

## CHAPTER I INTRODUCTION

### 1.1 Background

Education is the most important aspect in every country. It determines the development of the country itself. Education in Indonesia belongs to the low one and if we compare to the other countries, it's still fallen behind. The low quality of education in Indonesia naturally is very alarming.

Based on the data in Education for All (EFA) Global Monitoring Report 2011, the position of Indonesia is 69<sup>th</sup> of 127 countries in the world. While survey result that was done by Program for International Student Assessment (PISA) in 2003 showed that, from 41 surveyed countries for mathematic skill and reading skill, Indonesia was in 39<sup>th</sup> level with the score is 360,2. It belongs to the beneath international average, namely 500. In the same survey, for problem solving ability is 361,5. It's also beneath international average.

By discerning this fact, the seriousness of governor in increasing the education quality is absolute demand that must be done overall. The spirit of improvements have been already visible, for instance the increasing of education budget to 20% of APBN budget, the enhancement of teachers quality by means of teacher certification program. The education curriculum is revised continuously from 1994, then supplement 1999, 2004 curriculum (KBK), and now KTSP, which is refinement of the competency-based curriculum. But even there have been some improvements, we still find a lot of education problem in all parts.

Mathematics is one of the sciences that must be learned by all students as generation who will lead a nation. It is also due to the mathematical science is a fundamental science that can foster students' problem-solving ability that are needed in the times. The role of mathematics is very extensive in this life. The magnitude of mathematics role requires the students to be able master math.

Cockroft states (Abdurrahman, 2003: 253) that mathematics must be taught to the students because 1) always used in all parts of life; 2) all fields of study require an appropriate math skills; 3) it is a powerful means of

communication, concise, and clear; 4) can be used to present information in variety of ways; 5) improve the logical thinking ability, accuracy, frivolous awareness; and provide the ability solve challenged problem; and 6) give the ability to the problem solving effort.

Dolan and Williamson (1983: 9) states in the different ways:

“In April 1980, following two years of extensive research regarding the beliefs that many segments of society hold with respect to the objectives and priorities of mathematics education, the National Council of Teachers of Mathematics published *Recommendation for School Mathematics of the 1980's*”.

Discerning the trend of mathematics has a lot of benefits, students should be fond of the mathematics subjects. But in fact, students' anxiety and frustration in mathematic up to now still heard, both in public and school environment. Most students said that mathematics is an abstract class, difficult to understand, boring, uninteresting, and even there is no relation with the daily life. Probably it's due to the saturated theory because there are exactitude methods in the mathematic subjects that are given.

Dolan and Williamson (1983: 15) describes more specific, it is:

“Many students have considerable difficulty solving word problems. Their confusion lies in the fact that they are unable to write number sentences for the problems, which is the method of solution typically taught. If they can not use the approach, they are lost and often give up. A majority of these same students do have an understanding of the basic problem. If they are taught an alternate strategy that will give them a less sophisticated approach to solving the problem, they may be able to arrive at solution”.

Example:

An employee gets a constant raise every year. He started to work in 1990 with salary Rp 225.000,00 per month, and in 1996 his salary raised to Rp 465.000,00. How much salary will he get in 2000?

For such a problem above, the difficulties that probably appear is difficult to understand the word problem and connect the information on to the method to solve the problem. It does due to the students do not understand yet the solution steps, where it should be made the mathematical model which is appropriate in designing step.

Abdurrahman states (2003: 252) that from various fields of study that are taught in school, mathematics is a field of study that is considered as the most difficult lesson, who do not find any difficulties to learn mathematics, and even more for students who find difficulties.

In addition, based on the concise interview to some students, they state that mathematic is an abstract lesson, difficult to understand, boring, uninteresting, and even there is no relation to daily life. And by seeing some students' exercise book in SMA Negeri 2 Balige, some students have been able to answer the problem. But they only need the answer. They ignore the steps that must be passed systematically.

It's probably caused of the saturated theory because the lesson that is given does not use the appropriate learning method, with one of teachers in SMA Negeri 2 Balige, Mr. Paber Panjaitan, teachers are often use the conventional method. That can be one of the reasons why students do not like studying mathematics. And then the spread of students' achievement is extended.

