CHAPTER I

INTRODUCTION

1.1. Background of study

Education is a way to develop the world in the future. By education, people will be informed and able to develop itself to the more advanced, or to compete in the future. Therefore, developments or alteration in education is something that should happen in accordance with the changing culture of life. Supporting the development of education in the future can develop the potential of students to face, overcome and solve the problems that will occur in the future.Every child has the right to a quality education. Education can give the students the courage to face the competition in the progress of the modern era in either the current or next. As Bernard (in The International Working Group on Education Florence, Italy June 2000) states that:

> In all aspects of the school and its surrounding education community, the rights of the whole child, and all children, to survival, protection, development and participation are at the centre. This means that the focus is on learning which strengthens the capacities of children to act progressively on their own behalf through the acquisition of relevant knowledge, useful skills and appropriate attitudes; and which creates for children, and helps them create for themselves and others, places of safety, security and healthy interaction.

The education system in Indonesia is referring to the Law of the Republic of Indonesia Number 1 Year 20012 on National Education System said that education is a deliberate and planned attemptto create a study atmosphere and provide learning in order that students may actively develop themselves to have spiritual and religious strength, self-control, personality, intelligence, morals, and skills needed by themselves, the communnity, the nation and the state.

Mathematics is one of the subjects that occupy an important role in education. As seen from time spent in math in school, more than the other subjects given at all levels of education starting from elementary school to college. According to William (Mathematics' Arizona Education) said that: "mathematics is a human endeavor; and humanity is brought together throught matematics". Mathematics is essentially the activities of human life, how to live, how we are shaped by the social environment and growth of a civilization. In the activities we would have experienced activities that involve math in it. And the activities that we will experience continued until the future. Therefore, learning of mathematics is essential in education.

As Cornellius (in Abdurrahman, 2009: 253) states that there is five reason for studying mathematics there is a means of clear and logical thingking; a means to solve the problems in everyday; the means to know the patterns of relationships and generalization of experiences; the means to develop creativity and a means to raise awareness of cultural development. However, a problem that often arises is inactivity students in learning mathematics.Students follow the process learning by the teacher in the classroom by listening but do not criticism to teachers as feedback from the process of teaching and learning.This makes students become passive and can not solve problems in mathematics and tend to memorize concepts. These conditions make the students less interested in math.

To solve the problem is needed some strategies named problem solving. Mathematical problem solving is a process which involved the method solution is unknown in advance. To find the solution, student should map their knowledge about mathematics. There are found important phases to solve mathematics problem. Problem solving ability according to Polya (2004) will be measured through students' ability to complete a problem by using problem solving steps as follows:

1. Understanding the problem

   From this step, student should understand the problem that can be looked from being able to point out what the data, what the condition, and also what the problem showed.

2. Devising a plan

   From this step, students make plan how to solve the problem, which solution that correspond to the problem. Finding the connection between the data and the unknown.

3. Carring out the plan

   From this step, students implement the plan of what they have planned before.

4. Looking back

   Student able to derive the result differently and use method for some other problem.

When researcher teach in PPL, researcher has make the diagnostic testin SMA N 2 Balige during follow experience teaching in school or generally called "Program Pengalaman Lapangan Terpadu" on Agustus 22th until November 28th observations carried out in class XI IA. Number of students about 30 student per class. Diagnostic tests conducted by researcher by giving the problem to see students' problem solving ability. Giving diagnostic test carried out on October 12th 2016. There are 30 students answer the diagnostic test in class XI IA 3. The problem tested to students as follow:

Sudut-sudut segitiga ABCD adalah α, β *dan* γ. *Jika* $\sin \alpha = m$ *dengan* α *adalah sudut lancip maka* $\tan(\beta + \gamma)$ *adalah..*

From the answers given by student obtained:

1. Students could not understand the problem

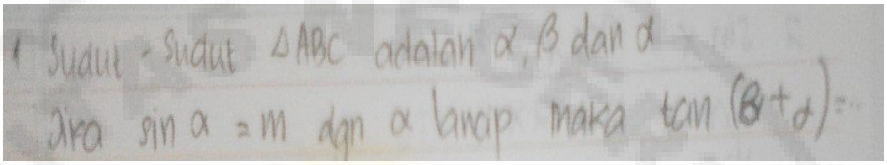

Figure 1.1 Student's sheet in understanding the problem step

Students were able to identify what is asked but they did not able to identify whats is known. From the image above, student did not know clearly what is known. In this step, there are 15 of 17 students could not understand the problem.

