

CHAPTER I INTRODUCTION

1.1. Background

Education is one of the efforts to achieve the life of the nation and is an important key to achieve the ideals of a nation. Education is believed to be able to push maximize students' potential as a candidate a reliable resource to be able to be critical, logical, and innovative in the face and resolve any problems faced. Education requires continuous improvement. Education emphasizes the mastery of the material and mastery of skills are balanced. The world of education has the goal to be achieved in the learning process. Education is not only focused on the mastery of the material, but also emphasis on mastery of skills (Silitonga et al, 2016).

Science plays important and dominant roles in spearheading technological advancement, promoting national wealth, health improving and accelerating industrialization roommates aid development in many countries. Physics is one of the branches of science that attempts to describe how nature works using the language of mathematics. It involves the study of universal laws and the behaviors and relationships among a wide range of physical phenomena (Agarwal, 2012).

According Harlen (2006) characteristics of learning physics among others: 1) is a science that natured on the product, the which means that in learning physics is not enough just to learn the code, but also how to obtain the product; 2) the product of physics tends to be abstract and in the form of physical science and mathematical logic. In physics this means not only contains about theories or formulas to memorize, but in physics contains many concepts that must be understood in depth. Thus, in teaching students are required to be able to build his own knowledge and his active role in the learning process.

The learning process of physics should be more emphasis on student-centered learning and the process of learning physics is not a large amount of information that must be memorized students, so that students can gain a learning experience. Therefore, the learning process should be more emphasis on the importance of meaningful learning (Ompusunggu et al, 2016).

At the high school level of education, physics deemed extremely important subjects to be taught. Because, physics is one of the subjects, they have great impact on the development of science and technology. In addition to providing knowledge to students, the physics subject with all the problems to train students to think critically and creatively so that students can solve problems in everyday life. Critical thinking becomes one of the abilities to be owned by the students, it can be nurtured and developed through the physics.

Most of the students admitted are interested in studying physics but others think that physics is a subject that is difficult. Because the models roommates teacher facilitate less attract students to learn physics so the impact on the activities of students in the class are passive and not oriented (disoriented). In solving the problems that teacher experience is the lack of effective models applied, it is better to upgrade the models that applied by the teacher in advance so that the models is being used more attracted the attention of students. The school roommate's researcher choose for this research is SMA Swasta Santa Maria Medan.

Based on the observations that have been done in SMA Swasta Santa Maria Medan in physics study, it is known that the teaching model used by teachers still tends to use lecture method although several meetings have been held experiment activities. In the completion of the material usually teachers only give the task to students to solve some problems of physics and it is done independently. Basically, these lessons are still less challenging to the students in gaining meaningful knowledge. When teachers carry out the teacher's appraisal is still limited to unstructured observation, without using complete instruments and covering only aspects such as student co-operation, how students use tools and materials, and report's experiment. Assessment becomes poor because basically the aspects of skill assessed on each learner are different.

Based on the results of interviews with physics teachers, students tend to be lazy to read the work steps presented on worksheet practice as well as ways to use the tool and rely more on the things instructed/guidance from teachers alone that causes student's skills in the use of unfavorable tools. This was observed when observation was done by observing the student's way of using the tools in the

previous experiment, where the students did not read the work steps and only waited for the direction of the teacher when there was already a work steps presented on the worksheet. Teachers also have difficulty in assessing the processes undertaken by students during the experiment. When experiment is done, student performance is not good. In one group, only a few students are active during experiment activities so that only a few students in one group actually use the tool.

Based on these problems it is necessary to change the approaches, methods, and models of learning in such a way as to generate interest and interest of students to learn in the real sense and improve student's science process skills. Scientific process skills are skills that must be developed in the students. Some of the origins of why the science process skills must be owned by students is science (especially physics) consists of three aspects: product, process, and attitude. By developing the skills of the science process students will understand how the formation of laws, theories, and the existing formulas in the experiment. Science (physics) changes with the times. Therefore, the teacher is no longer possible to teach all the concepts and facts to the students of so many subjects. Students need to be equipped with skills that can help students explore and find information from various sources rather than from the teacher alone. Students will better understand complex and abstract concepts if accompanied by concrete examples. And finally, students will have a deep understanding of the subject matter that encourages students to be more active in learning.

Based on the problems described above, researchers intend to create an environmental system that to learn students. One alternative learning model that can be applied to improve the quality and skills of the science process as a means of research is the scientific inquiry learning model. As one of the constructivism reference learning models, this model focuses on the investigation process, where students are faced with one problem area, identify problems, conceptual or methodological within the area of investigation and invite students to design ways to overcome the problems they face. The scientific inquiry instruction model is one of the suitable models to use because in the implementation the teacher provides guidance or extensive instruction to the students.

