CHAPTER I
INTRODUCTION

1.1 Background

Mathematics is an important subject for every level of education, such as in primary school, middle school, and college. It can help people to think logically and orderly or justify a problem. Cockcroft (1982:253) said that mathematics should be thought for students because of

> (1) its importance and usefulness in many other fields; (2) mathematics provides a means of communication which is powerful, concise, and unambiguous; (3) mathematics can be used to present information in many ways; (4) develop powers of logical thinking, accuracy and spatial awareness; and (5) develop such confidence with relative ease should not underestimate the difficulties which many others experience

In other words, mathematics should be thought for students in order simplify or made it easier to solve problems. Mathematics is not an individual knowledge that cannot be perfect by their self, but it's there because of mathematics helps people to understand problems and to hold sociality, economics, and worlds. Mathematics makes us smarter, lose less money, have an easier time in college, meet more and more in the future, and increase our career options.

There are students who are not interested to learn mathematics in every school. Why do students dislike mathematics? If someone asks them to tell their feelings, there are many reasons. First reason, there are a lot of formulas to be memorized by students. Second reason, their teacher doesn't have a good personality. As we know, mathematics is related to formulas. In the learning activities, students are emphasized to memorize formulas. If they did not memorize it, there are teachers scolding them in front of their friends. It was a same thing, when students did not answer correctly against problems. As a teacher, we must know students well. Vygotsky (1978:25) said that:

> A child's speech is as important as the role of action in attaining the goal. Children not only speak about what they are doing: their speech and action are part of one and the same complex psychological function, directed toward the solution of the problem at hand.

Same reason has been stated by Yasoda (2009:10) based on attitudes of students towards mathematics, they are:

Obviously different factors such as physiological, social, emotional, intellectual and pedagogical may cause 'maths-aversion' in different students and it is duty of the mathematics teacher to identify and isolate these factors. Once the disease is diagnosed, the remedy might be easy and often it may require lot of effort on the part of the teacher.

Observation result towards mathematics learning activities in grade X at SMAN 1 Matauli Pandan Academic Year 2012/2013, it was shown the average score of daily test (UH) on mathematics subject. Their score can be seen at Table 1.1, where the average score of daily test (UH) has not reached mastery criteria minimum (KKM) that is 75.

Table 1.1 Average Score of UH in Grade X SMAN 1 Matauli Pandan

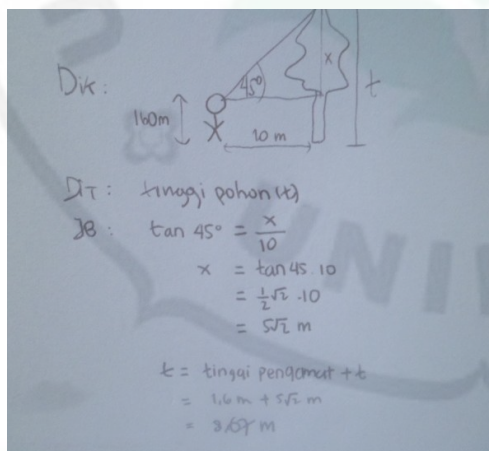| Class	Average of UH	KKM
X 1	64.5	75
X 2	68.08	75
X 3	53.74	75
X 4	18.73	75
X 5	31.07	75
X 6	56.16	75
X 7	42.54	75
X 8	47.96	75
X 9	57.24	75
X 10	48.71	75
X 11	23.52	75
Total	46.57	75

Source: Drs. Ro'is, M.Pd (Mathematics Teacher at SMAN 1 Matauli Pandan)

Based on the result, there is a possibility for student did not understand to solve a problem when doing daily test (UH). Furthermore, Lener (in Abdurrahman, 2009:253) said that "*kurikulum bidang studi matematika hendaknya mencakup tiga elemen, (1) konsep, (2) keterampilan, dan (3) pemecahan masalah*."

Problem solving is application of concept and skill. It involves some combination of concept and skills usually in a different situation. As an example, according to Abdurrahman (2009:254), said that:

> *Pada saat siswa diminta untuk mengukur luas selembar papan, beberapa konsep dan keterampilan ikut terlibat. Beberapa konsep yang terlibat adalah bujur sangkar, garis sejajar, dan sisi; dan beberapa keterampilan yang terlibat adalah keterampilan mengukur, menjumlahkan, dan mengalikan.*

But, students have difficulty to solve storyline problems. It seems to be related to mathematics learning activities that make student solve a mathematics problem without giving guidance for several steps that must be taken. A non-routine problem was given to student; it can be expressed as follows: Ali whose heights 160 cm sees the top of tree 45 degrees towards horizontal line. The distance between Ali and a tree is 10 meters. How tall that tree is?
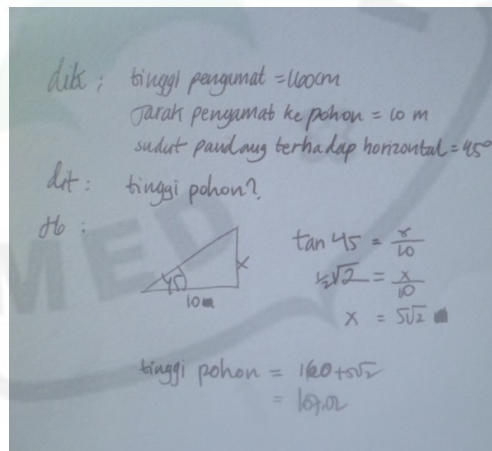

Figure 1.1   Figure 1.2

Figure 1.1: Student A knows what is being asked by the problem and translates it into an illustration sketch. Then, student A make mathematics model and do calculation until get the right answer. Figure 1.2: Student B knows what is being asked by the problem, but didn't really know illustration of problem. Then, student B make mathematics model and do calculation. But, student B get a wrong answer.

