

## CHAPTER I INTRODUCTION

### 1.1 Background

Education is a very important thing and it has a strategic role in the development of human civilization in the world. Therefore, almost all countries, including Indonesia put the variables of education in developing human resources to face the development of civilization nation and state.

As expressed by Trianto (2009:4) that entered the 21<sup>st</sup> century national education system face very complex challenges in preparing the quality of human resources to compete in the era of globalization. Appropriate measures to prepare qualified human resources and the only place that can be in view and a tool for building high-quality human resources is education. However, the quality of education in Indonesia is now considered by many people is still low. Kunandar (2009: 1) mentions several indicators, namely:

1. Graduates from high school or college are not ready to enter the workforce due to lack of competency
2. Rank Human Development Index (HDI) of Indonesia is still low. In 2004 Indonesia ranked 111<sup>th</sup> of 117 countries, ranking 110<sup>th</sup> in 2005 under Vietnam is ranked 108<sup>th</sup>. Later in the year 2010 ranked 111<sup>th</sup> and in 2012 Indonesia down to 124<sup>th</sup> of the 187 countries ranked.
3. Report of International Educational Outcomes (IEA) that the reading skills of elementary school students Indonesia was ranked 38 of the 39 countries surveyed.
4. Quality among the nation's colleges / Program for International Student Assessment (PISA) 2003 show Indonesia ranks 38<sup>th</sup> of 41 countries in science then mathematics and reading was ranked 39<sup>th</sup> compared with south Korea is ranked 8<sup>th</sup> in science, mathematics and reading ranked third on the ranking of seventh.
5. Competitiveness World Report Year book 2000, the competitiveness of Indonesia's human resources positions in 46 of 47 countries.

6. The position of favorite universities in Indonesia, UI and UGM are at 61 and 68 of the 77 universities in Asia (Asia week, 2000)
7. Underdevelopment of Indonesia in the field of science and technology compared to neighboring countries such as Malaysia, Singapore and Thailand.

Mathematics is one of the basic sciences in school curriculum and must be learned in educational institutions. Based on the data above, Indonesia ranks are located in 39<sup>th</sup> of the 41 states and this must be very worrying. This problem must be improved immediately and be seriously handled because the usefulness of mathematics and very important both in development thinking, mastery of science and technology and its role in several other scientific subjects. It is also expressed by the Daniel Muijs and David Reynolds (2008: 332) which states mathematics is the main means for developing the ability of logical thinking and higher cognitive skills in children and plays an important role in several other scientific fields such as physics, engineering, statistics and others. Therefore, it is necessary teach students to mastery the mathematics early on creating, face and master modern technology for globalization era. Then, Cornelius in Abdurrahman (2003: 253) show several reasons for studying mathematics, namely:

1. Means of a distinct and logical thinking
2. Means to solve problems of daily life
3. Means to know the patterns, relationships and generalization of experience
4. Means to develop creativity
5. Means to increase awareness of cultural development.

Based on the above quotation through the learning of mathematics is expected that students can develop the ability to think, reason, develop creativity, communicate and present ideas and information and solve problems in daily activities.

Although mathematics is one of the important aspect to develop a nation, in fact, the mathematics ability of student still low like in expectation.

It can be concluded that the teaching and learning process is not able to give the good effect in increasing the learning outcomes of students. It also can be seen from the Ujian Nasional result in 2012, *Mendikbud* M.Nuh explains that most of students failed in mathematics. From the above quotations provide clear information that until now the learning outcomes results mathematics students have not achieved the desired level.

(<http://edukasi.kompas.com/read/2012/06/02/10035432/Banyak.Siswa.Tak.Lulus.Ujian.Matematika>)

Furthermore Trianto (2009: 5) states that a major problem in learning on formal education (school) today is the low absorptive capacity of learners where can be seen from the average of the students' results of study that is still very bad. This outcome is certainly as the result of the condition where learning still in conventional dimensions and do not touch the realism of learners themselves, namely how to actually learn it (learning to learn) and also caused by the process of learning until today still provide the teacher dominance and does not provide access for students to develop independently through the development and their thought processes.

Based on the above opinion, it is very urgent for educators; especially teachers to understand the characteristics of the materials and learners. In addition, other factors that have an important role in determining the learning objectives of the study is a model of learning. The learning process can be followed very well and attracted students' attention when teachers use learning models which is suitable for learning material. Therefore, the learning of mathematics must be based upon the characteristics of mathematics itself and the students themselves.

Algebra is a language of symbols and relationships. Algebra is used to solve everyday problems. With the symbolic language of relationships that emerge problems solved simply. Learning algebra is not simply learned about its abstract but also learn to solve problems of everyday life. In elementary school learn arithmetic. The symbols used are the figures that directly stated amount or recognized as a disciple of a certain number. Because the language

of algebra uses symbols not only the number but also the letter forms used in junior high school algebra class VII is a very real need to understand the students and need of special attention.

The beginning Algebraic form of a majority of students is not easy. Students' competency in understanding and preparing the algebra class VII student is a prerequisite for being able or competent in solving verbal problems involving both equality and inequality and development. Because of these basic skills need attention before entering into the equations and inequalities as well as to function in algebra is taught in class VIII and IX (Al krismanto in Diklat instruktur/ pengembangan Matematika SMP jenjang Dasar 2004)

Algebra is one of the subject matter of mathematics lessons taught in school. Algebraic equations that contain some form of variable and constant symbols and tend to be abstract enough make it difficult and foreign for student to resolve any issues in this matter. From interviews given to the researcher mathematics teacher at SMPN 1 Medan that is Elliati Nasution on June, 02<sup>nd</sup> 2012 obtained the information that students still have difficulty in distinguishing coefficient, variable, constants, operating algebra operation, equations and inequalities form and apply it in solving the equation algebra in daily life examples.