2. Students could not devise a plan in problem solving strategies

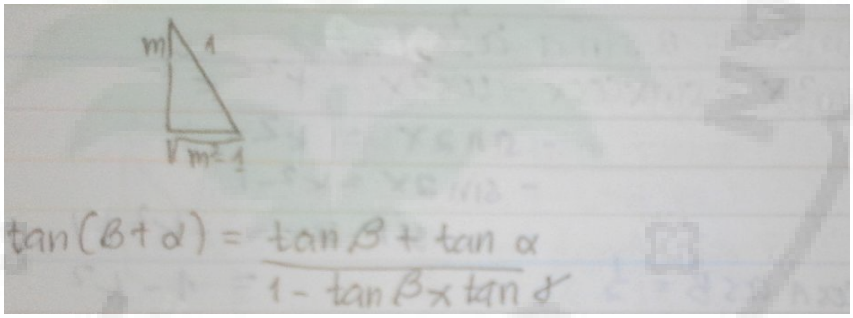

Figure 1.2 Student's sheet in devising a plan

From this figure, students still did not make a right sketch drawing. They draw a sketch but did not make the explanation of the drawing. From the 17 students, thay are no one make the sketch explanation.

3. Students could not carry out the plan in problem solving strategies

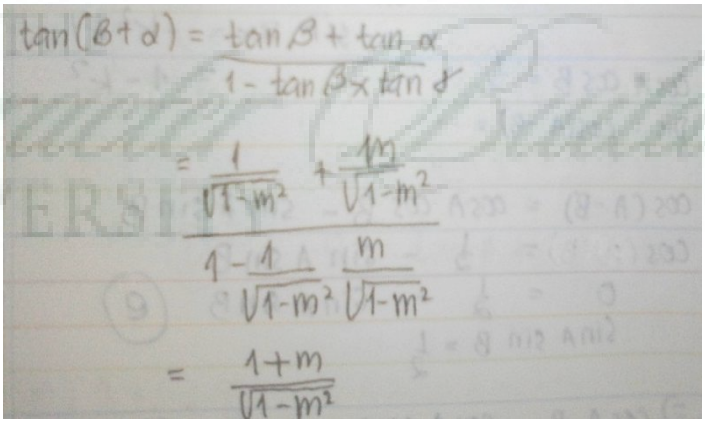

Figure 1.3 Student's sheet in carrying out the plan

From this figure, students could not do the completion based on the plan. Students could not find an appropriate strategy to solve the problem. There are 13 of 17 could not implement problem solving strategy.

4. Students did not look back the solution carefully and they could not derive the solution differently.

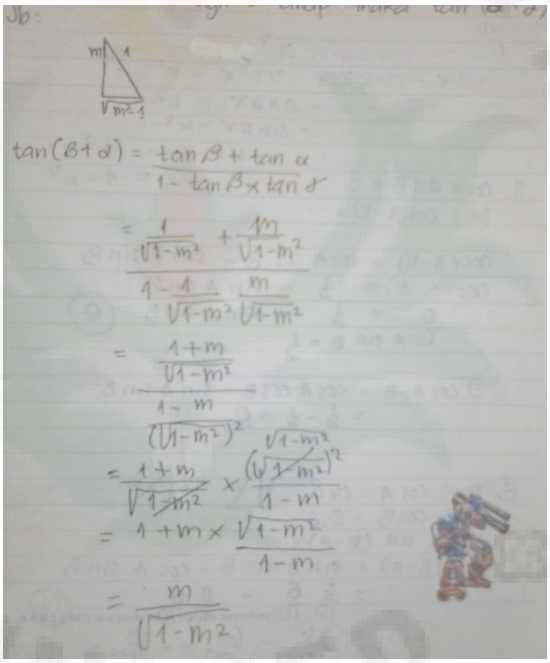

Figure 1.4 Student's sheet in looking back the solution

Most of students did not check back their task carefully. They also could not derive the solution differently.There are no student did not look back the solution carefully and could not derive the result differently.

Table 1.1 Table of Preliminary Diagnostic Test

Aspect	Categorized			Not Categorized
	High	Medium	Low	
1. Understanding the Problem	46.66%	23.33%	13.33%	16.66%
2. Devising a plan	13.33%	23.33%	40.00%	23.33%
3. Carrying out the plan	23.33%	16.66%	13.33%	46.66%
4. Looking Back	-	-	6.66%	93.33%

From the diagnostic test of problem solving ability above, many students still can not understand the problem, make the question into mathematics model and formulate the problem. From this table, shown that students still have low ability in problem solving. Fourth aspects of problem solving throught the diagnostic test, were still not reached yet as well by students, this is happen because students are not able to figure out the problem in their mind and can not make the problem into the mathematics model and also formulate the problem.