Based on explanation of Student A and Student B solving a problem, there are differences of their problem solving steps. According to Abdurrahman (2009:257), there are several steps to solve mathematical problems such as:

(1)   *Baca : Apa yang ditanyakan?*
(2)   *Baca kembali : Informasi apa yang diperlukan?*
(3)   *Pikirkan : Apakah memerlukan semua informasi tersebut?*
(4)   *Pemecahan masalah : Tulis persamaan tersebut!*
(5)   *Periksa : Hitung kembali dan bandingkan!*

In this case, student A has done several steps to solve mathematical problems rightly. Meanwhile, student B did not pass the last step of checking out the answer of solution. So, problem solving ability of these student are different.

Another result of observation towards mathematics learning activities were conducted by teacher is not attrating for students. There are students who get sleepy when their teacher explain the topics in front of the class. There are students talking each others and did not pay attention to their teacher. Besides of it, a student in grade X said that "student's activities in the classroom just hear teacher's explanation of mathematics subject in front of the class, write in our book, memorize a lot of formulas and get a lot of homework" (Simarmata, interview, October 16th 2012). The impact of learning was limited to memorize, it will make students less in analysis and problem solving ability (Guerin, 2006).

According to observation result, a teacher always used whiteboard and spidol to explain the subject. They didn't use variety of instructional media or teaching aids in mathematics learning activities. Based on them, there is an idea to seek out, if teachers used a variety of instructional media and teaching aids in order to make student understand the subject more easier or it will make an influence to problem solving of student to solve story line, they must select both of them that suitable for the subjcet. In several meetings, teachers can use macromedia flash at the first meeting and clinometers at the second meeting. It can be a suitable choice to explain trigonometry ratio and function.

Hamalik (in Arsyad, 2007:15) said that "*pemakaian media pembelajaran dalam proses belajar mengajar dapat membangkitkan keinginan dan minat yang baru*". Macromedia flash can be used as innovative and creative instructional media. Because it has elements of sound, image, and motion. It presents mathematics to be more interesting for student. It is expected to make students understand easily. Meanwhile, Asyhar (2012:11) said that "*alat peraga digunakan*

untuk membantu pembelajar dalam meningkatkan keterampilan dan pengetahuan pembelajar." Clinometers are teaching aids which is used to measure the height of an objcet using a vertical angle and distance. If the researcher used both of them is not only to make students understand the concept but they have skills to solve problem in real life.

If teachers deliver mathematics with interesting steps, it will make students understand easily too even though limited of time. learning strategies that are not compatible will make students do not understand, boring, and bring down motivation to learn mathematics. Therefore, cooperative learning is needed to apply in the classroom. According to Shindler (2009), there are many reasons to decide that cooperative learning is worth the effort, such as

> First, it has been shown to have a positive effect on student learning when compared to individual or competitive conditions. Second, cooperative learning has the potential to meet more learning style needs more of the time than individualized direct instruction. Third, the interpersonal and collaboration skills that can be learned in a cooperative learning activity teach skills that are critical for later personal and professional success.

So, the researcher choose STAD (Student Teams-Achievement Division) as learning model to explain the subject in the classroom. Because this model will involve students to work in a group, share their ideas and discuss a problem together.

Let be student's assessment of something is a major thing as the role of action in attaining the goal. So, what if the student tell about their opinion or perception about macromedia flash and clinometers towards problem solving ability? It will make a consideration for both parties.

Based on the explanation of research background, the research has a title: "The Influence of Student's Assessment of Macromedia Flash and Clinometers through STAD towards Problem Solving Ability on Trigonometry Ratio and Function in Grade X at SMAN 1 Plus Matauli Pandan Academic Year 2012/2013."

1.2 Identification of Problem

Based on the background, some problems can be identified as follows:

1) Problem solving ability of students on trigonometry subject is less.

2) Some of students still not mastered trigonometry subject based on their mastery criteria minimum.

3) Students are not involved actively where learning activities begun in the classroom.

4) Subject matter that presented by teacher is not interesting and boring for students.

1.3 Scope of Problem

Identified problems are problems that are quite extensive and complex. The research is more focused and achieved the goals, and then the scopes of problem are:

1) The relationship between macromedia flash and problem solving ability.

2) The relationship between clinometers and problem solving ability.

3) The relationship between macromedia flash and clinometers towards problem solving ability.

1.4 Research Questions

Based on description of problems background, identification of problem, then research questions are:

1) Is there a significant positive influence between macromedia flash and problem solving ability?

2) Is there a significant positive influence between clinometers and problem solving ability?

3) Is there a significant positive influence between macromedia flash and clinometers towards problem solving ability?

1.5   Research Objectives

Generally, research objectives of the research are:

1)   To find out a significant positive influence between macromedia flash and problem solving ability.

2)   To find out a significant positive influence between clinometers and problem solving ability.

3)   To find out a significant positive influence between macromedia flash and clinometers towards problem solving ability.

1.6   Research Benefits

A research is expected to find significant input for development of learning activities that can provide a new condition for improving the way of learning strategies in the classroom, particularly for problem solving ability of students. A research benefit that may be obtained includes:

1)   For students, it will improve their activity, creativity and achievement of mathematics.

2)   For teachers, it will provide useful information to determine alternative teaching strategies and learning resources.

3)   For principals, it can be consideration for educational efforts if they use macromedia flash and clinometers trough STAD for teaching mathematics in the classroom.

4)   For researchers, it can be a useful of learning resource and a device for further high level of education, and also the result of research can serve as learning basis for other scientists.