CHAPTER I
INTRODUCTION

1.1 Background

Many high school students consider chemistry to be a difficult and boring class. Reflection of teaching high school chemistry reveals memories of the common and consistent occurrences of students quickly losing interest during lessons. Assignments issued to students to complete individually resulted in too many students becoming frustrated, quitting, and in many cases resulting in misbehavior. While contemplating the explanations and possible solutions to these issues, it's easy to forget an important fact for most of these students. They are teenagers who naturally value and seek attention and interactions with their peers. As teachers, why not use this to our advantage? The use of cooperative learning structures the interactions and attention teenagers seek from one another into learning activities that could lead to increased student engagement, interest, and achievement in Chemistry.

Over the last 30 years, research has demonstrated that cooperative learning is an effective instructional tool that has been widely adopted at all levels of education (Johnson & Johnson, 2009; Schroeder, 2007; Kyndt, 2013). Research also suggests that the use of cooperative learning is particularly effective in both science and math (Kyndt, 2013). Cooperative learning is an instructional grouping strategy that consists of required elements to promote more effective, creative and efficient learning by students working respectfully together to achieve a common learning goal (Johnson & Johnson, 1988; Slavin, 1988). The required elements are meant to enhance the learning experience with strengthened relationships, student engagement, and academic achievement.

Discussions that researcher have been implemented in Dharma Pancasila Senior High School with chemistry teacher explained that redox topic which taught in X grade is a basic material for the next topics. However, at years of previous

students felt redox topic is such enough a complicated topic. So that learning requires needs variation model of learning. The curriculum at the school had been applying the 2013 specially in X grade. So the model of student learning centered has been often be applied. Where the student learning model including Numbered Head Together and Think Pair Share type. So the researcher interests to compare the results of student learning outcomes on redox topic with those type.

Some studies have concluded the benefits of cooperative learning. Such as, Robert E. Slavin and Nancy A. Madden, the results of research on "School Practices That improve Race Relations" which was published in the American Educational Research Journal stated that cooperative learning in the learning produces higher than other learning models. Cooperative learning for students' academic achievement gets better ability to conduct social relations social subject, increase self-confidence, and develop mutual trust each other, either individually or in groups. Wheeler (1977) reported that students taught by cooperative learning model is more successful in studying social studies than students taught by a system of competition, with a rate ratio of 74%: 26%.

According to a research which done by Yusof (2011) using Cooperative Problem-based Learning has been proved to achieve learning effectivity and increase the result of students learning where about 97% of students get increased on its learning result and only 3% of students don't. Cooperative Problem-based Learning model is the result of combination between problem based learning and cooperative learning. It is developed by taking the benefits from problem based learning and cooperative learning they both are combined. In problem based cooperative learning, students face on problem that is related to learning material. By there is a problem that must be solved by students in learning process so as direct students will be active. From the learning activity, the teacher will find growth value and develop on each student. (Suharta and Luthan P.L.A, 2013)

There are several types of cooperative learning, including the cooperative model NHT (Numbered Head Together) and the type of TPS (Think Pair Share). NHT learning model is the kind of cooperative learning that is designed to influence the pattern of interaction of students and as an alternative to the traditional class structure. Numbered Head Together (NHT) was first developed by spencer Kagen

(1993) to involve more students in reviewing the material covered in the lesson and check their understanding of the subject content (in Trianto 2009: 82). Teachers divide students into three to five member teams and have them number off on them so each student has a number between 1 and 5. Teachers ask students a question. After that, students put their heads together to figure out and make sure everyone knows the answer. Finally, the teachers call a number a student from each group with that number raise hands and provide answer to the whole class (Arends, 2011 :371)

The results of research conducted by Revykawanti, Devi (2008), shows that the cooperative learning model of Numbered Head Together trends can improve critical thinking skills demonstrated by the increase in most of the critical thinking skills of each indicator XD grade students of SMA Negeri 1 Pagak on the subject of economic subjects the form of the market that in the first cycle most of the students got a score of 2, which means improper and conscientious, while in the second cycle most of the students got a score of 3 means rigorous but less precise. Another results indicated by Mufarrihah, Novy. (2008), shows that the type of learning cooperative learning Numbered Head Together can increase students' motivation shown by the increase in the percentage of all aspects of student motivation observed that 58.19% with enough categories in the first cycle increased by 70.30% with a high category in cycle II. With the application of learning cooperative learning model type Numbered Head Together student learning outcomes also increased. Learning outcomes of the average value of 74.23 with both categories in the first cycle increased to 85.38 with excellent category and in the second cycle, an increase of 15.02%.

