

CHAPTER I INTRODUCTION

1.1. Research Background

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Education holds the important role to produce Indonesian human resources, like as individu or as society because education can improve and develop the quality of human resources. Improving the quality of education deserve serious attention and careful. Therefore, various attempts have been made to improve the quality of education. One is the development of research in the field of education, especially in the teaching-learning process (Sanjaya, 2006). Learning exposes one to a range of possibilities and choices that life has to offer. The learning process is both a mirror of one's life in relation to others and to the wider environment, as well as a compass to help us to map our way in our life's journey (Ramphela, 2015).

Physics is one of the science lessons and it is a discipline that based on qualitative and quantitative measurements for understanding the natural phenomena around us. Physics is composed more abstract concepts, which are central to further learning in both physics and other Sciences. Mathematical calculation also found in these Physics, means that students must have high level skill for understanding physics. Therefore, students have some difficulties for understanding physics concepts.

For understanding physics concept student must have conceptual knowledge, conceptual knowledge is static knowledge about fact, concept, and principles that apply within certain domain, conceptual knowledge functions as additional information that problem solver add to the problem and that they use to perform the solution (Arends, 2009).

Number of students nowadays that have conceptual knowledge still in little scale. According to Arends (2009) The process of learning concepts begins at an early age and continues throughout life as people develop more and more complex concepts, both in school and out. Majority students can find working

with physics calculations difficult and frustrating to understand. With enough practice, they can memorize a pattern to complete the calculations but have a difficult time understanding the concept, then quickly losing their enthusiasm to work with these calculations.

From preliminary observation that have done by researcher through the direct observation by interviewing the physics teacher of SMA N 10 Medan the result show that almost 100% of students are able to achieve minimum completeness criteria (MCC). With 70 point of MCC standard for grade X at Second semester this year. However, many students aren't able to achieve minimum completeness criteria (MCC) only around 30 % of students can answer analysis question that given by teacher.

The interview show that, most of student confused when learning of Physics, but they still want to learn Physics no matter what. Some students interested in physics want to learn physics with another teaching method, they need more books reference, more practice and more solving of physics problem. Process of teaching and learning physics in school is also far from being satisfactory. Students was taught verbal, teacher becomes the one and only informant, and using conventional model in learning that create students just memorize or mimic their acts in class, and the method is often used in conventional learning model is the lecture method.

Another factors that caused student have little of student who have conceptual knowledge are because there are only one type of guide book that used in learning process, it is text book that produced by one publisher also. There are no laboratory practice book and worksheet, so the students only used the text book as long in learning process until one semester.

SMA N 10 Medan is a school with structure and infrastructure supporters to learning activity like Science Laboratory, LCD, and another learning media but the teacher not using optimally, especially physics laboratory. The teacher is rarely using the lab to learning process, so the students rarely doing experiment and rarely taught by using media also.

Student must use their conceptual understanding of the fundamental concepts of physics to qualitatively analyze a problem before the mathematical manipulation of formulas. Based the problem of learning in this paragraph we clearly conclude that the conceptual knowledge of student must be increased from the basic concept until the abstract concept.

To face this problem is need to apply other learning models that can improve student conceptual knowledge. Some models of teaching like can be as an alternative that expected could build character become critically, logic, objective, creative and innovative then automatically can improve student learning outcomes in conceptual knowledge. One of the teaching models can be as an alternative that expected could build the conceptual knowledge is cooperative learning type Group Investigation and Jigsaw.

Cooperative learning is a model where the student learns with group and they are work together. Psychologists generally agree that students easily understand the complex and abstract concepts when accompanied by concrete examples and in working together (Isjoni, 1992). According to Slavin cooperative learning is a learning model where student learn and work in small group consist of 4-6 people with heterogenic structure. Patterns of employment as mention above enable emergence a positive perception about what they have to do to success their group. Cooperative learning consists of some type one of them is Group Investigation.

Group Investigation have goal and impact, the cognitive goal of Group investigation are conceptual academic knowledge and conceptual knowledge, Focus to the goal of Conceptual Knowledge, according to Arends (2009) conceptual knowledge have learning outcomes are specific concept, nature concept, logical reasoning and Higher level thinking also communication.

Based on all premises this is particularly relevant to teach student by Cooperative Learning Model using Group Investigation type, That focus on Conceptual Knowledge as a goal. However, Group investigation developed by Shlomo Sharan and Yael Sharanin 1992, is a general classroom organization plan in which students work in small groups using cooperative inquiry, group

discussion and cooperative planning and projects. More over, it is said to be one of the most student-centered methods as students have much freedom to choose their topics of interest for investigation, plan and carry it out, present and evaluate the results.

