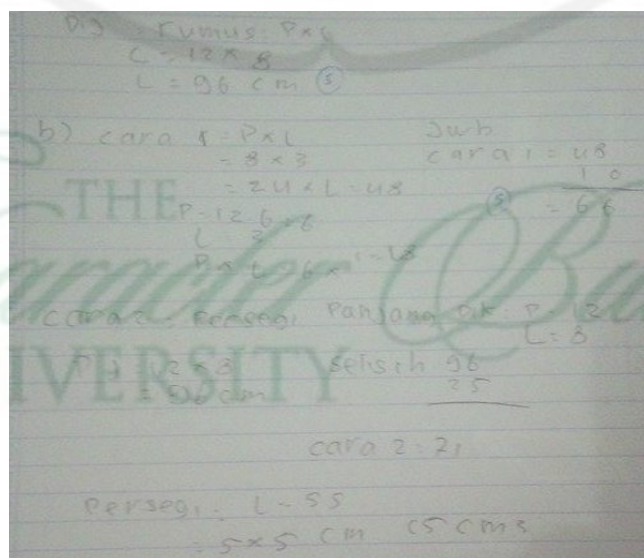


Figure 1.1. Student's answer on the item no.1

This picture above is one example of student's answer, from this picture, shown that in the item no.2, sthis student can only answer with one way, student's answer in second way is false.

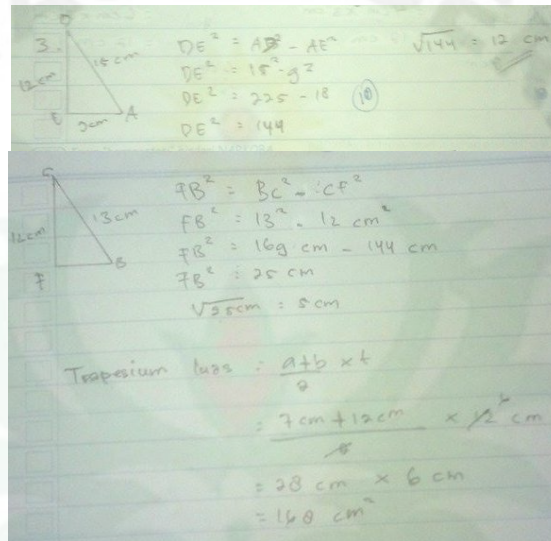


Figure 1.2. Student's answer on the item no.2

The second picture shows that in the item no.3, this student can only answer with one way, this student can't answer with the second way.

At the time of observation, Beside providing initial ability tests and obervation of learning process, researchers also conducted interviews with mathematic teacher Class VIII-1 namely, she said that students very rarely get questions such as questions about the ability to think creatively or requesting more than one answer. So that students are not able to answer as to what initial ability tests are required in the matter . She also said that in the learning process, students are less interested in learning mathematics, students are less active and responsive, so just follow the formulas given teacher without being able to develop it.

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.

Semiawan (1984 : 9) revealed that :

Success in education is often only assessed on the extent to which students are able to produce a given material of knowledge. In mathematics , students are often required to solve the problems in only one way. It is understandable that such an approach would lead to rigidity in thinking and narrowness in reviewing an issue. Thus the power of creative thinking as the ability to be able to see a problem from different angles review, it inhibited

From the opinion, we can see that if someone is said creative so he can think more than one idea or one way to solve problems he faced.

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.

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.

Delisle (1997 : 7) stated that problem-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.

Problem-based learning model is a model of learning is done in the presence of a stimulus giving problems then do problem solving by students is expected to increase the skills of students in achieving the learning materials. Before starting the process of teaching and learning in the classroom, students are first asked to observe a phenomenon first. Then the students are required to record the problems that arise. After that the teacher's task is to stimulate students to think critically to solve problems. The task of the teacher is to guide students to question, to prove the assumption, and listen to the different opinions of them. Problem-based learning model that challenges students to "learn how to learn", working in groups to seek solutions to real world problems. Given problem is used to bind the learners in the learning curiosity question. Problems given to students before the students learn the concepts or materials relating to the problem to be solved.