Research reinforces learning model of scientific inquiry include Hussain et al (2011) in the journal which concluded that there is a significant impact on student achievement that is taught by the learning model scientific inquiry than traditional learning in teaching physics at secondary level. Corlu (2012) in the journal concluded that students who are taught by scientific inquiry learning model showed a significant effect. Similarly, research conducted by Lederman et al (2013) in the journal which concluded that scientific inquiry is one model of learning to develop knowledge and attitudes science students. Rahayu et al (2015) in his study also says that the scientific inquiry-based learning model pictorial riddle effective in improving student learning outcomes. Fahrnunisyak & Sinuraya, J (2016) also said that the influence of scientific inquiry learning model to increase student learning outcomes and better learning activity.

Selection of the right learning models can improve students' science process skills for the better. Based on Reviews these objectives can be understood that through learning physics is expected that students not only master the knowledge alone but Become individuals who have the skills and abilities found in everyday life.

One of the learning models that can improve students' science process skills is the scientific inquiry models. The inquiry begins by presenting a model training puzzle-filled events to students. Students who face the situation will be motivated to find answers to the problems that are still the puzzle. Teachers can use this opportunity to teach assessment procedures in accordance with the steps of the scientific inquiry models. The inquiry teaching models is a student-centered teaching. In this case students become actively learning. The main goal of the inquiry is to develop models of intellectual skills, critical thinking and to solve scientific problems (Dimiyati and Mudjiono, 2013).

The students' science process skills are approaches that give students the opportunity to discover facts, build concepts, through activities or experiences like scientists. Furthermore Rustaman (2005) says that process skills need to be developed through direct experiences as learning experiences. Through direct experience one can better appreciate the process or activities that are being done.

Based on the above, it can be concluded that students' science process skills capability are complex devices that can be used by scientists in conducting scientific inquiry into the learning process. Skills in the science of students are very important for every student as a preparation for scientific investigation.

Based on the above description, the Researchers are interested to conduct a research on **"The Effect of Scientific Inquiry Learning Model to Science Process Skills on Elasticity and Hooke's Law Topic First Semester Grade XI in SMA Swasta Santa Maria Medan A.Y. 2018/2019"**.

1.2. Problem Identification

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

1. Student's science process skill still low.
2. The learning process still tends to be based memorizing physics theories, concepts, and formulas and not based on the student experience which leads to lower students' science process skills.
3. Teacher less using various teaching models.
4. In the teaching and learning process rarely doing experiments.

1.3. Problem Limitation

By considering the subject matter of SMA Swasta Santa Maria Medan, this study is limited to:

1. Learning the model used is scientific inquiry.
2. Related variables in this study are science process skills of students.
3. Research subjects are students of class XI first semester.
4. The material taught is Elasticity and Hooke's Law.

1.4. Problem Formulation

Based on the limitation problem, so the problem formulation in the subject matter of Elasticity and Hooke's Law Class XI SMA Swasta Santa Maria Medan A.Y. 2018/2019 are:

1. How is student's science process skills by using scientific inquiry learning model?
2. How is student's science process skills using conventional learning?
3. How is the student's activity based on science process skills indicator during the learning process using the scientific inquiry learning model?
4. How is the effect of scientific inquiry learning model to the student's science process skills?

1.5. Research Objectives

There are some objective research in the subject Elasticity and Hooke's Law Class XI SMA Santa Maria Medan A.Y. 2018/2019 items, namely:

1. To analyze student's science process skills using scientific inquiry learning model.
2. To analyze student's science process skills using conventional learning.
3. To analyze the student's activity based on science process skills indicator during the learning process using the scientific inquiry learning model.
4. To analyze the effect of scientific inquiry learning model to the student's science process skills.

1.6 Research Benefits

1. For Students

- a. Improving student learning outcomes in the subject's physics, especially the materials Elasticity and Hooke Law's.
- b. Motivating students to engage in learning through scientific inquiry learning models.

2. For Teachers

- a. Opening think the conception of teachers in developing teaching and learning models uses one scientific training learning models.
- b. Feedback to teachers to measure the success of the implementation of the teaching and learning activities in the classroom.

3. For Schools

- a. Improving the quality of the learning outcomes of school through student's learning and teacher performance.
- b. As feedback to improve the effectiveness and efficiency of the learning activities.

1.7 Operational Definition

1. Learning model is a plan or a pattern which used as a guide in the classroom learning or learning tutorial and to determine the tools of learning including books, movies, computers, curriculum, and other (Joyce et al, 2009).
2. Scientific inquiry learning model is a model that involves students in research problems actually original with the way they face an investigation field, helping, them identify methodological in these field, and invite them to device ways to solve the problem (Joyce et al, 2011).
3. Conventional learning is the learning that is help in the school's learning atmosphere of the classroom tend teacher centered so that students become passive.
4. Science Process Skills is the complex skills used by scientists to conduct scientific investigations into the series of the learning process. According Dahar (2011), science process skills is the student's ability to apply the scientific method in understanding, developing, and finding science. Science process skills is very important for every students in preparation to use scientific methods in developing science and are expected to gain new knowledge or develop the knowledge you already have.