

CHAPTER I INTRODUCTION

1.1. Background

Indonesia is a developing country that is rapidly developing. For the purposes of this building, and in addition to the necessary capital resources, required qualified human resources for development purposes. One effort to create and enhance these resources through education.

Throughout its history, in this world, education is essentially has two objectives, namely to help people to be smart and clever, and help them become better human beings (Haryanto, 2012). Making intelligent and clever man, it could be easy to do, but to makes people to be kind and wise, it seems much more difficult or even very difficult. Thus, it is reasonable to say that the moral problem is a matter of acute or chronic diseases that accompany human life anytime and anywhere.

The phenomenon of the degenerate of the character of the nation can be due to weakness of character education in continue the value of nationalism over the generations. Straight life following the rules of the values and norms directed to the welfare and happiness of living in the world is characterized life. In the lives of individual, family, school and community; corruption considered to be a culture; abuse and juvenile delinquency are rampant; cheating in exams is considered normal and even necessary; and others who all was not in accordance with the demands of life characterized. By seeing the fact, then the character 's behavior is not sufficiently represented by the term smart, polite or immoral alone but must be done through the learning process. The learning process as a form of educational efforts, organized by the educators at all levels and types of education can optimize the desired character education efforts. (Prayitno in Sari, 2012)

Mathematics as a science that underlies the development of modern technology, have an important role in a variety of disciplines and advance the thinking power of humans. To master and create future technologies required mastery of mathematics from an early age. Therefore, the subjects of mathematics is a subject that is given at every level of education from the start of primary education.

Mathematics is also a means to foster students' mathematical abilities, such as the ability to think logically, creatively, critically, carefully, effectively, problem solving, representation, connections, communication, and so on. Knowing that the benefit of mathematics for human is very magnitude, it is not surprising that mathematics subject becomes a concern, of course, in this case the concern is the math learning achievement as measured from the mathematical ability of the student (*doing math*).

Recently mathematics always considered the scary lessons and tend to memorize formulas so that in the students' soul already entrenched about the assumptions, this cause the students' interest and attracted to mathematics lesson are low. Whereas the interest of students to mathematics can be a major thing to develop a desire in learning mathematics, and with the interest is expected to expected to be a tendency of positive attitude towards mathematics in order to reach learning achievement in mathematics.

Based on the Regulation of the Minister of National Education No. 22 of 2006 stated that the study of mathematics aims to enable students to have the following capabilities: (1) Understand the concepts of mathematics, explains the relationship between concepts and apply concepts or algorithms, are flexible, accurate, efficient, and precise, in solving the problem. (2) Using the pattern and nature of the reasoning, mathematical manipulation in making generalizations, compile evidence, or explain ideas and mathematical statements. (3) Solve the problem that includes the ability to understand the problem, devised a mathematical model, solve the model and interpret the obtained solution. (4) Communicate ideas with symbols, tables, diagrams, or other media to clarify the situation or problem. (5) Have respect for the usefulness of mathematics in life, which has a curiosity, attention, and interest in studying mathematics, as well as a tenacious attitude and confidence in solving problems. Ministry of Education (2006).

Based on NCTM (2000) describes the communication is a very important part of mathematics and mathematics education. Communication is a way of sharing ideas and clarifying understanding. Through the communication of ideas can be reflected, repaired, discussed, and developed. Communication process also

helps build meaning and permanent ideas and communication process can also publish the idea. When students challenged their minds and their ability to think about mathematics and communicate the results of their thoughts orally or in writing, they are learning to explain and convince. Listen to the explanation of the other students, giving students the opportunity to develop their understanding. Communication is essential for students because every problem in daily life needs good communication to find its solution. In an effort to develop communication, students have to be able to deliver information to the mathematical language, for example, presents the question or problem into a mathematical model to make it more practical, systematic, efficient, and easy to understand.

Mathematical communication ability can occur when students work in groups, when students describe an algorithm to solve an equation, when students construct and describe a graphical representation of the real-world phenomena, and when students give a conjecture on geometry images. Furthermore, in learning students need accustom to give arguments of each answer and give responses to the answers given by others, so that what is learned becomes meaningful.