As has been described previously about creative thinking ability students of initial ability test, and observation of researcher to teaching and learning activity in that class. Creative thinking ability of students is low, and after observation and interview mathematics teacher, researcher look that students in learning just listen what teacher said in front of class, so students are less interested in learning mathematics, less active and responsive, and students are very rarely find questions or problem that needs creativity to solve it. All of these are cause of creative thinking ability of students is low. Researcher choose Problem Based Learning model to be a solution for that because in Problem Based Learning model, students will be divided in groups, so students can give their idea and opinion in their groups about the problem given. From some learning model that use groups in the process, Problem Based Learning model in the process started with a problem, so teacher can use opened question in Student Activity Sheet, so student's brain is stimulated to think creatively.

By using PBL model, to get the competencies, at the beginning of meeting, students are given one opened question orally, to make students can find and can give idea to the class, from different students, other students will listen various answers. Researcher divide students to be groups and give Student Activity Sheet to all groups. In a group, will make students can work actively and can find ideas to solve problems in Students Activity Sheet which consists of opened question. In process investigating, researcher checks and guides students in each group, motivating students to try to find other solution of a problem, to find new ways and knowledge. Students are also given props, such as geoboard at first meeting, to help students to create shapes of other planes and then cube and cuboid so that can stimulate creativity of students. Students are given a quiz at the end of each meeting, to practice students to solve open ended questions, and at the end of cycles, students are given test which consists of open ended question, and ask various and new ways to students through the direction of the question.

In problem-based learning model, the problem raised in the context of realistic that may be encountered in the future students. Then students search for information related to the problem before solving the problem. By working in a group, students are taught to be critical and not blindly accept and follow the ideas put forward by his colleagues. Learning and knowledge acquired in an effort to solve the given problem helps students to explain their thinking and to formulate an accurate conception. Finally, review, evaluation, and integration of learning in the final stages of PBL allows students to understand the new knowledge that is built as a result of solving the problem. When thinking of something for the first time, one generates new ideas, new assumptions, and new concepts by asking new questions, create a new conclusion, and allowing a view to forming a new direction. It is essentially a creative act.

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".

1.2. Problem Identification

Based on the description that has been raised on the background of the problem , the problem can be identified :

1. Students are less interested in learning mathematics
2. Learning model that used by teacher cause students are still less active during the learning process.
3. The student's mathematical creative thinking ability is low in solving mathematical problems.

1.3. Problem Limitation

Because of the problems identified fairly wide, so that a more focused study, the researchers made the extent of the problem in improving mathematical creative thinking ability of junior high school students to solve mathematics problem by applying problem-based learning model

1.4. Problem Formulation

Based on the above description of the problem limitation, the problem formulation to be studied in this research are :

Whether the application of Problem-Based Learning model can improve the mathematical creative thinking ability of junior high school students?

1.5. Objectives of Research

The objectives of this research are to know whether the application of Problem-Based Learning model can improve the students' mathematical creative thinking ability in solving mathematical problems

1.6. Benefits of Research

- 1 For students, through a model of problem-based learning is expected to improve students' creativity in solving mathematical problems.
- 2 For teachers, providing an alternative to choose to use mathematical learning model.
- 3 For schools, provide input for empower policy for implementation innovative learning model for improving the quality of mathematics education
- 4 For researchers, as an input to develop the insight and knowledge as a teacher candidate.

1.7. Operational Definition

To be able to study quantitatively the variables are defined as follows :

1. Learning is a process in the form of activities and efforts of an someone or individual getting new knowledge/experience to make changes , both aspects of knowledge and aspects of behavior in which these changes can be observed , continuous , functional , positive , and active takes place in a relatively long time.
2. Problem-based learning is a learning that begins with a problem in an effort to stimulate and improve the thinking ability of students so that the students construct their own knowledge. And problem-based learning have 5 phases, namely Orient students to the problem, Organize students for study, Assist independent and group investigation, Develop and present artifacts and exhibits, Analyze and evaluate the problem-solving process.
3. Creativity is the ability to bring something new , whether it be the idea and the real work , both in the work of both new and existing things that are relatively different. And there are four indicators used to measure students' mathe
4. matical creative thinking ability, namely Ability to think fluently (fluency), ability to think flexibly (flexibility), ability to think originally (originality), ability to itemize (elaboration).