

## CHAPTER I INTRODUCTION

### 1.1 Background

The main problem in learning of formal education (school) is low students achievement. It is shown in average of students's value which is still concerned (Trianto, 2011). Actually, there are many aspects that can affect the quality of education, among others: professional teachers, interesting and varied teaching methods, appropriate media in supporting the learning process and conducive condition for learning (Rofiah and Handhika, 2012).

Observation that be done by researcher on 13 December 2013 by giving the closed questionnaire to 120 students class XI science in SMA Negeri 1 Sunggal, shows that 71.7% students say that chemistry is the difficult subject matter and 60.8% students say that chemistry is a bored subject matter. Questionnaire shows that there are many students think that chemistry is one of difficult and bored subject matter. This mind set will influence students interest, motivation and activity in learning the chemistry. If the point of view about chemistry is bad, there is no willing to learn about it further. Based on this observation, teacher needs to do some innovations to change students point of views about the chemistry subject matter.

Based on researcher's observation in class, teacher uses the direct instruction model and students become passive. It's also supported by the questionnaire where students say that teacher seldom use the various learning model. When researcher did the interview with teacher, teacher said that discussion method was not too effective to be applied. It was because not all groups were active. Smart and diligent students would be better, but the lazy students would be worse. There were some students who make their own discussion. Based on this fact, teachers are required to be able to make the interesting way in teaching and learning process to improve students motivation and activity that can affect the better students achievement in chemistry learning.

Actually, learning process that be applied must be student center learning. But in real application, most teachers use direct instruction model and dominated by teacher so it doesn't give access for students to develop by their own thinking (Trianto, 2011). Research of Pratiwi and Muharini also states that using direct instruction model in chemistry learning process is one reason why students think that chemistry is difficult and bored subject matter (Pratiwi and Muharini, 2010). Students get bored because they just listen to teacher explanation. By using the learning model, students should be involved in teaching and learning process. When students involve directly, they will be happy and keep trying to learn the subject matter until they comprehend it. It will result the high achievement and increase value of students. Because of that problem, teacher must use the model that can make students active in teaching and learning process.

Cooperative learning is a learning model that is usually used to apply students center learning especially to solve the problem that teacher find in make passive students be active, students who can't cooperate with others, aggressive students and careless with others. Students must work together to accomplish a common goal or to receive a common reward. In addition, cooperative learning model recommends heterogeneous ability or achievement grouping for the bulk of the instructional time. Most of the models include explicit guidelines for group composition in which a range of high, medium, and low achieving students is to be placed in each cooperative group (Robinson, 1991). In cooperative learning, students are expected to help, discuss and give arguments with other students in learning more about the subject matter and make sure that all of group member have been understood about the concept of subject matter.

There are some types of cooperative learning, but in this case, researcher chooses student teams achievement division (STAD) type. In student teams achievement division type, students are placed in a learning team that consists of four to five students who have various achievement, gender and ethnic. At the beginning of learning process, teacher presents the subject matter and focus to the concepts that will be learned. Then students learn in team and make sure that all

students have understood about the concepts. After the learning process, students are given the quiz and they must do it by themselves. Then, team who has the highest score will get award on their achievement (Slavin, 1997)

Besides that, using media in chemistry learning process isn't used well to increase students interest in learning chemistry in SMA Negeri 1 Sunggal. Based on questionnaire, most students say that teacher seldom uses media. In this case, teacher said that sometimes she uses the media such as power point. But because of limited time and projector, she can't use media every time. Although there are many media that can be used, but she only can use power point in teaching and learning process. Based on it, teacher must use media to increase students interest. If students interest increase, they will be happy and always repeat the subject matter until they comprehend and it will result high achievement and value.

There are many researches that use media in chemistry learning to increase students achievement such as pocket book, crossword, question card, macromedia flash and learning with computer. Like Silaban and Desma research that conclude the increasing students interest in hydrocarbon topic by using macromedia flash, power point and mind map each are 63% ; 65 % and 50 % (Silaban and Sianturi, 2008). Other research shows that the findings of the study indicate that the video and animation have more significant effects on promoting students' learning achievements in a chemistry laboratory context than static pictures in terms of operating equipment, technical operation, experimental procedures, and observation performance. Additionally, the students indicated that video presentation can best assist them in understanding the experiments (Lou, 2012). From the researches above, it can be concluded that media is also important to increase students interest. When a student has interest in learning chemistry, he will repeat the subject matter for several times, so when a test is given to him, he will be able to answer it well and the result is he gets high score. It means that there is increasing the achievement.

In this case, researcher will use media. The media is chemsketch. Chems sketch is graphic software that can be used to draw the molecular shape of organic

compound and the isomerism. By using chemsketch, students can also the molecular shape in 3D. Students will be more competent in using their imagines.