Ansari (2012: 11) evaluation standart to measure mathematical communication is expressed as follows:

(1)Menyatakan ide matematika dengan berbicara, menulis, demonstrasi, dan menggambarannya dalam bentuk visual; (2)Memahami, menginterpretasi, dan menilai ide matematik yang disajikan dalam bentuk tulisan, lisan atau bentuk visual; (3)Menggunakan kosa kata/ bahasa, notasi dan struktur matematik untuk menyatakan ide, menggambarkan hubungan dan pembuatan model.

Baroody (in Ansari, 2009: 4) says there are at least two reasons why communication in mathematics should be developed in students. First, matematis as language, mathematics means not just thinking tool (a tool to aid thinking), a tool for finding patterns, solve problems or draw conclusions, but mathematics as well as a valuable tool to communicate ideas clearly, precisely and carefully. Both matematis learning as a social activity as a means of social activity in the process of learning mathematics, mathematics as well as a means of interaction between students and also communication between teachers and students. This is an aspect that can accelerate students' understanding of mathematical concepts.

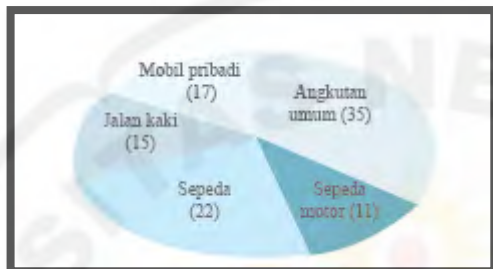
One reason of low ability students' mathematical communication is normal learning process and still centered on the teacher. Students not involved in constructing ability, only receive the information submitted searaah of teachers. Often students are not able to answer questions that are different from the example set by the teacher and doing exercises follow the pattern set by the teacher.

Teaching pattern has been used by teacher has not been able to help activate the students in learning, motivation to express their ideas and opinions, and even students are still reluctant to ask the teacher if they do not understand the concepts taught. To develop the communication skills of mathematics, teachers should seek learning by using a model - a model of learning that can provide opportunities and encourage students to train students' mathematical communication skills.

Based on the observation result which had done towards students in grade X PIA 6 SMA Negeri 1 Berastagi showed that students are less able in communicating to deliver information, such as expressing ideas, asking questions, and answering questions/opinions the other students. They tend to passive when teacher is asking a question to check student's knowledge. Students seem bashful to ask when teacher gives the opportunity. Even though there was student who answered the question, it seems clumsiness, less of variation, monotone, and not actual. It makes that the learning process in class "not alive". Majority teachers teach with lecturing method and writing notes on blackboard. It means that the learning process in class does rarely practice and rarely develop mathematical communication ability and interaction process among students, such as cooperative, expressing idea, asking question, and answering question/opinion the other students. Teacher has implemented discussion in learning model, however what has done is discussion in conventional way. In instructing the discussion, teacher only give some questions to students/groups that consist almost of materials in that topic, such that student's thinking is not developed and not stimulated to think critically. In writing mathematics, students can draw diagram, graph, or table, but they cannot draw it completely and clearly. Students also can

write mathematical model or algebraic form, but not completely. These were test that given to students:

- The following is a survey how some students go to school



- How many students were surveyed?
- Mention the fewest way used by students to go to school!
- Mention the way most used by student to go to school!
- What percentage of students who go to school by public transport?

