

CHAPTER I

INTRODUCTION

1.1. Background

Education is a very important thing for humans, because education is a human resource investment in the long run. Thus, education always requires a change and continuous improvement. The fundamental demands experienced by education today are improving the quality of lessons. Efforts to improve the quality of education is expected to be conducted on every subject, especially mathematics.

Mathematics is a study that be the basic of science and technology that is very important in every aspect of human life. Therefore, mathematics is very important to teach in every level of education such as SD, SMP, SMA and University. Beside of that mathematics is mother of all science, so mathematics is very important to teach.

In European Union , mathematics is the key to developing a country (Santillán, dkk, 2016:361). Mathematics is one of the most important school subjects in the curriculum worldwide. It is a subject that has direct relationship with other subjects, particularly technical and sciences. (Sa'ad, dkk, 2014:32). Moreover Byod, dkk (2014:207-208) say that:

Understanding mathematics is recognised as being important in everyday life, and cuts across many professional occupations including engineering, medicine, science and education. There is a strong societal expectation that teachers themselves will be competent at mathematical skills, have a deep understanding of mathematics, and be able to teach effectively so that their students are successful in mathematics.

The most important goal in mathematics learning is where students can understand the concept of mathematics, using reasoning of patterns and facts, solving problems that include the ability to understand problems, communicate ideas, and have a respectful nature of the use of mathematics in everyday life. And the most important goal in mathematics learning is where students can solve problems in mathematics.

At this time, students' mathematical problem-solving skills are a matter of great concern. Problem solving skills for students need to be strived so that students are able to find the solutions to various problems, both in the field of mathematics and problems in life everyday is increasingly complex (Urya, 2015: 2).

Teaching problem solving to students is the activity of a teacher in which the teacher raises his students to receive and respond to questions asked by him and then he guides his students to reach at problem solving. When a student is trained to solve a problem, the student will be able to make decisions, because the student has skills on how to collect relevant information, analyze information and realize how much it is necessary to re-examine the results which has gained.

Seeing the importance of problem solving skills owned by each student, the researchers conducted a survey (dated February 12, 2018) in the form of test or test given to examine the extent of the problem solving skills of mathematics students on statistical materials. This test is shown to some students in class IX SMP Pahlawan Nasional Medan T.A 2017/2018, as one of the classes that have studied the material statistics in grade VII.

Here is a test or problem used to test the extent of the problem solving skills of mathematics of students on statistics matter.

1. Nilai ulangan matematika 10 siswa kelas VII adalah 3,5,7,5,6,3,5,4,8,9. Berapa nilai rata-ratanya?

a. Tuliskan informasi apa saja yang diketahui dan ditanya dari data di atas?

b. Langkah apa saja yang kamu lakukan agar mengetahui nilai rata-rata ulangan matematika 10 siswa kelas VII?

c. Berapakah nilai rata-rata ulangan matematika 10 siswa kelas VII?

d. Benarkah nilai rata-rata ulangan matematika 10 siswa kelas VII adalah

Here is one student's answer:

Table 1.1 Students' Answers of the Test

	Students have difficulty to understand the meaning of the problem, formulate what is known and asked from the problem.
	Students are less precise in planning problem solving.
	The process of calculation or completion strategy of the answers made by students is less appropriate.
	Students do not re-examine the answer.

Based on the students' answer can be said that the ability of students in solving problems is still very low. The lack of mathematical ability led to the emergence of students' displeasure attitude towards mathematics lessons. Likewise on the contrary, students' displeasure with mathematics causes the low level of mathematics (Ulfa, 2015: 2).

From some of the above description shows that students who are less or not able to solve the problem due to displeasure attitude to the subject of mathematics and learning process that is less of meaningful, thus causing the low ability of students in solving mathematical problems. This is reinforced by the results of a research interview with one of the mathematics teacher at SMP

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The research was conducted with mathematics teacher.

at SMP Pblawan Nostora, Medan.

Salah satu tujuan pembelajaran masih berpusat pada guru. Dalam proses pembelajaran matematika siswa banyak menemukan kesulitan, bahkan mereka tidak mengetahui pada bagian mana yang mereka tidak paham. Selain itu siswa sering tidak fokus dalam mengikuti pembelajaran matematika, sehingga berakibat pembelajaran menjadi tidak bermakna. Selanjutnya, jika siswa diberikan soal penerapan dalam bentuk soal



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cerita, siswa sering kesulitan dalam menentukan apa yang diketahui dan ditanya pada soal, siswa juga kesulitan dalam mengaitkan konsep yang digunakan untuk menyelesaikan permasalahan, serta siswa juga sering tidak teliti dalam mengerjakan perhitungan.

It can be concluded that, the main cause of ability of problem solving of student in mathematics is still low student's displeasure attitude to subject of mathematics and learning process which still centered on teacher, consequently students only use information from teacher only in solving problem of mathematics problem. Students are only able to work on the problems that match the example given by the teacher without understanding every steps or processes in solving problem.

To overcome the problem in the process of learning mathematics as mentioned above, it needs an appropriate learning model and able to draw the interest of learning from students to mathematics. Based on that, the researcher choose the learning model that is cooperative learning or group discussion which is expected later through the discussion, the student schema relation will become stronger so that the student ability in solving mathematics problem becomes better. There are several types of cooperative learning model, in this case the researcher uses cooperative learning model type Think Talk Write and Think Pair Share which is considered appropriate to improve students' mathematics problem solving skills.

