

CHAPTER I

INTRODUCTION

1.1 Background

Education is very important for humans, because education is an investment in human resources in the long term. Education is also a vehicle to improve and develop the quality of human resources. Education is not only seen as an attempt to provide information and skill formation, but expanded to include efforts to realize the desires, needs and abilities of individuals to achieve personal and social lifestyle satisfactory. Education not merely as a means of preparation for the next life, but for the life of children today who are experiencing growth towards maturity level. Efforts to improve the quality of education has been done by the government including curriculum renewal, improvement of educational facilities, the use of methods of teaching, doing research, and improving the quality and quantity of learning outcomes. Teaching and learning process is a core activity in an effort to improve the quality of education. The good and bad of a learning process is one of the dominant factors in determining the quality of education.

Mathematics is one of principle fundamental human activity– a way of making sense of the world. Children have natural curiosity and interest in mathematics then come to school with an understanding of mathematical concepts and problem solving strategies that they have discovered through explorations of the world around them. Many problems that found in of mathematics learning. One of which is the dislike of students in learning mathematics because mathematics is a difficult subject. Mathematics is generally considered as the most difficult subject. Mathematics is the dangerous subject for student. Just some students like mathematics. This statement is supported by the results of observations that have been made as direct interviews with students. The observation is made on 19 to 21 January 2015 in SMP Negeri 1 Parbuluan. There are 5 students of class VII - A were interviewed. Some students say that

mathematics is one subject that difficult to learn. There no attractive that teacher can do to make they feel comfort when learning mathematics. Teacher just explaining formula to the other formula. There is no something concept understanding. Student also difficult to share what they know to teacher directly. When student is asked to make their answer about some problem in front of the class, student still look afraid and doubt about the information that their know. Then observation of learning process was also held to know what is actually happen in the learning process when learning mathematics is ongoing.

Based on observations made, teachers still use direct instruction that by teacher centered method. Students as an object which receive all the material that teacher's said. Association of learning with of daily life has been done but the students still feel bored and less active in learning. It was seen when the teacher asks students still mostly silent and did not want to participate. Students just fall silent and wait for the teacher to explain in detail about the given question. It is happen because the teacher is only charging a little explanation was followed by various formulas. The formula was a mainstay of teachers in answering all questions. Not understanding the concept of precedence so that students are not interested in active learning. Mathematics problem that teacher given to students is also a factor of student disinterest towards solving the problem. Problems associated with of daily life will encourage students to work on the problems. An interest will arise when we give a real problem. With the real problem, automatically the students will feel that math is important in of daily life.

Interview with teachers was also conducted to find out the any problems faced by students in learning mathematics. Based on an interview with teacher, students have a lot of problems especially in problem-solving abilities. They are hard working on the form of word problems. The method that teacher use still conventional method. Teacher just explain directly what the objective material in the used book. Teacher is not surely that student can build their knowledge themselves. Student is not active in learning process is does not matter because the learning outcomes is more important than learning process on their targeting.

Then one of the difficulties mathematics factor in the school is solving the problem.

Solving a problem is a basic human activity. Reality shows that most of life is faced with problems. To face the problem, individuals are required to have the ability to solve problems. Education is one of the effort to develop problem-solving skills for students is through the study of mathematics (Hudojo, 2005). Learning mathematics trains students to think logically and skillfully solve problems in everyday life. Learning mathematics is also work to develop the ability to communicate ideas and language through a mathematical model in the form of sentences and mathematical equations, diagrams, graphs, and tables.

Problem solving is an important component of mathematics education because of its practical role to the individual and society. By learning problem solving in Mathematics, students should acquire the ways of thinking, habits of persistence and curiosity, and confidence in unfamiliar situations that will serve them well outside the mathematics classroom. (NCTM, 2000).

Problem solving is a very important ability in mathematics as in problem solving, the ability of solving concepts students should master. During the learning process, students can follow the lessons well but by the time students are working on or given question, the students have not been able to think for themselves how to solve a given problem. Although it has been given direction by the teacher, students are still not able to apply the concepts they have learned in solving the problem. So as to improve students' independence in thinking towards which seem to be more difficult to achieve high. From the description above, it can be concluded that the mathematical skills of students in solving problems still have to be increased again.

According to Polya (in Hudojo, 2005) problem solving ability can be observed by 4 indicators, namely (1) understanding the problem by writing what is known and asked; (2) devising a plan to write a formula that can find the solution of the problem; (3) Carrying out the plan by doing a calculation; (4) looking back, checking each step and whether the results are correct or not, is still relatively low and needs improvement. Steps to solve a problems are still rarely

found when we give a problem to the students. That is one factor that causes low ability student's mathematical problem solving. This is supported by the observation has been made. The diagnostic test also given to students when the observation is doing. The test is word problem form to know the initial mathematical problem solving ability of students. Giving diagnostic tests carried out on the third day that is dated 21 January. There are 34 students answer the diagnostic test in class VIII-A.

The first problem tested to students are as follows: "A wire with length size 1.5 m will be used to create two models of rectangular prism frame with a size of 7 cm x 3 cm x 5 cm. What is the remaining length of the wire?"

