

CHAPTER I

INTRODUCTION

1.1. Background

Many countries recognize educational problems as complicated problems, but they all feel that education is a very important task of the country. Budiningsih (2005: 1) states that "Bangsa yang ingin maju, membangun, dan mencoba untuk meningkatkan situasi masyarakat dan dunia akan mengatakan bahwa pendidikan adalah kunci, dan tanpa kunci itu, usaha mereka akan gagal".

Education is the basic foundation of human personality and the ability to develop in accordance with the values prevailing in society. Education is also a lifetime requirement. The quality of education determines the progress of a nation. Thus, education can be used as a benchmark of quality development of a nation.

According Trianto (2010: 1) said that Education is one of the manifestations of human culture a dynamic and full growth. Therefore, change or development of education is indeed supposed to happen consistent with changes in the culture of life and be constantly in anticipation of future interests.

Meaningful learning takes students on a memorable learning experience. The experience the students gained will be more impressive if the their learning process is the result of understanding and discovery by themselves. In this context, the students do and experience things by themselves. The learning process that takes place involves the students to formulate entirely their own concept. The involvement of teachers is only as facilitators and motivators in the learning process.

Trianto (2010: 17) said that "Belajar merupakan aspek yang kompleks aktivitas manusia, yang tidak sepenuhnya dijelaskan". Simple learning can be defined as the product of an ongoing interaction between development and life experiences. Learning the meaning of the complex is the conscious effort of a teacher to teach students (direct interaction of students with other learning resources) in the series achieve the expected goals.

Mathematic is a science that characterize inductive and deductive, intellectual activity (Logic Mathematic) with language that compare with the daily

incisive language, and in this level of the abstract of mathematic is on high level. Mathematics is also one of the areas of study that occupies an important role in education, a sit occupies more school hours than other subjects.

According to Ibrahim (in Novitasari: 2012: 20) said Mathematics is a universal science that underlies growth modern technology, have an important role in a variety of disciplines and advance the human intellect. Learning math has some specific goals that must be achieved, one of them is to develop problem-solving abilities.

Mathematics is one of the most important subjects that provide several vital skills to the learners. Some of the skills that people get from math include: the ability to identify and analyze patterns, logic and critical thinking skills, ability to see relationships and problem solving skills. Mathematics has a structure and a strong and clear linkage between concepts as to enable a student has skill to think rationally (Depdiknas, 2007). Cornelli (in Abdurrahman, 2008: 253) states that:

"Lima alasan untuk belajar matematika karena (1) matematika adalah cara pemikiran yang jernih dan logis, (2) matematika adalah sarana untuk memecahkan masalah kehidupan sehari-hari, (3) matematika adalah sarana untuk mengetahui pola hubungan dan generalisasi pengalaman, (4) matematika adalah sarana untuk mengembangkan kreativitas, dan (5) matematika adalah sarana untuk meningkatkan kesadaran pembangunan budaya".

Furthermore, Cockroft (in Abdurrahman, 2008: 253) states that mathematics should be taught to students because it is always used in everyday life, all subjects require the appropriate mathematics, mathematics is a means of communication that is strong and clear, can be used to present information in a variety of ways, can improve the ability to think logically, and can give satisfaction to attempt to solve a challenging problems.

Once the importance of the role of mathematics as described above should seek to make the subject fun and loved by the students. Nevertheless, it is undeniable that mathematics course is still a subject that is considered difficult, tedious, and often lead to difficulties in learning. These conditions resulted in the subjects of mathematics is unpopular, ignored and even tends to be ignored. This

of course poses a considerable gap between what is expected of learning mathematics with the fact that occurs in the field.

Dimiyati (2002: 3) stated that learning outcomes are things that can be viewed from two sides, the side of the students and teachers. From the side of the students, learning outcomes is the better level of mental development than it was before the study. While, Hamalik (2001:155) states that a person has learned if there is a change in the person's behavior, for example, from not knowing to knowing, and of not understanding to understood.

The low of students' mathematics learning outcomes is a problem that must be faced today. Many factors can lead to low mathematics student learning outcomes, these factors may be the arrival of the student (internal factors) and also from outside the student (external factors).

Meanwhile, (Dimiyati, 2002: 236-253) stated that internal factors may include: attitudes toward learning, learning motivation, learning concentration, process of teaching materials, save recovery teaching materials, explore the learning outcomes, confidence, learning interest, talent, intelligence, learning styles and future goals. While external factors may include: teacher as mentor students learn, infrastructure and learning, assessment policy, social environment of students in school and school curriculum.

