CHAPTER I

INTRODUCTION

1.1 Background

(Saanatun, 2017) describes a new paradigm in the study of physics today is to prove to the students how to solve problems and find concepts as direct evidence concepts that we need, not just a lesson that is verbally, memorizing, the introduction of formulas, and the introduction of terms through a series of verbal. A learning more dominant on the students will be more active during the learning takes place. Good learning physics is learning that can be directed learners in direct experience to develop the competencies that the students explore and understand about scientific nature. The concept about nature of science is essentially produced by a set of scientific processes such as observing natural phenomena, formulating hypotheses, and testing hypotheses by investigations or experiments, so teaching science should be based on the characteristics of science itself. Students should be trained to find the concepts of science through investigation of phenomena that contextually occur in daily life. One of the best approaches for teaching science is inquiry methods (Ertikanto et al, 2017).

A fact obtained in the field is not in line with expectations, where learning is applied physics at school, still applying the method focuses on memorizing formulas. The fact was obtained by researchers based on observations at SMAN 11 Medan, where the observation is made by way of spreading questionnaires to students of class X MIA 3 which consists of 35 students, 71% of students said they felt indifferent to learning physics because physics is still fixated on the notes and do on the questions; physics considered as a lesson that is hard to prove, 77% of students consider that physics is a difficult lesson, reinforced by the results of the analysis in which 54% of students do not understand the explanation of the physics teacher, students are still less active in learning physics evident from the analysis of the questionnaire only 6% of students frequently answered questions teachers when learning takes place. This causes students' exam results obtained are less satisfactory or not yet reached KKM, where 57% of students gained

semester exam results were less than satisfactory. In the observation results also obtained that students never do experiment in the learning seen from the results of the questionnaire analysis that when asked the question "how do teachers teach in class?" No students who choose by way of experiments. This causes no development of students' science process skills.

Based on the analysis of the problems derived from these observations obtained data from interviews with physics teacher that teachers have been making efforts to improve learning outcomes physics students by using learning tools, teachers are already using peer teaching and Question and answer method when teaching. But it seems that is not yet efficient method to improve student learning outcomes for question and answer method is applied only to the extent FAQ on the presentation, so that way it seems not too able to increase student learning outcomes. From the observation requires a process of learning physics students with a model of its own investigation because with this model students will understand the physics concept so well that it will be able to improve science process skills. Science process skills of the students is very important because these skills make students able to work and ready to face all problems, especially problems in physics. Learning science brings a change in character and give the opportunity for more creative thinking and imagination of the students were able to compile (Kumari and Rao, 2008).

Efforts to improve student science process skills required the selection of appropriate models. A model of teaching is a plan or pattern that can be used to shape curriculums (long-term courses of studies), to design instructional materials, and to guide instruction in the classroom and other settings. As we describe models and discuss their uses, we will find that the task of selecting appropriate models is complex and that the forms of "good" teaching are numerous, depending on our purposes. The learning model that is expected to improve science process skills is the inquiry training learning model, where this model can help shape the concepts and solve problems in learning. According to (Joyce and Weil, 2011) Inquiry training is designed to bring students directly into the

scientific process through exercises that compress the scientific process into small periods of time.

Results of previous studies (Vaisnav, 2013) Inquiry training model have significant effect on students cognitive affective development & rate of learning. It also contribute in increasing the learners aptitude for learning the subject than traditional approach. Due to the use of this model of teaching students to become active in this regard in accordance with previous research (Judge and Fibro, 2013) the value of the activity affecting learning outcomes, it is also reinforced by research (Turnip et al, 2016) the average value of problem-solving abilities with Training Inquiry-based learning model Just In Time Teaching higher than cooperative model.

On the other hand (Harahap et al, 2016) concluded student's science process skills using inquiry learning model training is better than conventional learning model. It proved by results of testing that given to the students in inquiry training model are better than students in conventional learning model. Based on the research (Harahap et al, 2016) inquiry learning in the classroom with Inquiry Training which requires the active involvement of the students can improve learning achievement and attitudes of children to lessons, especially the ability of understanding and communication students. Learning process with Inquiry Training Model able to create the basics of scientific thinking on students, so in this learning process students are learning themselves, develop creativity in solving problems and improving science process skills. Based on the research result and discussion can be concluded student's science process skills using inquiry training learning model is better than conventional learning model. It proved by results of testing that given to the students in inquiry training model are better than students in conventional learning model. The same thing also expressed by (Upadhyaya, 2015) revealed Inquiry Training Model is more effective than the traditional teaching method in developing the scientific aptitude for the students of high & low intelligence. Based on this research Inquiry Training model can improve the science process skills of students in the class.

And also according to (Mahulae et al, 2017) skills of student's process using inquiry training model using PhET with average score 67,03 is better than conventional learning with mean score 57,15. In this research, the dominant student's science process skills in the inquiry training model using PhET in the group of students who have above average scientific attitude.

Seeing the positive results of the previous research on learning model *inquiry training,* this research will be applied learning model *inquiry training* to see the effects toward to student's science process skills on the material momentum and impulse.

1.2 Problem Identification

1. Students are less active in physic learning,
2. Students consider that physics is a difficult lesson,
3. Lack of student interest in the subject of physics,
4. Learning model that used not effective,
5. Physic is considered as a bored lesson,
6. The result of physics examination not get KKM,
7. Learning process is not interest.
8. Students are seldom doing experiment.

1.3 Problem Limitation

In order to keep this research become more focused and directed, the researcher limitation the problems as the following:

1. Learning model used is an Inquiry Training on the experimental class and conventional learning on the control class.
2. The material taught is Momentum and Impulse.
3. Conducted to determine the influence of Inquiry Training Model on student science process skills.

1.4 Problem Formulation

The problem formulations in this research are:

1. How student's science process skills using *inquiry training* learning model on the material momentum and impulse?
2. How student's science process skills using conventional learning model on the material momentum and impulse?
3. How the student's activity based on science process skills indicator during the learning process using the inquiry training learning model?
4. How the effect of *inquiry training* learning model on student's science process skills on the material momentum and impulse?

1.5 Research Objectives

The objectives derived from this research are:

1. Knowing student's science process skills using *inquiry training* learning model on the material momentum and impulse?
2. Knowing student's science process skills using conventional learning model on the material momentum and impulse?
3. Knowing the student's activity based on science process skills indicator during the learning process using the inquiry training learning model?
4. Knowing the effect of *inquiry training* learning model on student's science process skills on the material momentum and impulse?

1.6 Research Benefits

1. for students

1. Improving student learning outcomes of cognitive competencies in the subject physics, especially the material momentum and impulse
2. Motivating students to engage in the learning through inquiry training learning model

2. for teachers

1. Opening think conception of teachers in developing teaching and learning model one uses inquiry training learning model
2. Feedback for teacher to measure the success of the implementation of the teaching and learning activities in the classroom

3. for schools

1. Improving the quality of the school through learning outcomes student learning and teacher performance.
2. As feedback to improve the effectiveness and efficiency of the learning activities.

1.7 Operational Definition

1. Learning model is a plan or pattern that can be used to shape the curriculum (long-term learning plan), designing learning materials, and guiding learning in class or another.
2. Inquiry training originated in a belief in the development of independent learners; its method requires active participation in scientific inquiry.
3. A Science process skill is a broad concept, numerous experts who attempt to elucidate the process skills into more detailed aspects.