Based on the various researches that have been done, using cooperative learning and media can increase students achievement. Based on the Desstya and friends's research, using cooperative learning model (TGT type) and media (animation media and card) can increase students achievement in redox learning (Desstya, 2012). Pratiwi states that learning by using cooperative learning model (TGT) in hydrocarbon topic can increase students achievement with effect size 0.64 (23.89%) (Pratiwi, 2010). Hastuti also states that students achievement in experiment class by using cooperative learning (student teams achievement division type) with module is higher than control class by using conventional for cognitive domain ( $F_{\text{count}} > F_{\text{table}} = 13.7269 > 6.14$ ) and affective domain ( $F_{\text{count}} > F_{\text{table}} = 9.1124 > 6.14$ ) and also students achievement in experiment class by using cooperative learning (student teams achievement division type) with worksheet is higher than control class by using conventional for cognitive domain ( $F_{\text{count}} > F_{\text{table}} = 6.1681 > 6.14$ ) and affective domain ( $F_{\text{count}} > F_{\text{table}} = 6.4826 > 6.14$ ) (Hastuti, 2009). So does Parwanti, she also states that learning by using combination of student teams achievement division and structure exercise method can increase students achievement and activity in class X-5 SMA Negeri 1 Semarang. The students achievement classically is 89.73% with the average score is 75.15. Meanwhile, the students activity classically is reached 80% (Parwanti, 2007)

Hydrocarbon is one of difficult subject matter. It is showed by low students achievement in hydrocarbon examination at SMA Negeri 1 Sunggal academic year 2012/2013 where more than 50% students didn't pass the examination. Based on teacher's explanation, low achievement is caused by less comprehension of students in determining primary, secondary, tertiary and quaternary atom carbon, determining the general formula of hydrocarbon compounds, lowest number of carbon in naming the compounds and isomerism of hydrocarbon compound. Model perception and understanding the spatial structure of organic molecules has been a source of difficulty for many chemistry students (Dori, 2000). According to Nakhleh in Sari, usually students's difficulties in

chemistry learning is about difficulties in understanding terms and concepts that can result wrong comprehension. If it happens continuously, it will result wrong concept (Nakhleh in Sari, 2013). So, teacher needs to improve the model and media in teaching chemistry to increase students motivation, activity and interest in learning process and result high students achievement.

Based on the explanation above, researcher interests to make the research to investigate *The Implementation of Cooperative Learning Model (Student Teams Achievement Division Type) by Using Chems sketch Media to Increase Students Achievement in Hydrocarbon Topic.*

### **1.2 Problem Identification**

Based on background above, there are some identified problems, namely:

1. Chemistry is a difficult and bored subject matter.
2. Low students activity and motivation in the class because lack of using the learning model, teacher always uses direct instruction model and be dominated by teacher centered learning.
3. Low students interest in the class because lack of using the learning media.
4. Low students achievement in hydrocarbon topic.

### **1.3 Problem Limitation**

Problem limitations in this research are :

1. Research was done in SMA Negeri 1 Sunggal.
2. Subject matter was about hydrocarbon topic.
3. Low students activity and motivation in the class because lack of using the learning model, so learning model that be used is cooperative learning model (student teams achievement division type).
4. Low students interest in the class because lack of using the learning media, so learning media that be used is chemsketch.

#### **1.4 Problem Statement**

Based on the problem limitation above, problem statement in this research is: “is students achievement that be taught by implementation of cooperative learning model (student teams achievement division type) by using chemsketch media higher than students achievement that be taught by implementation of direct instruction model by using chemsketch media in hydrocarbon topic?”

#### **1.5 Research Objectives**

The research objective is to investigate whether the students achievement that be taught by implementation of cooperative learning model (student teams achievement division type) by using chemsketch media is higher than students achievement that be taught by implementation of direct instruction model by using chemsketch media in hydrocarbon topic to first grade students in SMA Negeri 1 Sunggal.

#### **1.6 Research Benefit**

The research benefits on this research are :

1. For students, it will be a pleasant learning. When they are involved in teaching and learning process, their motivation, interest and activity will increase, so they will be happy and repeat the subject matter until they comprehend and it will result students achievement and value increase.
2. For researcher and chemistry teachers, this research result can be one of alternative in increasing quality of teaching and learning process in chemistry especially hydrocarbon topic.
3. For other researcher, research result can add information for future research to make innovative, effective, interesting model in teaching and learning process.

### 1.7 Operational Definition

Cooperative learning is learning model that demand students to be more active because in solving the group assignment, each students is demanded to work each other until all group members understand about the subject matter. By using this model, students are expected be able to work in team, care with other and receive other arguments to be the best team at the end of learning process.

Student teams achievement division is one type of cooperative learning. In this model, teacher only acts as facilitator to form the good condition for learning process. Students must be more active to get new information in group and easier to understand about subject matter because they can discuss and solve the problems with other friends. In a group consists of students who has high, medium and low achievement. So all students will learn hard in group to understand the subject matter to make their team as the best team.

Chemsketch is software that can be used to make students understand about molecular shape. By using this software, students can draw the molecular shape and find the name of molecule. It will make students easier to understand about how the formation of molecular shape.