In conventional method, teacher is more active so the learning process makes the students are easy to be saturated. Students are considered as passive creatures who receive the input only. All the learning process is concentrated to the teacher's ability. So students' ability is ignored.

There is a lot of learning methods that have been used in field problem solving is not appropriate to the material. To increase the students' problem solving ability, it's needed for having the learning attitude, open minded, and challenged to be active to give the ideas as much as possible. Because of that, there is a learning method that can be used to increase the students' problem solving ability. The method is problem based learning.

Problem based learning is a learning method that gives challenge to students to look for the solution from individual or even team problems. Problem-based learning also makes students can develop their skills to the autonomous learners. Problems are divided to dig the natural curiosity by connecting the learning to the students' daily life. And it emphasizes to the using of analytical and critical thinking ability.

The aim of this method is to help human beings to tap their latent and frequently unused urge the growth to becoming self-directed, self-responsible, and autonomous persons. This development is encouraged by the therapist or educator initiating, in a one-to-one or a small group situation, a pattern of communication that creates a climate of trust and security. This type of milieu helps the students to focus on the issues, goals, and problems that confront them. It also facilitates the marshalling of the diverse cognitive, affective, and psychomotor resources required to resolve or reduce the concerns and problems. This facilitates setting is initiated and maintained by the facilitator's communicating a non-judgmental, acceptant, and caring appreciation for the students.

According to Tan (Rusman, 2011:229), problem based learning is learning innovation because in the process of learning, thinking ability of students is optimized through team work systematically, in order to use, exercise, test, and develop the thinking ability continuously.

Finally, in coming to understand what needs to be considered in making the suitable method with the matter of mathematics and the low problem solving ability level, it is important for the researcher to make a research about **The Influence of Problem Based Learning Method toward Students' Sequence and Series Problem Solving Ability in the Twelfth Grade of SMA Negeri 2 Balige 2012/2013.**

## 1.2 Problem Identification

Based on the background that is stated above, so we can identify some problems that relate to students' mathematics learning, they are:

1. The spread students' achievement of mathematics in SMA Negeri 2 Balige is extended.
2. Students' problem solving ability of mathematics is not visible yet.
3. Students' opinion that mathematic is difficult lesson and it's due to the shortcoming of students' interesting to mathematics learning.
4. The learning process still uses the conventional method.

5. The learning method that is implemented by teacher can't optimize the students' problem solving ability.

### **1.3 Limitation Problem**

Considering that this problem research scope is wide, it's needed to make the limitation. The problem research is limited in Problem Based Learning on students' problem solving ability in Application of Arithmetic Sequence and Series that concerns to KTSP.

### **1.4 Problem Formulation**

Based on the background of the issues, problems identification and limitation problem that have been stated above, then the problem in this study is formulated as:

1. Is there any significant influence of problem based learning toward students' sequence and series problem solving ability?
2. How is the students' activity difference between problem based learning method and conventional method in arithmetic sequence and series subtopic in the twelfth grade of SMA Negeri 2 Balige?

### **1.5 Research Objectives**

The research objectives of this research are:

1. To know there is positive influence of problem based learning to students' sequence and series problem solving ability.
2. To know the students' activity difference between problem based learning method and conventional method in arithmetic sequence and series subtopic in the twelfth grade of SMA Negeri 2 Balige.

## 1.6 Research Benefits

This research is expected will give the benefit as follow:

1. For Students
  - a. Increasing the students' activeness in learning in order to be autonomous students.
  - b. Increasing the students' mathematics problem solving ability
2. For Teacher
  - a. Opening the insight of teacher's mind in teaching and developing the learning method.
  - b. Measuring the students' understanding in mathematics learning.
3. For School
  - a. Increasing the school quality by increasing the students' achievement or teacher activities.
  - b. Increasing the learning affectivity and learning efficiency
4. For Students or Advanced Researcher
  - a. Increasing the insight, ability, and experience in increasing the competence as teacher candidate.
  - b. As information or reference for the advanced researcher in doing the same research.