Then Anita Silalahi, one math teacher at SMP Negeri 1 Medan also mentioned the difficulty in distinguishing coefficient students, constants, and variables. As mentioned example addition and multiplication;  $2x + 3y$  and  $(2x) \times (3x)$ , students still tend to answer  $5xy$  and  $6x$ . Form of algebra problems in daily life also make students faces difficulties as a matter of following: in a shop, Alim buy 5 books. After that he paid to the shopkeeper Rp 50,000 and Rp 25,000 get back. What is the price of one of the books purchased by Alim? To answer this question student must understand the problem asked and have some skills such as problem solving. Students are much less active in this matter; the less problem solving skills lead to some students also tended to be indifferent as spoken and it make the learning outcomes become low.



Cooperative learning model is still rarely used in the process of learning and teachers have not used cooperative learning type STAD and GI, more frequent use of the learning model of lectures and continued by discussions. As a result, students become less active so that students have difficulty in understanding and solve the algebra problem and also have an impact on learning outcomes based on test scores and dissatisfactory for some students' score.

Cooperative learning model can be used as an alternative model that is expected to activate students in teaching and learning mathematics, this means that students should be active and interact with others, exchange information and solve problems. Slavin in Sanjaya (2009: 239) suggests two important reasons for using cooperative learning model, namely:

1. Several studies show that the use of cooperative learning can improve student outcomes while increasing the ability of social relationships, fostering self-acceptance and lack of other people and can improve self-esteem and others esteem.
2. Cooperative learning can realize the needs of students in learning to think, to solve problems, and integrate knowledge and skills.

From the above explanation, cooperative learning can improve learning systems so far have weaknesses and lack. Cooperative learning can also improve students' skills in solving math problems, because students are able to explain ideas - ideas that are difficult to each other by translating into a language that teachers use to their own language.

One model of cooperative learning can be developed in a cooperative learning math is a type of Group Investigation and STAD. Group investigation is the method emphasizes more choice and control students to plan what you want to be studied and investigated. First of all groups of students placed in small groups, each group is given a different task or project. In the group discussion and each member must contribute to determine what research topics they take. Others share their own division of labor for each group member. During the investigation they will engage in activities of thinking, such as

making a summary synthesis, hypotheses, conclusions and present the final report so that the students strive for active learning and problem solving are investigated.

Hayu Pertiwi Sesani (2010) state that the succes of one of mathematics instruction is determine by the selection of appropriate learning method. From the models of learning that has been developed, one model of learning that is assumed to support the creation of a dinamic learning situation not saturated and can support creativity and interaction among students and teachers are learning model investigation. Then , in topic algebra itself group investigation learning method can be an alternative for teacher to be applied in the classroom because it can motivate student to be more active and creative among in learning mathematics so that can increase the learning outcomes. (<http://eprints.umm.ac.id/id/eprint/2321>)

STAD is a study that involves competence between groups; students are grouped in various ways based on ability, gender, race, and ethnicity. First of all, students learn the material together with a group of friends and then they were tested individually through quizzes, quiz grades each member to determine scores obtained by their group. Thus, each member should seek active and involved, supporting one another in mastering both the ability to think, solve problems or to be taught by teachers in order to obtain the maximum value in the quiz if they want to get a high score.

From the description above in order to active and involve students in teaching and learning is very important. Through cooperative learning type GI and STAD, learning of mathematics can be more interesting, fun, and also enable students to improve problem solving skills that can increase student outcomes.

Based on this background that the researcher is described, intend to do a research with the title *"The Difference between student's learning outcomes on Algebra using cooperative learning model Group Investigation and using Student Teams Achievement Division"*. Case study is in class VII SMPN 1 Medan academic year 2012/2013".

## 1.2 Problem Identification

1. Low absorptive capacity of learners caused by the process of learning still provide the teacher dominance and doesn't provide access for student's thought process
2. Algebra in junior high school especially class VII is a very real need to be understood by the students and need of special attention
3. Students are much less active in algebra topic and tend to be indifferant as spoken then make the learning outcomes become low
4. Teachers are more likely to use methods of lectures and discussions on the learning process
5. Cooperative learning model Group Investigation and Student Teams Achievement Division can be an alternative model to improve student's learning outcomes.

## 1.3 Problem Limitations

1. Students' learning outcomes on the subject of algebra
2. Cooperative learning model of Group Investigation (GI) and of Student Teams Outcomes Division (STAD) is as the learning model

## 1.4 Problem Formulation

- a. Is there any difference in students' learning outcomes by using cooperative learning type GI and type STAD on the subject of algebra class VII SMPN 1 Medan academic year 2012/2013?
- b. How is the difference of students' activity and teacher activity in cooperative learning type GI and type STAD on the subject of algebra class VII SMPN 1 Medan academic year 2012/2013?

### 1.5 Research Objective

To find out the difference between the students's learning outcomes on algebra using cooperative learning model GI and of using cooperative learning model STAD in class VII SMPN 1 Medan

### 1.6 Benefits of the research

The Benefit of this research is:

- a. As an input or consideration for teachers to choose models for teaching algebra.
- b. The results of this study are expected to provide a reference in the improvement of mathematics teaching in SMPN 1 Medan.
- c. This research can be a reference for the other researcher to develop both of these cooperative learning model but should pay attention for the class controlling, and time effectiveness in increasing the learning outcomes and better learning process in the class
- d. This research can increase student's learning outcomes, the activity of students, and decrease the teacher dominance in learning process.