The low of mathematics learning outcomes and a lack of knowledge and ability of the students in understanding mathematics also occur at SMP Negeri 3 Medan. Meanwhile, a math teacher, Mr. Limbong (in an interview January 21, 2015, at SMP Negeri 3 Medan), stated that:

"Mathematics is a subject that is difficult to be understood by the students. Although there are students who score high on math, their number is very little or not even a quarter of the number of students in a class. Most students' math scores are still low, in every test conducted many students scored below 65 and therefore contributes negatively to the value of their report cards. Of the 28 students, only 45% achieves satisfying results. Approximately 75% of learning activities are centered on the teacher. Teachers explain a lot, and provide information about the concepts that will be discussed. That is because the basic math skills of the children are still low. It is the learning model that is teacher-oriented".

Based on the observation of the mathematics learning activities in SMP Negeri 3 Medan, discovered the following matters. Learning activity is still dominated by the teacher, student learning activities are still low, very few students were asked during the learning process, students have not dared to express their opinions in discussions and skills to solve problems not yet entrenched. Most students in learning just memorize concepts and less able to use these concepts if you see a problem in real life associated with the concept owned.

Furthermore students even less able to determine the problem and formulate it so often questions given by the teacher of students with less can be solved well. This is indicated by the average value of daily tests of class VII quadrilateral material has not reached the minimum passing grade (KKM). From these data indicates that the learning outcomes of students of SMP Negeri 3 Medan more visible especially of abstract materials that require visualization, namely the aspect geometry.

The material is a material quadrilateral geometry junior class VII. For example, in square and rectangular material. In these materials, the students tend to memorize the concepts and formulas. These results are still less than the standard mastery learning, which generally reaches 85%. Based on the above realities, the role of the teacher is indispensable in successful learning.

A significant problem in learning process is the low student learning activities, that it is very influential on the outcome. The learning model applied by teachers often is the conventional model or with the lecture method. This model makes the teacher dominates the teaching and learning activities in the classroom, and students become passive. From these statements, it can be concluded that the teaching model applied for mathematics in SMP Negeri 3 Medan causes the students to have low learning outcomes.

According to Gagne's theory of learning mathematics consists of the direct object and indirect object. Direct object, among others, the ability to investigate, problem-solving skills, persistence, rigor, self-discipline, positive attitudes towards mathematics. While the indirect object form facts, skills, concepts, and principles. With the theory researchers Gagne hoping to improve learning outcomes appropriate target to be achieved.

Of this study, researchers focused on the material Perimeter and Area of Rectangle and Square, where students are required to understand the formula in order to solve the problems properly. In order for the concept of the Perimeter and Area of Rectangle and Square firmly entrenched in the minds of learners, they should know where the formula originated. For the students to think and find out for yourself with media support. The thought process here is very important because the process of thinking is the process by which knowledge is acquired as a result of transfer from another person, but rather acquired through interaction them with objects, phenomena, experiences, and the existing environment.

Paying attention to the problem above, it is proper and necessary in the teaching of mathematics for an innovation in the learning process so that students are more interested in the learning activities. There are many models applied in cooperative learning to make the students' learning activities more active. Two of the cooperative learning models that can be used are Attention, Relevance, Confidence, Satisfaction which is abbreviated as ARCS and Team Assisted Individualization abbreviated as TAI. These models were able to achieve success in school learning and can be used as one of the alternative solutions in order to improve the activity and outcomes of student learning.

Kagan (2009: 411) said that Cooperative learning is not only a powerful set of instructional strategies, it is a powerful approach to assessment. Using cooperative learning enables us to easily perform on going, authentic assessment that accurately captures students' level of understanding across many dimensions. During our cooperative lessons, projects, and challenges, we can observe our students interact. We can plainly see what they can do and what they can't. We can measure how well they can use their knowledge and creativity to create projects and solutions, rather than merely select the correct answer on a test or complete a worksheet. Cooperative learning promotes verbalization of the content; it enables us to listen and hear not only what our smartest students know, but what all our students know.

ARCS learning model approach is a learning model that is able to create a meaningful interaction and motivation that will affect the success rate of student learning. Attention is arisen from the curiosity of students, relevance is associated

with the relationship between learning materials with matters relating to the lives and needs of students, confidence is a belief that can increase the activity and hope to succeed, and satisfaction will appear when students reach their learning success. By applying the learning model ARCS will facilitate and assist students in learning mathematics can understand better and improve students' confidence in dealing with problems in learning.

Team Assisted Individualization (TAI) was designed to allow each student to progress at his or her own rate, working on the skills he or she needs the most. At the same time, each student is part of a team, caring about and encouraging the progress of team mates. TAI was designed by Slavin, Leavey, and Madden 25 to create a happy marriage between cooperative and individualized learning. As students progress at their own pace through carefully designed individualized learning modules, they earn points for their teams. Unlike typical individualized programs, in TAI students do the routine checking and management. TAI uses heterogeneous teams and team recognition, much like in STAD. There is some peer tutoring in TAI (team members turn to their team mates for help), but because the individual learning modules are designed to be self-explanatory and because team members are usually working at quite different levels, cooperative interaction is minimal. There are some learning modules that students receive as a group, but the groups are of students with similar academic ability.

