

## CHAPTER I INTRODUCTION

### 1.1. Problem Background

The objective of learning mathematics in the Kurikulum Tingkat Satuan Pendidikan (KTSP) is developing a creative activity involving imagination, intuition and invention to develop divergent thinking, original, curious, make predictions and expectations by attempt repeatedly.

Students must learn mathematics through understanding and construct new knowledge actively from experience and prior knowledge. National Council of Teachers of Mathematics or NCTM (2000) outlined that in learning the mathematics the students not only depends on "what" is taught, but also depends on "how" the mathematics is taught, or how students learn. Basically, learning is a process of communication between teachers and learners. The process of communication is not always run well, but sometimes it can cause misunderstanding or a wrong concept. Furthermore, teachers should be able to provide an alternative learning for learners such that they can understand the concepts that have been taught.

Students worksheet is one of the appropriate learning alternatives for students because student worksheet help learners to add information about the concepts that is learned through systematic learning activities (Suyitno, 2009:40). But in the fact student worksheet that learners have is not able to assist in finding the concept, actually it just contains the material and questions. In addition, from the display of worksheet also less interest for students.

In effective learning process, the usage of student worksheet in learning is expected to provide positive and great contribution to the student's achievement . In the other hand, the usage of the student worksheet can be tailored to the needs of students in the class such that making it easier for students to understand the subject material that being studied and can also assist students in developing self-potential so that students do not feel afraid in dealing with the material that they studied.

Mathematics is needed in every aspect of life because the mathematics can form a critical thinker, systematic, logical, creative and willing to cooperate effectively. Daily life that we pass will never escape from mathematics, from our childhood, before we go to school, the concepts of mathematics are often used, for example, when we play cards, play hide and seek, playing monopoly, playing puzzle, playing dice and other children's games, we have doing mathematics indirectly. Mathematics is all around us, mathematics is an activity that we do as Freudenthal's statement said that mathematics is "human activity". Mathematics is a knowledge that can be found in every aspect of life.

However, the characteristics of mathematics which are abstract, hierarchical, and logical make mathematics seem difficult for most of people. Mathematics is looked as boring subject because generally teachers teach mathematics in a improper way and was not associated with daily problems. Finally, students only consider that mathematics as a collection of questions that must be solved without realizing the benefits of learning mathematics. Learning is dominated by the lecture causes students to be passive in the learning activities. In fact, many objects around the students that can be used as a exemplary materials so that students can learn actively and students can feel that what they have learned about has meaningful in their daily life.

According to that situation, based on the results of interviews was conducted by researcher with one of the VIII grade mathematics teacher in SMP Negeri 1 Medan, Mrs. Hanita Silalahi on April 2, 2012 which says that:

"The willing in learning of some students in class VIII at mathematics is still lacking even there are also some students who hate mathematics. It can be seen from the low of learning outcome that is obtained in students class VIII. There are some students who have score below average of class."

One of material that is difficult to understand in learning mathematic in the grade VIII is algebra. Difficulties in studying the algebra is also happen in students SMP Negeri 1 Medan. It is also stated by Mrs. Hanita Silalahi through interviews with researcher, which states that:

"Students have difficulty in learning the subject matter of algebraic form. Most of the students difficult to understanding the concept of algebraic form. Students are less able to translate and do the problems of algebraic form if the form of question relation to daily life."

As a follow-up of interview researcher with Mrs. Hanita Silalahi where the researcher also asked about the presence of instructional media in like students worksheet, She said that: "There is no students worksheet in the learning of mathematics at that school."

From the interview with the teacher of mathematics at SMP Negeri 1 Medan, it can be concluded that in learning of mathematics, the teacher never used the student worksheet as a media of learning. Teachers only use textbooks as their main source of learning.

From the interviews, the researcher will conduct research on the algebraic form. The reason the researcher choose the algebra, because the algebra is one of the basic knowledge in mathematics. Furthermore according to the TIMSS 2003 in William, Steve (2005 : 26), mathematics frameworks reveal considerable agreement on the general boundaries and the basic organization of mathematics content. Five contents area related to the major mathematical curricular area of number, measurement, geometry, data, and algebra. Algebra is included in to the five contents that must be fulfill by the students. In addition, the algebra often regarded as an easy subject matter. But in reality there are many junior high students who can not understand just only the meaning of variables.

