CHAPTER I
INTRODUCTION

1.1. Background

In the process of learning, success is measured based upon achievement of competence of teaching and learning established since the beginning of the learning activities. Teacher's role is very important in learning. The teachers act as facilitators, mediators and counsellors. In this role, the teacher should also be able to work well with students, support each other so that the achievement of competence specified. An important element in the process of teaching and learning is a method of teaching and learning media that used in accordance with the material being taught. It is trivial, but these link to each other. (Slameto, 2003)

Teachers should be known to teach the learning material by used method combined with media compatible. The teachers need to be more creative and innovative in teaching, especially in learning chemistry topic. Education without technological advances is boring. The tendency of a teacher in delivering subject matter using the same method in chemistry courses, asked students to read and memorize the learning materials make students feel bored; annoyed and less active. (Oemar Hamalik, 2008). It is make decreases of students' interest inquired for the material being taught and understand it. The teachers should keep students' interest and motivate to learn in different ways of teaching, using varies teaching method and combined with teaching media in improving student motivation and students' achievement. (Mulyani, 2009)

Cooperative learning model is method that can be done because it can improve learning progress; makes positive attitudes of student; increases motivation and confidence of students. One of the cooperative learning models that can be used by teachers in delivering of thermochemistry is the type Student Teams Achievement Division (STAD) model. STAD cooperative learning model is one type of learning model that allows developing skills, creativity, critical thinking and a willingness to help friends. (Slavin, 1995)

Based on a research conducted by Ali (2012) showed that student achievement using STAD is higher than conventional learning. Similarly Tanjung

(2011) found that student achievement using STAD cooperative learning model combined with guided discovery method is better than STAD cooperative learning model without guided discovery with a percentage increase of students' achievement by 34.18%. It was also found that (Ellys Nainggolan. 2010) student achievement using STAD cooperative learning is higher than conventional learning on the subject of solubility and solubility product. The results found by the Citra Simarmata (2012) that there was a significant findings that STAD cooperative learning in improving student achievement on hydrocarbons compared with conventional learning is 29.77%.

According to Isjoni (2009) the type STAD cooperative model is more useful and interesting when combined with the learning media. In the study of chemical material on the subject of thermochemistry for example, it is considered very attractive if the type STAD cooperative teaching model a combined with a variety of media and methods that lead to practical work in the laboratory to enhance students' understanding of concepts and skills in critical thinking. But it would be very difficult to do if not supported by comprehensive laboratory facilities. (Sulistyani, 2010)

In facts, there are a number of schools that do not have a lab or a complete chemical laboratory facilities and instruments to support laboratory works. So that students are not getting of best of all the potential in order to achieve a predetermined competency. Students were generally briefed only the material without doing lab activities directly. Understanding chemistry concepts comprehensively, will be able to help the student in mastering the subject matter. (Azar, 2011)

One of the best the media can be used to anchance student mastery is a virtual laboratory based on computer media. Computers can work or run using specific software which is compatible with the computer used. Software that can construct virtual learning media according to the subject intered, for example in a computer multimedia it is usually found microsft office, photo design software, film editing and macromedia flash are useful in supporting teaching and learning

activities. It was found that a number of computer software installed already into a computer and it can be used to help the learning process become interested and innovative condition. (Rida, 2008)

In the case, a virtual laboratory is considered as a usefully media in supporting teaching and especially when it is used in teaching learning process thermochemistry. (Puspita, 2008). It is expected that the media can be useful in improving and enhancing student achievement. Students can freely to explore the potential in them and critical thinking by using virtual laboratory, it is expected that students would be able to think critically, for it contains chemistry simulation that could be useful in simulating abstract concept into a meaningful concept. (Maldalleri, 2008)

Based on the discussion above, I would like to investigate the **"Effect of Cooperative Learning types Students Team Achievement Division using Virtual Laboratory Flash Media towards Improving Senior High School Students' Achievement in the Thermochemistry."**

1.2. Identification of Problems

Based on the background above, there are many problems identified:

1. Generally teachers do not use cooperative learning model in teaching chemistry topic.
2. How in improving student achievement using STAD cooperative learning combined with virtual laboratory and without virtual laboratory?
3. Is using a virtual laboratory it is necessary that the teachers should be able to operate or use computer and internet comprehensively more effective in fatherly type STAD cooperative learning enhance learning achievement of students in the chemistry subject of thermochemistry?

1.3. The Scope of Problems

In this study, the problem is limited to scope:

1. Effect of cooperative learning types Students Team Achievement Division using Virtual laboratory flash media towards improving senior high school students' achievement in the thermochemistry.
2. Improving student achievement of the thermochemistry concepts acquired individually through pre test and post test.

1.4. The Problem of the Research

Based on the identification of problems and limitations described above which a research problems in this study are:

1. Is the student's achievement taught by using cooperative learning types STAD model combined with virtual laboratory flash media higher than conventional model in the thermochemistry topic?
2. What cognitive aspect most be improved by effect of cooperative learning types STAD model combined with virtual laboratory media in the thermochemistry topic?

1.5. Research Objectives

The purpose of this study is to know:

1. The significant differences of student's achievement between taught by using cooperative learning types STAD model combined with virtual laboratory flash media and conventional model in the thermochemistry topic.
2. Cognitive aspect will be improved by effect of cooperative learning types STAD model combined with virtual laboratory media in the thermochemistry topic.

1.6. Research Significances

The significances of this research are:

1. Improving the student achievement taught thermochemistry material.

2. The results are expected used by teachers as information or a literature to improving teaching methods combined with computer based media in chemistry learning.
3. It is contribute to the process of learning chemistry for schools that have not complete of the laboratory facilities.

1.7. Operational Definition

1. Cooperative learning model type Student Teams Achievement Division. Cooperative learning model type Student Teams Achievement Division (STAD) is a type of cooperative learning model using small groups with a total membership of each group of 4-5 students that every group have heterogeneously of membership. The learning process begins the giving of materials, group activities, quizzes and groups reward. (Slavin, 1995)
2. Virtual laboratory flash media.

   Virtual laboratory flash media is a simulation laboratory on the computer that introduced students and teachers to assemble equipment, forming a series of experiments, control and measure the parameters of the experiment, and retrieve data on a simulation experiment and not harmful to the students and teachers in the trials. (Puspita, 2008)
3. Thermochemistry

   Thermochemistry is a branch of chemistry that studying of reaction heat. Chemical reactions take place by absorbing or realising heat. Reactions that release heat are called *exothermic reactions*, while reactions that absorb heat are called *endothermic reactions*. Examples for exothermic combustion of gas in the stove, while examples of endothermic reactions such as rice that turns into rice. Exothermic reaction generally lasts more dramatic than the endothermic reaction. The amount of heat that accompanies (released or absorbed) of a reaction we are called *heat reaction*. As the heat of reaction is a form of energy and most chemical reaction take place under constant pressure, the heat of reaction is better known as *enthalpy change (ΔH*). (Michael Purba, 2006)