The picture below showed one of the student answers:

a. Berapa banyak siswa yang disurvei? 100

b. Sebutkan cara yang paling sedikit digunakan siswa untuk pergi ke sekolah? Sepeda

c. Sebutkan cara yang paling banyak digunakan siswa untuk pergi ke sekolah? ANGGKUTAN UMUM

d. Berapa persen siswa yang pergi ke sekolah dengan angkutan umum? 35

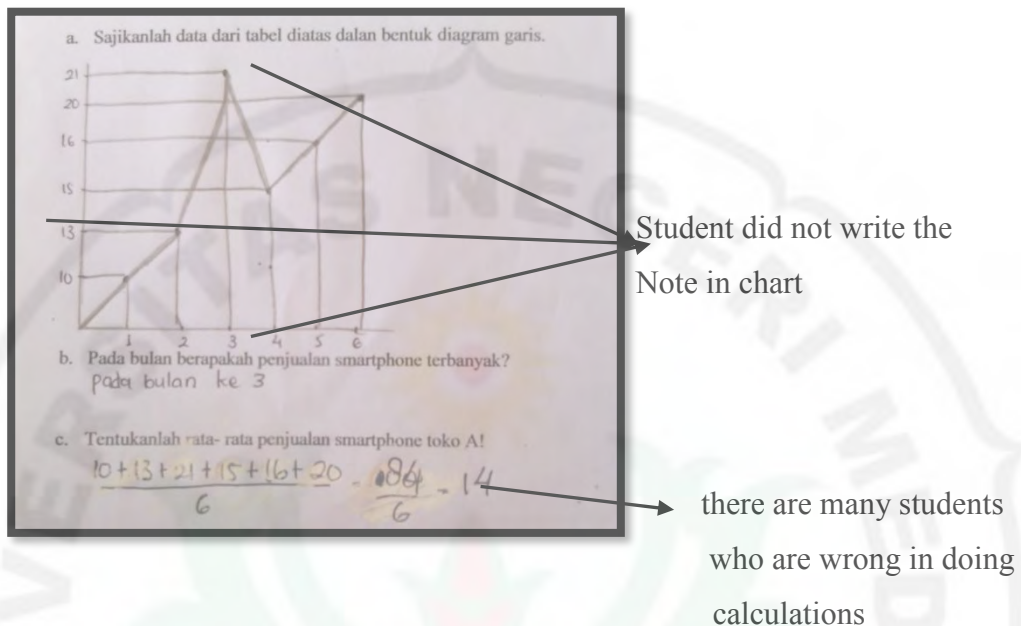
students do not understand what is being asked in question

- The following is a table of smartphone sales profits in Store A..

Months	1	2	3	4	5	6
Profits (millions rupiah)	10	13	21	15	16	20

- Serve the data from the table above in the form of line charts!
- When the most sales of smartphone?
- Determine the average sales of smartphones in store A!

The picture below showed one of the student answers:



Based on the results of test above, can be concluded that the students' mathematical communication ability was in low. Students had difficulties in answering the questions, students had difficulties to express mathematical description into mathematical model; students were not able to create mathematical model through diagram, graph, or table; and students had difficulties to explain mathematical model and do calculation.

Based on observation had done, majority teachers teach with lecturing method and writing notes on whiteboard. The selection of varied teaching methods will improve teaching and learning activities and motivate students to learn. Such that students can learn well, then the teaching methods to be undertaken as efficiently and effectively as possible. In addition, the selection of learning approaches also influences the students' abilities on mathematics. The selection of learning approaches should be tailored to the learning objectives with the needs of students, and can guide students to gain learning experience in order to improve students' math abilities, such as mathematical communication ability. Learning approach chosen should be meaningful, because through learning approach students should be able to find their own knowledge and abilities they need, not only notification. Therefore, the learning approach is designed so that students are able to construct knowledge in the minds of students, so the students were able to learn active and independent and able to solve problems.

One effort that can be done is by the use of cooperative learning. According Safrida (2014) cooperative learning are chosen with consideration that the process of cooperative learning involves students in a group discussion so that students will be able to communicate mathematically and allows students to be more open in expressing an idea or opinion. This can be done on cooperative learning model of Team Games Tournament.

Slavin (2010; 63) state that

Teams Games Tournament is one of type cooperative learning that puts students in a group 5-6 students that have the ability, gender and syllable or a difference race. Teacher presents the material, and students work in their groups.

Teams Games Tournament is a cooperative learning model that is considered to arouse students' interest in mathematics and to make students more active, encouraging cooperative among students in learning the concept to improve students' mathematical communication ability.