Cooperative learning model Think Talk Write type was introduced by Huinker & Laughin in 1966. This learning model is basically one of the alternatives that can develop the students' mathematical problem solving abilities. In this learning model, it divided into three steps the first step is thinking, both is and the last is write.

The think talk write involve mental of student, student should be able to think of a way to solve a mathematical problem. Next talks where students are expected to communicate the results of their thoughts in discussions with other friends then the students share ideas with their friends before writing. In this group the students are expected to be able to read, take notes, explain, listen, and share ideas with friends and then express them through

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writing. Members in the group are heterogeneously selected to enable students to exchange ideas, solve problems and encourage students to work together. When student has more friends to exchange the idea in solving mathematical problem, it can make less mistakes.

Cooperative learning model Think Pair Share type was firstly developed by Frank Lyman at University of Maryland. As the name suggests, this learning begins with Think, then Pair and the last is Share. In Think the teacher gives the students the opportunity to think about what answers to the problem solving. Then Pair at this stage students are asked to pair, when pairs students are expected to pair up for discussion. And lastly is Share at this stage students are expected to share result of discussion with all partner in class. Through cooperative learning type Think Pair Share students are expected to actively develop their ability to share ideas with their friends. So this method indirectly teaches students to get the more comprehension.

An integer is a set of numbers whose members consist of both a negative number and a count number. An integer represents all the numbers either negative or positive including zero. An integer consists of a negative integer, a positive integer, and a zero. The symbol of the integer is denoted by the letter \mathbb{Z} derived from the word Zahlen (From German meaning "number").

In the number line, integers can be expressed as shown below:



In the number line drawing above, the number 2 is to the right of the number -1 then 2 is greater than -1 can be written $2 > -1$, -5 is located on the left -2 then -5 is smaller than -1 ($-5 < -1$) so it can be concluded that the value of the number the

left then the number is smaller and vice versa if the more right the number is greater.

Based on the above background, the researcher intends to conduct a research entitled "The Comparison of Students' Mathematics Problem Solving Ability by using Cooperative Learning Model of Think-Talk-Write and Think-Pair-Share Type in SMP Pahlawan Nasional Medan Grade VII in Integers Matter Academic Year 2018/2019".

1.2 Problems Identification

Based on the background of problems that have been described above can be identified several problems namely:

1. Student's problem solving ability in SMP Pahlawan Nasional Medan is still low.
2. Teaching activities undertaken by teachers are still using conventional learning model.
3. Mathematics teacher of SMP Pahlawan Nasional has not done innovative learning, especially using cooperative learning model Think Talk Write and Think Pair Share type in teaching mathematics to students.

1.3 Problem Limitation

Based on the identification of the problem mentioned above the researcher limits the problems, so that the results of this study can be more focused and clear.

The problem in this study is limited to mathematical problem solving ability by using cooperative learning Think Talk Write type and Think Pair Share type.

1.4 Problem Formulation

The problem formulation in this research is: Is students' mathematical problem solving ability by using cooperative learning model Think Talk Write type higher than cooperative learning model Think Pair Share type in Grade VII SMP Pahlawan Nasional Medan Academic Year 2018/2019.



1.5 Research Objective

Specifically, the objectives of the research is to know whether the students' mathematical problem solving ability by using cooperative learning model Think Talk Write type is higher than cooperative model Think Pair Share type in Grade VII SMP Pahlawan Nasional Medan Grade VII in Integers Matter Academic Year 2018/2019.

1.6 Research Benefits

After this research is conducted, it is expected the results of this study provide benefits include:

1. For teachers, as input materials, especially math teachers to apply cooperative learning model Think Talk Write and Think Pair Share type in teaching mathematics.
2. For me, as a material information as well as a grip for researchers in carrying out teaching tasks as prospective faculty in future.
3. For students, can be as learning experience that can be applied in other learning subjects, teachers improve math problem solving skills and provide satisfactory learning outcomes.
4. For other researchers, the results of this study will add information and input for research or further assessment.

1.7 Operational Definitions

This research entitled comparison of problem solving ability of student mathematical taught by using cooperative learning model Think Talk Write and SMP Pahlawan Nasional Medan Grade VII in Integers Matter Academic Year 2018/2019.

To avoid misunderstanding this study provides the following definitions of operational definition:



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1. Mathematical problem is a situation faced by a person or group that requires a solution but the individual or group has no way to directly determine the solution.
 2. Problem solving ability is the ability of students in solving math problem solving problems by showing the stages that have been proposed in finding answers. Stages of the students include the problem-solving stage, that is: understanding the problem, planning the problem solving, implementing the solving plan, and checking again.
 3. Think Talk Write type cooperative learning model is a measurable learning model and encourages students to think, talk and then write down a particular topic. This model is formed based on the group specified by the teacher.
 4. Model of cooperative learning Think Pair Share type is an effective model to create a variety of class discussion atmosphere. Assuming that all discussions require settings to control the whole, class and the procedures used in Think Pair Share can give students more time to think, respond and help each other.

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