In addition to interviews, the researchers also observed the process of learning mathematics in class XI when the learning process , researchers found:

- ✓ Some students are more passive and less response to the material being taught
- ✓ Students are more memorizing formulas and notes the important things without knowing the concept
- ✓ Most students do not want to ask and just listening to the teacher
- ✓ At the given task or problem, students can answer well through the formulas given. However, when there is a matter that is slightly different from the examples and formula, the students immediately apparent confusion.

Recognizing the reality on the ground that the learning activity and the problem solving ability of students is still low. We need a model of learning that make the student become active. It required a learning model that can support successful learning. According to Ausubel (Dahar, 2006) The new paradigm in education today is to create meaningful learning process, the learning process that takes place in schools let students actively in involved in learning (students-oriented). As a manager of student learning, teacher are obliged to improved attention and 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 thingking to be skilled in problem solving in daily life relatedto mathematics.

Various efforts continue to be developed by the instigators of education for the learning of mathematics in order to maximize on reaching the desired objectives, in terms of models, strategies and learning methods in accordance with the concepts being taught. According to Berns (2011) said that one of the alternatives that can be done to overcome these problems is to use appropriate learning models namely Contextual Teaching and Learning. This model is very supportive to improve the activity of the students because it provides a learning contextually or involves events experienced in daily life as a person, family members, and community members. If students know the application of learning by looking at students' everyday itself, then it can be more active, problem solving, and also further develop the lesson.

Contextual Teaching and Learning is a concept of learning that help teacher to connect between what is taught with students' realworld situation an encorage students make connection between knowledge possessed and its application in daily life, that involve seven main componets, they are: contructivism, questioning, inquiry, learning community, modelling, and authentic assessment (Trianto 2009).

Based on the matters described above, the researcher interested in conducting research by the title "The Application of Contextual Teaching and Learning to Improvethe Activity and Problem Solving Ability in SMAN 2"

1.2. Problem Identification

From the the background issues that have been described, can be identified some problems, among others:

1. Student SMAN 2 Balige still consider that learning process of mathematics is a difficult subject.
2. Learning activities in SMAN 2 Balige are still dominated by teacher.
3. Students' mathematical problem solving ability in SMAN 2 Balige is low.
4. The approach learning is not satisfy to reach the goal of learning.

1.3. Problem Limitation

In this observation Researcher make the limitionbecause time and cost, there are:

1. Learning method used is Contextual Teaching and Learning.
2. The mathematical learning activity tenth grade students of SMAN 2 Balige Academic Year 2016/2017
3. Problem solving ability tenth grade students of SMA N 2 Balige Academic Year 2016/2017

1.4. Problem Formulation

Based on the background that has been stated above that the formulation of the problem in this research are:

1. How strategies to improve the activity of students by Contextual Teaching and Learning in class XI IA1 SMAN 2 Balige in Statistical topic?
2. How improving the problem solving ability of student XI IA1 SMAN 2 Balige after applied by Contextual teaching and Learning with the Statistical Topic?

1.5. Research Objectives

Based on the problem formulation, then objectives ofthis research are as follows:

1. Applying the Contextual Teaching and Learning to improve students' mathematical learning activities in the statistical topic in XI IA1 grade of SMAN 2 Balige
2. Applying the Contextual Teaching and Learning students' mathematical problem solving ability in the statistical topic in XI IA1 grade of SMAN 2 Balige

1.6. Benefit of Study

In the implementation of classroom action research is expected to contribute ideas and feedback that is useful to the improvement of the quality of education, especially for:

1. For schools, as input and contribute ideas for improving the quality of learning, especially in order to increase activity and problem solving skills in mathematics.
2. For teachers, increase the variety of learning models. This research is expected to broaden their horizons and knowledge of teachers regarding teaching model Contextual Teaching and Learning (CTL) as an alternative learning in order to improve the activity and problem solving skills in mathematics
3. For students, gain experience learning how to understand a mathematical concept with contextual
4. For researchers, add and equip themselves to become a teacher and educator who will plunge into the community

1.7. Operasional Defenition

This study entitled "The Application of Contextual Learning to Improvethe Activity and Problem Solving Ability in Grade X SMA N 2 Balige Academic Year 2015/2016". The terms that require explanation is as follows.

1. Contextual Teaching and Learning (CTL) is a contextual model of learning that engages students in an important activity that helps linking academic learning to real-life contexts they face.
2. Learning activities is any activity carried out in the process of interaction (teacher and students) in order to achieve learning objectives. Activity is means here the emphasis is on students, because the presence of student activities in the learning process will impact the creation of active learning situation.
3. The mathematical problem solving ability is the ability which gained by student to understand and complete the problem which are faced by using their skills and abilities to determine the concept they should use to be applied in solving the problem.