CHAPTER I
INTRODUCTION

1.1.   Background

Every child needs education to be able to face increasingly competitive global competition. Education provides opportunities for children to compete and develop their potential. At the basic education level, students study five main subjects such as Indonesian, Mathematics, Natural Sciences, Social Sciences and Citizenship. Material on various topics comes from the environment around us. The learning process will be more effective if it is adjusted to the student's level of cognitive development. Students have many opportunities to solve problems, supported by interactions with classmates and supported by insightful questions from the teacher. In addition, teachers should stimulate students' desire to interact with the environment and actively explore various things in their environment to achieve better learning outcomes. Like mathematics, which studies numbers, especially the formulas used to calculate numbers (Tia, 2019: 133).

Mathematics should be one of the most interesting and popular subjects for students. However, for most students, mathematics is the most difficult, boring and most frightening subject. This situation causes mathematics to be disliked and ignored. Education is considered important in improving the quality of human resources, and various efforts are made to improve the quality of education. It is hoped that various efforts to improve the quality of education will lead to increasing students' academic achievements, especially in the field of mathematics (Tia, 2019: 133).

In learning abstract mathematics, students need tools in the form of media, and if there is material that can help clarify it, the teacher will distribute it to learn further. Students understand quickly, but all concepts understood require immediate reinforcement so that they stick, last a long time in students' memories, and become embedded in thought patterns and behavior. Discussing this concept

requires learning by doing and understanding, not just memorizing or memorizing facts. This is easily forgotten by students (Sandra, dkk, 2022: 22).

In teaching mathematics, teachers need to understand that each student's abilities are different and not all students enjoy mathematics lessons. Effective mathematics learning requires understanding what students know and need to learn, then providing challenges and support to them so that students can learn well (Susanto, 2013: 185).

Based on the results of observations in class VIII of SMP Parulian 1 Medan which were carried out when the teacher provided teaching materials, the following field facts were found: 1) Mathematics learning is still teacher-centered, so there is boredom felt by students, 2) The RPP prepared by the mathematics teacher is designed using innovative learning models, but in reality learning is still conventional, 3) The learning atmosphere is conducive and orderly. However, some students are not serious about studying mathematics and do not dare to ask relevant questions and what is more, the homework given by the teacher is also not done.

Student learning outcomes are one of the things that need to be achieved in the learning process. Based on the results of preliminary research on class VIII teachers at SMP Parulian 1 Medan, it shows that there are still many students who do not like learning mathematics, so there are still many students' learning outcomes that are classified as low, especially in mathematics subjects. Then students also experience difficulty in solving the questions given by the teacher, students also make mathematics a scary lesson in class because they feel stressed by the too difficult learning load presented.

Observations at SMP Parulian 1 Medan show that teachers as classroom teachers only carry out teacher-centered learning, and students only listen to explanations and note down things that need to be noted during class hours. This affects students' activeness in the learning process so that it does not develop students' thinking abilities. Another factor related to students' difficulties in learning mathematics is the learning model used by teachers. Teachers who teach mathematics never use the Think-Pair-Share model or the Numbered Heads Together model. The model that teachers usually use is the lecture and

demonstration model for students. So students consider learning to be boring during mathematics learning hours because of the lack of variety in learning models.

The low student learning outcomes can be seen from the fact that the average mathematics learning outcomes are related to Cartesian coordinates. Based on the results of the daily test scores obtained from the class VIII Mathematics Teacher, the test results show that there are still several students whose scores do not reach the Maximum Completeness Criteria (KKM) limit set by SMP Parulian 1 Medan, namely a score of 75, so the Cartesian Coordinate material is still low. This can be seen in the table of daily mathematics test scores for students in class VIII of SMP Parulian 1 Medan in 2023 as follows:

Table 1.1. Data on Prerequisite Test Score Results for Class VIII Students at SMP Parulian 1 Medan**.**

No.	Class	KKM	Complete (%)	Incomplete (%)
1.	VIII 1	75	13 (43,33%)	17 (56,66)
2.	VIII 2	75	2 (6,25%)	30 (93,75%)
3.	VIII 3	75	5 (16,12%)	26 (83,87%)

Based on the problems above, the researchers created a treatment using the Think-Pair-Share and Numbered Heads Together models. According to Suprijono (Kurniawan, et al, 2020: 60) Frank Lyman and his colleagues from the University of Maryland in 1981 developed a cooperative learning model called Think-Pair-Share. Think-Pair-Share (TPS) is a cooperative learning model that gives students time to think, react, and help each other. This may change the belief that memorization and discussion methods should be carried out in whole class groups.