If you look at the implementation of learning in the classroom, using a variety of learning is still very low and teachers tend to use the lecture method and reduce the interest of students in each learning activity undertaken. This may be due to lack of mastery of learning models is in need to improve teachers' professional ability and absorption of learning materials by students. Meanwhile, student centered learning requires a process of learning and creative learning, innovative, and curriculum that supports learning, to develop independent learners capable of critical thinking skills to empower learners.

Therefore, researchers wanted to determine whether differences in a learning taught by using learning model Attention, Relevance, Confidence,

Satisfaction (ARCS) and learning model Team Assisted Individualization (TAI) that can help students learn to get results as expected.

Based on the above explanation, the researcher is interested in conducting the research to reveal whether the learning model *Attention, Relevance, Confidence, Satisfaction* (ARCS) and *Team Assisted Individualization* (TAI) can improve students' mathematics learning outcomes as one of academic human contribution in improving the quality of education in Indonesia. Therefore, this research title is "**The Difference of Students' Mathematics Learning Outcomes by using ARCS Learning Model and TAI Learning Model at SMP Negeri 3 Medan**".

1.2. Identification of Problem

Based on the above, several problems have been identified, namely:

1. Mathematics is often perception as difficult subjects and less preferred the students.
2. Lack of student interest in learning mathematics
3. The low student learning outcomes
4. Lack of active participation of students in learning mathematics
5. The monotone of learning activity

1.3. Problem Limitation

From the above, so that author is focused in the difference of students' mathematics learning outcomes between taught by *Attention, Relevance, Confidence, Satisfaction* (ARCS) and *Team Assisted Individualization* (TAI) in *Rectangle and Square* at class VII SMP Negeri 3 Medan Academic Year 2014/2015.

1.4. Problem Formulation

Based on problem limitation above, so that the problem formulation in this research is: “Is there any differences in students’ learning outcomes by using ARCS and TAI in Rectangle and Square at class VII SMP Negeri 3 Medan Academic Year 2014/2015?”.

1.5. Research Purposes

The purposes of this research is to know whether there are differences of students’ learning outcomes ability using ARCS with TAI in Rectangle and Square at class VII SMP Negeri 3 Medan Academic Year 2014/2015.

1.6. Benefits of Research

The Benefits of this research is:

1. For the Teacher

As an input information for teachers of SMP Negeri 3 Medan in order to implement the Attention, Relevance, Confidence, Satisfaction (ARCS) and can be used as comparisons for teachers in an effort to improve student’s learning outcomes.

2. For student

It is to increase learning activity, achievement, and students’ learning outcomes. This research will be useful because they indirectly helped in being taught mathematical concepts that provide opportunities for students to improve their learning outcomes to be optimal.

3. For Researcher

As an experience and knowledge in doing research and self training in application of specific knowledge about mathematics concept and as information matter in order to handle matter to researcher in carrying out teaching task as a teacher candidate in the future.

1.7 Operational Definitions

Operational definition is necessary to avoid errors in interpreting and interpret in the context of this study variables. Operations of each variable is described as follows:

1. Learning outcomes are defined in terms of the knowledge, skills, and abilities that students have attained as a result of their involvement in a particular set of educational experiences.
2. The indicator of students' mathematics learning outcomes which will be measured are :
 - a. Absorption of the material that has been taught the lessons of high achievement, either individually or in groups.
 - b. The behavior outlined in the special purpose of teaching or instructional student has achieved both individually and in groups.
3. The syntaxes of ARCS like the following
 - a. Presentation Teacher
The teacher explains the outline of the material in front of the class and the student pay close attention.
 - b. Introduce the objectives and benefits of learning (R)
Teacher describes objectives and benefits of learning that will be presented.
 - c. Using concrete examples (A and R)
Intended use concrete examples of this is to foster or keep the attention students (attention) and provide compatibility between learning presented by the experience of learners or everyday life students (relevance).
 - d. Give guidance of learning (R)
Teacher motivating and directs students to make it easier to understand the learning material presented.
 - e. Provide opportunities for students to participate in learning (C and S)

Teacher provides the opportunity for students to ask questions, respond, or do the questions about the learning material presented.

f. Give feedback (S)

Teacher gives a feedback which can certainly stimulate the thinking patterns students.

g. Conclude any material that has been presented at the end of the lesson (S)

Students to make inferences about the new material they learn to use their own language.

4. The syntaxes of TAI like the following

a. Presentation Teacher

The teacher explains the outline of the material in front of the class and the student pay close attention.

b. Group

Student are distributed in small groups are heterogenous for the disccusion.

c. Quiz

Student doing the individual test.

d. Individual Scores

Student donated points on his team based on how much their quiz scores exceeded their baseline score.

e. Team Award

Teams can earn a certificate or other award if the average score they exceed certain criteria.