This following figure 1.1 is one sample of student's answer sheet:

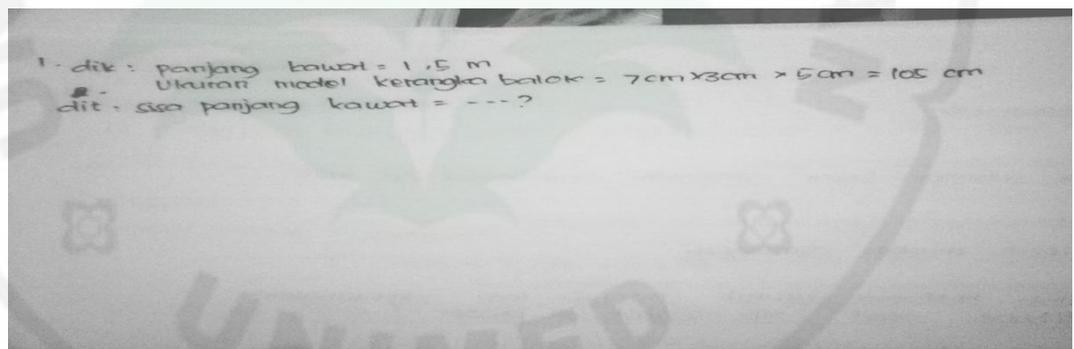


Figure 1.1 Sample of Student's Answer Sheet Number 1

Based on Figure 1.1 students could not understand what the plan to solve the problem. Students only wrote what is known and what is asked. In the process, students also could not find the exact answer to figure out remains wire after used to make rectangular prism frame.

On the third problem also contained the following errors in understanding the problem and using the formula were not correctly. "Classrooms VIII will be renovated. The room is square with an area of 9 m^2 . The floor will be covered with a square-shaped ceramic with a size of 30 cm x 30 cm for the ceramic pieces. Price 1 ceramic box is 100.000, -. And 1 box contains 5 pieces of ceramic tile. What is the price that must be spent to renovate just the floor."

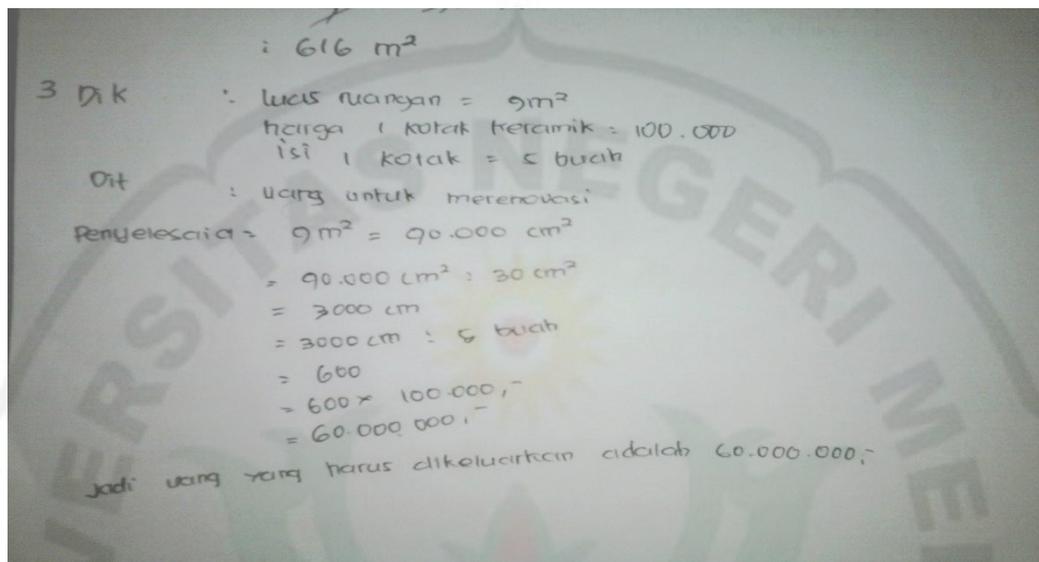


Figure 1.2 Sample of Student's Sheet Answer Number 2

Based on figure 1.2 students did not understand the problems mentioned above, she/he didn't write what the question is. Student also had not been able to write a formula that can solve these problems so as a result students could not do the calculations right and got the right answer.

From the diagnostic test of problem solving ability, many students still cannot understanding the problem, make the question into mathematics model and formulate the problem. For the first indicators, namely understanding the problem, 82.35% of students have been understood the problem and 17.65% of students have not been understood the problem. For the second indicators, deving a plan, there are 52.94 % of student have been devised a plan and 47.04% of student have not been devised a plan. For the third indicators, namely carrying out the plan, there are 20.59% of student have been carried the plan and 79.41% of student have not been carried the plan. And the last indicators, looking back, 8.82% of student have been looked back 91.18% of student have not been looked back. The graphic will be shown as below:

Tabel 1.1 The Table of Preliminary Diagnostic Test

Aspect	Categorized	Not Categorized
1. Understanding the problem	82.35%	17.65%
2. Devising a plan	52.94%	47.06 %
3. Carrying out the plan	20.59%	79.41%
4. Looking back	8.82%	91.18%

This is shown with still low entirely student answer sheet. In this aspect of the students are not able to substitute the results obtained into equation and cannot prove the results obtained.