Researcher suspect this event happen because the basic concept of the algebra that has been learned is not strong, when students are given the different questions about algebraic form, they get difficulties. It could also be due, the abstract mathematics learning without making relationship between algebra with their daily life. The terms that is mentioned above very often make the learning mathematics is regarded as a boring subject for most of the students.

Based on the paragraph above, the researcher argue that to make the learning of mathematics have meaningful, effective, and interest for many students and making the learning of mathematics is not boring and make students do not consider that the mathematics is an abstract lesson, the teacher needs to

choose a learning approach that requires the active involvement of students and also develop the ability of thinking by using the real thing around them, so the learning objectives achieved. Researcher tried Realistic Mathematics Education.

Realistic Mathematics Education applies the views on what mathematics, how the students learn mathematics and how mathematics should be taught. In mathematics education, according to Freudenthal students is not just a passive recipient of the mathematics material, but students need to be given the opportunity to invent mathematics through practicum that they have. The major principle of Realistic Mathematics Education is students must participate actively in the learning process. Students should be given the opportunity to construct their own knowledge and understanding.

The subject matter needs to be real for students. This is the reason why it is called Realistic Mathematics Education. Of course it is not mean that the RME must always use the real life problems. Abstract mathematics problems can be made real in the mind (thoughts) of students.

In this approach, students are given the opportunity to work in groups to construct their own knowledge, while teachers act as facilitators of learning are required to have a good capability in managing the learning process.

Therefore, the researcher are interested for designing the students worksheet that have characterized Realistic Mathematics Education and trying out the students worksheet to see the effectiveness of learning mathematics. And holding research entitled "*Development of Students Activity Sheet (SAS) Characterized by Realistic Mathematics Education for Algebraic Form Subject in VIII Grade SMP Negeri 1 Medan.*"

## 1.2. Problems Identification

Problems are identified in the learning activities as follows:

1. The willing of many students in learning mathematics is still lacking even there are also some students who hate mathematics.
2. Students only consider that mathematics as a collection of questions that must be solved without realizing the benefits of learning mathematics.
3. The usage of media of learning that is not real (not in daily life)
4. Students are less able to translate and do the problems of algebraic form if the form of question relation to daily life.
5. The low of learning outcome that is obtained in students grade VIII in algebraic form.

## 1.3. Problems Restrictions

The main problem that can be taken from the problems identification above and also to limit the problem in this research is development of students worksheet characterized by Realistic Mathematics Education in the subjects algebraic form in grade VIII of SMP Negeri 1 Medan.

## 1.4. Problems Formulation

The formulation of the problem in this research are :

1. How does the validity of the Students Activity Sheet characterized Realistic Mathematics Education of algebraic form in grade VIII SMP N 1 Medan?
2. How does the students response to the Students Activity Sheet characterized Realistic Mathematics Education of algebraic form in grade VIII SMP N 1 Medan?
3. How does the learning achievement of students after using Students Activity Sheet characterized Realistic Mathematics Education of algebraic form?

### 1.5. Research Objective

Based on the formulation of the problems above, this research aims to produce students worksheet that has characterized Realistic Mathematics Education for algebraic form subject and know the description of students worksheets effectiveness in grade VIII SMP Negeri 1 Medan.

### 1.6. Benefits of Research

The advantage that is expected from this research are:

1. For students

By using the media of learning like expected to improve students achievement in learning mathematics for material algebra especially students in VII grade SMP Negeri 1 Medan.

2. For teachers

The students worksheet that has characterized Realistic Mathematics Education is expected as the information of model worksheet that can be utilized in the learning of mathematics and materials for teachers in SMP Negeri 1 Medan

3. For schools

The results of this research give the good contribution for the school in improving the teaching of mathematics at SMP Negeri 1 Medan in optimizing school facilities and infrastructure that can support the learning process.

4. For Researcher

Can add to the knowledge and experience, because according to the profession of researcher later that will be an educator such that the result of this research can be applied in the classroom and as preparation to become a professional teacher.

5. For the other researcher

Can be the source for the other researcher that are interested in undertaking similar research further.