Group Investigation (GI) technique was developed by Sharan and Sharan in 1989. In the technique Secondly the class is divided into several groups that study in a different phase of general issue. After that, study of issue is divided into working sections among the members of the groups. It's provided to students that pair up the information, arrangement, analyzes, planning and integrate the data with the students in other groups. In this process, teacher must be the leader of the class and ensure that students need to the explanations Knight and Bohlmeyer (in AKÇAY and DOYMU , 2014)

Group Investigation (GI) strategy is a cooperative learning strategy that can be used to encourage and develop metacognitive skills. The results of the research by Danial (2010), reported that the GI strategy could enhance metacognitive skills and concept understanding. GI also had the potential to empower students' thinking skills and abilities (Nasruddin and Azizah, 2010; Listiana, 2013). The results of the research by Akcay and Doymus (2012), and Koc, et al. (2010) reported that there was a difference in the learning results between the students taught by using GI and those taught by using conventional learning. Additionally, Tsoi, et al. (2004) confirmed that the GI effectively improved social skills, responsibility, and problem solving skills. Siddiqui (2013) also stated that the GI increased the learning levels (investigation, participation, interaction, critical thinking, logical thinking, problem solving, decision making, communication skills). GI is also proven to increase motivation (Tan, et al. 2007), and creative thinking skills (Suartika, et al. 2013).

The nearly examined done by Bicerdimaylia (2014) and Sitinjak, Jovan (2015). Bicerdi, maylia using Cooperative learning model type group investigation to analyze the student's High Order Thinking of learner outcomes and research in MAN 1 MEDAN Senior High School in the topic of Dynamic' Electricity. The result of her research are : Pretest score based on C4, C5 and C6

of Experimental class is 47,97 and in the Control class is 47,51 when Experiment class teach using Group Investigation Method and Control class teach using Conventional method when the research result of Post test to measure High Order Thinking cognitive test in experimental class is 76,81 and in the Control class is 57,39.

Sitinjak, Jovan (2015) using Cooperative learning type Group Investigation focus on student's learning outcomes consist of cognitive outcomes, affective and psychomotor and his research done in SMA SANTO THOMAS 3 Medan on the Linear Motion topic of physics. That were obtained: pre-test mean value of experiment class was 42.26 and 41.45 for control class and then post-test mean value of the experiment class was 80.48 and 64.03 was the mean value for control class. Standard deviation in pre-test were 7.62 in experiment class and 7.55 in control class and standard deviation in post-test for two classes were 6.87 and 8.89. Then; based on observation that done by observers by using observation sheet of students' affective and psychomotor. Students' affective score on last meeting of experiment and control class are 91.83 and 87.10 and students' psychomotor score on last meeting of experiment and control class are 85.01 and 80.78 .

Many researches about Group Investigation method in physics have done by previous scientist and based on previous thesis above with Group Investigation method used in learning process. Its offers a proven, if Group Investigation is one of the great choices models of teaching to increase conceptual knowledge of students in the physics topic. The differences this research with the previous research are this research apply the new curriculum there is K13, new topic, and new school. There is still low research about Static Fluid. Therefore, in this case the writer chose research entitled **“The Effect of Cooperative Learning Model Type Group Investigation (GI) to Students Conceptual Knowledge on Static Fluid Topic Grade X Second Semester in Senior High School”**.

1.2 Problem Identification

Based on the background that already consider, so the problem identification in this research are:

1. Many Student can't reach the minimum completeness criteria
2. Teacher less using various teaching models
3. In the teaching and learning process rarely doing experiment
4. Less of various book's learning
5. The teacher rarely teach physics using media
6. School doesn't have enough tools and materials for doing experiment
7. The physics teacher still using the conventional learning by lecture method
8. Less number of students who can solve conceptual knowledge of test

1.3 Problem Limitation

By considering subject matter in SMA N 10 Medan, this study is limited to The effect of Cooperative Learning model type Group Investigation to the students conceptual knowledge at class X SMA N 10 Medan on topic Static Fluid compared with conventional model of learning.

1.4 Problem Formulation

Based on the limitation problem, so the problem formulation are:

1. How is students conceptual knowledge using conventional learning in the subject matter Static Fluid Class X SMA N 10 Medan A.Y 2016/2017
2. How is students conceptual knowledge using cooperative learning model type group investigation (GI) in the subject matter Static Fluid Class X SMA N 10 Medan A.Y 2016/2017
3. What are the students conceptual knowledge by using cooperative learning model type group investigation (GI) greater than conventional learning model in the subject matter Static Fluid Class X SMA N 10 Medan A.Y 2016/2017

1.5 Research Objective

There are some research objective, namely:

1. To analyze students conceptual knowledge by using conventional learning in the subject Static Fluid Class X SMA N 10 Medan A.Y 2016/2017.
2. To analyze students conceptual knowledge by using cooperative learning model type group investigation in the subject matter Static Fluid Class X SMA N 10 Medan A.Y 2016/2017.
3. To analyze whether students conceptual knowledge by using cooperative learning model type group investigation is greater than conventional learning in the subject matter Static Fluid Class X SMA N 10 Medan A.Y 2016/2017.

1.6 Research Benefit

Once this study is completed then the expected benefits of this research are:

1. For School : Can give a good contribution in order to improve the learning process and improve the quality of schools by increasing student conceptual knowledge and teacher professionalism.
2. For teacher : As a consideration in selecting learning model better than conventional learning model.
3. For students : Students are more motivated to learn physics, because the abstract concepts of physics can be more real through cooperative learning model Type Group Investigation So, the learning process becomes more interesting and more attractive to increase students understanding.
4. For researcher : As a description to implement a more effective learning model and method that can be used as a reference.