The other problem that found in this research is also seen from the student's answers. From the results of the initial diagnostic test is given, the student written answers are less varied. The process of students' answers also not fulfilled the criteria a good completion process. There are still many students who solve the problem but did not get the correct results. There are incorrect estimates when answering the questions.

Low ability students' problems can be improved in various ways. One of which is to improve the delivery of a material. Delivering material by linking learning materials for everyday life is how. So that students feel that mathematics is a very important science is applied in everyday life. Other factors that have contributed very important in determining the success of learning mathematics is learning model selection. The use of appropriate learning models will overcome saturation students receive lessons in mathematics so that not only focused on teachers.

Recognizing the reality on the ground that the problem solving ability of students is still low, we need a model of learning that makes the students become active. It required a learning approach that can support successful learning. The new paradigm in education today, to create meaningful learning process, the learning process that takes place in schools let students actively involved in

learning (student-oriented). As a manager of student learning, teachers are obliged to improve attention, and truly efforts, in providing school mathematics learning, so the lesson material can be understood by students. Students are required to be better, to use the ability of thinking to be skilled in problem solving in daily life related to mathematics.

Problem solving ability will be improved if the teacher can use the innovative and contextual learning approach. Through contextual approach, the concept of thinking and understanding of the students will be more open to mathematics, not only focused on a specific topic being studied, so will lead to a positive attitude towards mathematics itself. The need for capabilities and skills to be able to solve the problem the development of thinking that the study would be more meaningful if the students directly experience for themselves what is learned, this research is done by using the learning which is considered to be relevant to be applied in mathematics learning is contextual learning approach.

Because we expect students actively in learning, the learning students must construct their own knowledge, that knowledge can be gained from their own experience or from others by social interaction. Contextual Teaching and Learning (CTL) Approach is one of a learning approach that can construct their knowledge by giving a contextual situation. CTL approach is the concept of learning that help teachers find connections between the material being taught by real-world situations and may encourage making the relationship between knowledge and its application in everyday life, so that students will understand the concept to solve a problem. Sanjaya (2008) mentions that the CTL is a learning approach that emphasizes the involvement of students in the full process to be able to locate the material studied and relate it to real life situations that encourage students to be able to apply them in everyday life.

Based on the above description that the problem solving ability of mathematics learning objectives are very important, and one of the learning approach that can improve student's problem-solving ability is Contextual Teaching and Learning (CTL) approach. Therefore CTL approach is chosen in doing this research.

1.2 Problem Identifications

Based on the description in the background, some of the problems that can be identified are as follows:

- a. Students still consider that mathematics is the difficult subject.
- b. Students is still doubt and not self confidence to answer question to teacher directly.
- c. The most activities in learning activities are still dominated by teacher
- d. Students still give a low participation on solve a mathematical problem.
- e. Teacher explains the material is only targeting on learning outcomes rather than on learning process.
- f. Students' mathematical problem solving ability are generally low.
- g. The process of student's answer in solving the problem are still less varied, yet follow a good completion

1.3 Problem Limitation

Based on several problems identified, the problems is focused on:

- Low ability student's mathematical problem solving in learning and teaching.
- Lack of teacher's knowledge of teachers in implementing the learning model thus inhibiting the ability of student's mathematical problem solving in learning and teaching.
- Students still give a low participation in learning process.
- The process of student's answer in solving the problem are still less varied, yet follow a good completion

1.4 Problem Formulations

Based on problem limitation, the problem in this study is formulated as follows:

- a. How does the enhancement of student's mathematical problem solving ability by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.
- b. How does the learning management conducted teacher by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.
- c. How does the learning activity of students by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.
- d. How the process of student's answer in solving the problem by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.

1.5 Research Objectives

In accordance with the problem formulation above, the objectives of this research are:

- a. To know the enhancement of student's mathematical problem solving ability by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.
- b. To know the learning management conducted teacher by implementing Contextual Teaching and Learning (CTL) approach in learning and

teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.

- c. To know the learning activities of students by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.
- d. To know the process of student's answer in solving the problem by implementing Contextual Teaching and Learning (CTL) approach in learning and teaching Cube and Rectangular Prism topic in Class VIII of SMP Negeri 1 Parbuluan in Academic Year 2014/2015.

1.6 Research Benefits

After completion of this study are expected to be beneficial to all parties, including the:

1. For students. Giving students' learning experiences related to problem solving collaboratively through cooperative learning model Numbered Head Together.
2. For the teacher. The results of this study can be considered and input in developing a mathematical model of learning efforts to improve students' problem-solving abilities.
3. For schools. The results of the study can be used as input in making policy alternative implementation of innovative learning model in school.
4. For researchers. The results of this study can be used as input in the development of application of learning models to the students for a variety of subject matter.