Cooperative learning model TPS (Think Pair Share) is a type of cooperative learning designed to influence students' interaction patterns. First developed by Frag Lyman and colleagues at University of Maryland accordance Arends (1997), states that think pair share an effective way to create an atmosphere of variation patterns of a class discussion. "Assuming that all of recitation or discussion needs settings for controlling the class as a whole, the procedure used in think pair share can give a better student to think, to respond and help each other" (in Trianto 2009: 81). Thinking: the teacher poses a question associated with the

lesson and ask students thinking alone about the answer. Pairing: the teacher asks students to pair off and discuss what they have been thinking about. Sharing: in the final step, the teacher asks the pairs to share what they have been talking about with the whole class. It is effective to simply go around the form pair to pair and continue until about fourth or half of the pairs have had a chance to report (Arends, 2011 : 370-371).

Based on the above background, the researcher intends to conduct a research entitled: **"The Comparison of Students' Learning Outcomes Taught by Cooperative Problem-based Learning Model of Numbered Heads Together and Think Pair Share on Redox Reaction Academic Year 2016/2017."**

1.2 Problem Identification

Based on the background of the problems that have been described problem identification in this research are:

1. Are model and method applied still conventional?
2. Are students still less active in learning process because still a teacher centered learning?
3. Has the result of chemistry learning been maximal?

1.3 Problem Limitation

This research needs to restrict to get targets as expected. The limitation of this research are:

1. The model used are cooperative problem based learning model of Numbered Heads Together and Think Pair Share.
2. The students' learning outcomes in this research is restricted in students' learning outcomes on topic Redox Reaction in X grade.
3. This research is conducted at SMA Dharma Pancasila Medan.

1.4 Problem Formulation

Based in the background above, the author formulates the problems of the study as follows:

1. Is students' chemical learning outcome taught by cooperative problem based learning model of Numbered Heads Together is higher than cooperative problem based learning model of Think Pair Share in X grade SMA Dharma Pancasila Medan Academic Year 2016/2017?

1.5 Research Objectives

Based on the identification of the problem that has been described, the objectives of this research is:

1. To know whether students' learning outcome taught by cooperative problem based learning model of Numbered Head Together is higher than cooperative problem based learning model of Think Pair Share in X grade SMA Dharma Pancasila Medan Academic Year 2016/2017.

1.6 Research Benefits

After the research is expected to result of research can provide significant benefits, namely:

1. For the teacher, as a material consideration in choosing a model of learning that can improve students' learning outcomes on chemistry.
2. For students, it can make-students having enthusiasm to improve students learning outcomes.
3. For the school, it can be used as consideration and suggestion to improve the quality of teachers and learning system at the class.
4. For researchers, as reference materials to improve teaching and learning as future teachers and as study materials for further research.

1.7 Operational Definition

To avoid differences or lack of meaning clarity, the following operational definition are important terms in this research:

1. Learning outcomes are success level of students' understanding the subject matter at school that will be explained in score from some test results. Result obtained in the form impression which cause changeover to individual as a learning activity (Djamarah, 2006)
2. Cooperative Problem-based Learning is an instructional grouping strategy to solve the problem that consists of required elements to promote more effective, creative and efficient learning by students working respectfully together to achieve a common learning goal (Johnson & Johnson, 1988; Slavin, 1988).

3. Learning model is planning or a pattern that is used as a guidance to plan learning in class or learning in tutorial and determining sets of learning included books, films, computer, curriculum, etc (Joyce, in Trianto, 2009).
4. Numbered Heads Together (NHT) is one method of cooperative learning. In NHT students are required to be more active in teaching and learning activities. NHT is done by dividing the students into small groups.
5. Type of cooperative learning model of Think-Pair-Share is a cooperative learning that is designed to influence the students' interaction patterns.