

CHAPTER I

INTRODUCTION

1.1. Background

The development of science and technology must be supported by the ability to use, to develop and to apply technology of science in a balanced way. One way to improve students' mastery of the knowledge is improving the ability in mathematics, because mathematics is the foundation of other sciences.

Mathematics is a tool that clarifies and simplifies situations through abstraction, idealization or generalization for a study or problem solving. Mathematics is also able to increase the ability to think clearly, logically, orderly, and systematically. That is why learning mathematics is important.

In general, the teaching of mathematics in Indonesia are still using traditional or mechanistic approach that emphasizes the '*drill and practice*' model, so that students trained work on the problems such as mechanical or machine; prefer memorizing to understanding. In addition, the learning process tends to "textbook" and less related to daily life. As a result, students do not appreciate or understand math concepts and student achievement isn't maximized.

Based on the data of mid examination score of students in SMP Negeri 1 Tebing Tinggi, some students do not achieve the standard minimum of criteria value. Students that achieve the score above MCC value less than 10% (MCC value: 75). Beside that students find the difficulties to apply mathematics in daily life. As in the platonic solid subject, students often memorize formulas to solve problems related to this topic. But students do not understand the concept for this subject and do not find the relation between mathematics concept from this subject and the problem in daily life. It makes students difficult to use the suitable formula to solve the contextual problem that is given to them. So, the implementation of learning process is important to make the students not only memorize the formula of mathematics but they also understand about the concept.

Learning is a process undertaken by individuals to acquire the desired skills or competencies. Through the process of learning a person will have the knowledge, skills and attitudes necessary to perform a task and job. Smith and Ragan (in Benny A. Pribadi, 2011: 12) interpret the concept of learning as: "... The changes are relative permanent in knowledge and behavior caused by experience."

Learning process is a deliberately planned in order to facilitate the individual in taking a learning process. In other words, learning is a process that has the purpose of facilitating the individual to have the specific competencies of knowledge, skills and attitudes required to perform a specific task or job.

Educators recognize that learning is more effective when students are actively participating. By participating, students will get experience, appreciate, and draw lessons from the activities undertaken so that learning outcomes are embedded in more depth on students. Rowntree (in Benny A. Pribadi, 2011: 19) suggested four indicators that can be used to determine the success of a program of learning. A learning activity can be effective if it meets the following criteria.

- Able to improve student learning outcomes
- Able to motivate students to learn more
- Able to improve memory or retention of students to the content / subject matter
- Able to make the students apply the knowledge and skills

To achieve the above criteria, the role of teachers in teaching the course is very important. Therefore, teachers are expected to teach not only convey the subject matter, but to train students' ability to think, to use the full cognitive structures and directed. Teaching is to get students to think through the thinking skills students will form an intelligent and capable to solve any problems. For the teaching process, as the process of imparting knowledge, it would be more appropriate if it is defined by embedding the science of the kind described Smith that teaching is imparting knowledge or skills.

Standard of teaching in the context of the educational process not only convey the subject matter, but also interpreted as a process to set the environment for learning. Learning models must guide students to think creatively and actively. Learning models that can make students learn actively are ASSURE learning models and Problem Based Learning model.

ASSURE Model developed by Sharon Smaldino, Robert Henich, James Russell and Michael Molenda in the book *"Instructional Technology and Media for Learning"*. Learning design model is an abbreviation of the components or steps contained therein, namely:

- A: Analyze learner characteristics
- S: State performance objective
- S: Select methods, media and materials
- U: Utilize materials
- R: Requires learner participation
- E: Evaluation and revision

This learning model is more oriented to the use of media and technology in creating the learning process and the desired activity. Utilization ASSURE instructional design model needs to be done stage by stage (systematic) and comprehensive (holistic) in order to deliver optimal results, namely the creation of successful learning.