The advantages of cooperative learning type Teams Games Tournament, namely:

1. Teams Games Tournament model will foster a sense of togetherness and mutual respect among members of the group.
2. Students more enthusiastic about the course. Because in the learning, the teachers promises a tribute to the best students in groups.
3. The learners become more fun in the class because there is games tournament.

Other learning models that are also expected to develop students' mathematical communication skills is learning cycle. Learning cycle is expected to make students not only hear from teachers but can play an active role to explore and enrich the understanding of the concept to increase the students' mathematical communication skills. Learning Learning cycles are designed with coverage of five phases: (1) engagement, (2) exploration, (3) explanation, (4) the application of the concept and (5) evaluation. Through Learning cycle models, students are expected to have the readiness and can develop their own understanding of a concept to try and think of activities (hands -on activities and minds -on activities), so that students can communicate the idea in class.

Based on the above, researcher interested in conducting research with title: **“The Difference of Student's Matematical Comunication Ability Taught by Cooperative Learning Teams Games Tournament Type and Learning Cycle Model Integrated with Character Education at SMA Negeri 1 Berastagi.”**

1.2 Problems Identification

Based on the background can be identified the problem that occurred as follows:

1. The attitude of the students who are less good and the degenerate moral of learners.
2. The students' mathematical communication is still low.
3. Mathematics is considered difficult and not interesting.
4. The model of learning that are less attractive cause the low of student interest in learning .
5. The method of Teams Games Tournament and Learning Cycle is not used in schools.

1.3 Problems Limitation

Based on problems identification above, it needs problems limitation to be more focused. The problem to be examined in this study is limited to:

1. The model used are cooperative learning Teams Games Tournament type and Learning cycle model integrated with character education.
2. The student's mathematical communication ability in this research is bounded in student's mathematical communication ability at topic statistics in grade X semester II.
3. The difference in the process of students' answers on the mathematical communication ability test in both experimental class.

1.4 Problems Formulation

From background of problem, the problem formulation are

- Is students' mathematical communication ability by using cooperative learning Teams Games Tournament type higher than Learning Cycle integrated with character education?

- How does the process of student's answer in mathematical communication ability test?

1.5. Research Objective

Based on the problem formulation which has been described, the objectives of this research are:

- To know which higher of student's mathematical communication ability using Teams Games Tournament (TGT) or Learning Cycle that integrated with character education.
- To know the difference students process of answer from Teams Games Tournament(TGT) and Learning Cycle class.

1.6. Research Benefit

The results obtained are expected to be useful both for teachers, students and researchers:

1. For the teacher: can be an alternative model that can be applied to increase the students' mathematical communication skills.
2. For students : can improve students' mathematical communication.
3. For researchers: it can be a means for self-development researchers in finding appropriate learning models and can be used as a reference for other researchers in similar studies.

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. The ability of mathematical communication referred to in this research is the process of solving problems in terms of student scores (1) The ability of student's mathematical problem into mathematical model, (2) The ability to explaining mathematical problem to figure, (3) The ability of explaining problem situation by own words and doing calculation.

2. Cooperative learning Teams Games Tournament type is one of cooperative learning model that promotes learning in heterogeneous group as well contain elements of the games and reinforcement. The syntaxes of cooperative learning model type team games tournament are:
 - a. Presenting learning goals and set
 - b. Present Information (Class Presentation)
 - c. Organize students into learning teams (Teams)
 - d. Assist team work and study (Teams)
 - e. Test on the materials (Games Tournament)
 - f. Provide Recognition (Team Recognize)
3. Learning Cycle is a model of student-centered learning that is a series of stages of activities (phase) are organized so that students can master the competencies that must be achieved in learning to play an active role. The syntaxes of learning cycle model called 5E that are: engagement, exploration, explanation, elaboration, and evaluation.
4. Character education is a system of cultivation of character values to the school community, which includes knowledge, consciousness or volition, and actions to implement proficiency level value, both to the God Almighty, ourselves, others, the environment, or nationality to become human better.