The Think-Pair-Share (TPS) learning model involves a pair discussion method followed by a plenary discussion. By continuing to refer to the material or learning objectives, this learning model teaches students how to express their own opinions and respect the opinions of others. In this learning model, social skills are very necessary for each student. This can support students' learning process. Based on the understanding above, the researcher also includes previous research to strengthen the reasons for using the Think-Pair-Share (TPS) model, namely

research by Dydik Kurniawan, et al. Data collection was carried out through interviews, observation and documentation. This research uses formulas for normality tests, homogeneity tests and t-tests to carry out data analysis techniques. The results of the research show that the mathematics learning outcomes of class XI SMA Negeri Samarinda in the 2019/2020 academic year significantly influenced by the Think-Pair-Share (TPS) cooperative learning model used in Power Point presentations (Kurniawan, 2020: 59).

According to Fathurrohman (2015: 85), the Numbered Head Together (NHT) type learning model is also the treatment in this research. The Numbered Heads Together (NHT) learning model is a learning model that prioritizes student activities in searching, managing and reporting information from various sources. This model was finally presented in front of the class. Researchers also present previous research that supports the use of the NHT model. The research written by Ahmad Na'im and Wuli Oktiningrum aims to find out how the Numbered Heads Together (NHT) learning model influences the mathematics learning outcomes of fifth grade students at SD Negeri 2 Sumberejo, Malang Regency. This research is a quasi-experimental quantitative research with a disproportionate control group design. The research sample consisted of twenty students in the experimental class which used the NHT learning model and twenty students in the control class which used the conventional learning model. Data was collected using tests and questionnaires. tcount is greater than the table, according to the results of the independent sample t test. Therefore, the mathematics learning outcomes of fifth grade elementary school students are significantly influenced by the Numbered Head Together (NHT) cooperative learning model. The two classes have different average scores; the experimental class has an average value of 63.8, while the control class has an average value of 53.6. The survey results also show that students agree that the Numbered Head Together (NHT) learning model should be implemented in their class (Na'im and Wuli O, 2019: 10).

From the two models above, researchers want to see differences in mathematics learning outcomes for students taught using the Think-Pair-Share and Number Heads Together (NHT) models. Lesatari and Mokhammad Ridawan (2015: 52) stated that the Think-Pair-Share model stimulates students' thinking

activities in pairs, while Sohimin (2014: 108) stated that Number Heads Together is a learning model that involves students and makes students more enthusiastic about thinking in pairs.

Based on the description of the problem above, research has been conducted entitled **"The Difference of Students' Mathematics Learning Outcomes Taught by Think Pair-Share and Numbered Heads Together Models"**.

1.2. Problem Identification

Based on the description of the background of the problems stated above, several problem identifications can be identified as follows:

1. Student mathematics learning outcomes at SMP Parulian 1 Medan are still low.
2. The use of the Think-Pair-Share and Numbered Heads Together learning models has never been implemented at SMP Parulian 1 Medan.
3. Students are passive during the mathematics learning process.
4. Students still think that mathematics is a difficult subject.
5. Mathematics learning at SMP Parulian 1 Medan is still teacher-focused and not student-centered.

1.3. Scope of Study

Based on the identification of the problems described above, the scope is needed so that this research is not too broad. The scope of this research is limited to the low mathematics learning outcomes of students, and the use of the Think-Pair-Share and Numbered Heads Together learning models has never been applied in SMP Parulian 1 Medan.

1.4. Limitation of Problem

This research is limited in several ways :
1. The class studied was class VIII at SMP Parulian 1 Medan.

2. The learning model applied is Think-Pair-Share Type and Numbered Heads Together Type.

3. The learning material studied is Cartesian Coordinate material.

4. The learning outcomes studied are the learning outcomes in the cognitive phase.

1.5. Formulation of Problem

Based on the explanation above, the formulation of the problem is determined as follows: "How Are The Difference of Students' Mathematics Learning Outcomes Taught by Think Pair-Share and Numbered Heads Together Models?"

1.6. Purpose of Research

Based on the formulation of the problem above, the research objectives were determined to analyze how the difference of students' mathematics learning outcomes taught by Think Pair-Share and Numbered Heads Together models

1.7. Research Benefits

So, based on the above research objectives, the benefits of this research are as follows. To improve existing conditions, the results of this research were carried out with the hope of providing benefits. The benefits of this research are as follows:

1.7.1. Theoretical Benefit

Theoretically, the results of this research are expected to contribute to mathematics learning, especially in terms of improving mathematics learning outcomes using the TPS and NHT models.

1.7.2. Practical Benefits

a. For students

As an alternative material for students to improve students' abilities and activate students and be able to establish better relationships with fellow students so that they can improve learning outcomes in mathematics learning.

b. For teachers

As a consideration for mathematics teachers in choosing a better learning model to improve students' mathematics learning outcomes.

c. For school

Providing information to schools about the importance of new learning models in mathematics learning.

d. For researcher

As input for researchers to apply more appropriate learning models in teaching and learning activities in schools in the future.

e. For readers

As information and reference material for readers or other researchers who want to conduct similar research and develop this research to make it even better.