This is a procedural instructional design model that is built to create learning programs that are effective, efficient and attractive. In this model the use of media and technology is a must because it is used to assist students in achieving learning objectives. The use of media that goes along with learning method and strategy will be able to engage students in learning activities are intensive.

Problem Based Learning (PBL) can be interpreted as a series of learning activities that emphasize the process of resolving the problems encountered in scientific terms. There are three main characteristics of problem-based learning.

First, PBL is a series of learning activities, meaning that the implementation of PBL in a number of activities to do by the students. PBL did not expect the students just listen, record, and then memorize the subject matter, but through the PBL students actively think, communicate, find and process data, and finally making a conclusion.

Second, learning activities geared to solve the problem. PBL puts the problem as a keyword of the learning process. That is, no problems there can be no learning process. Third, problem solving is done using a scientific approach to thinking. Thinking of using the scientific method is a process of deductive and inductive thinking. Thinking process is carried out systematically and empirically. Systematic means of scientific thinking through certain stages, while the empirical means problem-solving process is based on data and facts are clear.

Learning strategies with the Problem Based Learning can be applied:

- When the teacher wants the students not just remember subject matter, but to master and understand it full
- If the teacher intends to develop students' skills of rational thinking, the ability to analyze situations, apply their knowledge in new situations, to know the difference between fact and opinion, as well as develop the ability to make an objective judgment
- When the teacher wants the students' ability to solve problems and make students intellectual challenge
- If a teacher wants to encourage students to take more responsibility in their learning
- If teachers want students to understand the relationship between what is learned with the reality of his life

From the above, by executing the process of ASSURE learning model and Problem Based Learning students are expected to learn actively, appreciate or understand math concepts and increase student achievement.

Based on the explanation above, the authors are encouraged to conduct research titled: **THE COMPARISON OF STUDENT ACHIEVEMENT THROUGH ASSURE LEARNING MODEL AND PROBLEM BASED LEARNING MODEL ON SUB TOPIC OF PLATONIC SOLID: PYRAMID IN GRADE VIII SMP NEGERI 1 TEBING TINGGI**

1.2. Identification Problem

Based on the background above, it can be identified some problems in learning process:

1. The students still have low ability to solve the problem in learning process.
2. Students' achievements do not achieve the standard of competency.
3. Students still feel difficult to solve the problem because they still confuse about the mathematics concept.
4. Learning process tends to "textbook" and less related to daily life, so the students feel unpleasant to study mathematics.

1.3. Limitation of Problem

The limitations of this research problem are:

1. The students still have low ability to solve the problem in learning process.
2. Students' achievements do not achieve the standard of competency.
3. Scope of research:
 - Independent variable: Model of Learning (ASSURE and PBL)
 - Dependent variable: Students' achievement
 - Subject matter: Pyramid

1.3 Research Problem

Based on the background in the formulation of the problem in this study are:

1. Is ASSURE learning model can improve student achievement in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid?
2. Is Problem Based Learning model can improve student achievement in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid?
3. Is there a significant different of student learning achievement through ASSURE learning model and PBL model in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid?

1.4 Research Objectives

The purposes of this study:

- To find out is ASSURE learning model can improve student achievement in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid.
- To find out is PBL learning model can improve student achievement in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid.
- To find out is there a different of student learning achievement through ASSURE learning model and PBL model in class VIII SMP Negeri 1 Tebing Tinggi on the sub topic of Platonic Solid: Pyramid.

1.5 Research Benefit

- a. In Theoretical

- The results of this study may be a reference in the development of mathematical models of learning that can improve student learning achievement
- The study is expected to add the repertoire of knowledge, especially in the implementation of learning mathematics on the subject Platonic Solid

b. In Practical

- For the teachers, the teacher can apply the mathematical model of learning by using ASSURE learning model or PBL model.
- For the school, this study is expected to help the improvement of student achievement. In addition, the application of mathematical models of learning using ASSURE learning model or PBL model is expected can increase students' motivation in learning.