CHAPTER I

INTRODUCTIOIN

1.1 Background

Basic physics courses in physical education courses are the foundation for students to face and study other subjects in the following semester; therefore student of physics education is very important to thoroughly master the basic physics. The students' basic capabilities related to mastery of concepts of physics is very important. Nevertheless, the results of experience in the Integrated Field Experience Program (PPLT) at SMAN 1 Perbaungan during the last 3 month in the study of physics education, shows that the ability of the average student is still relatively low. It can be seen from the midterms and final exams results especially those of basic physics course which gain under 6 on average from maximum value of 10 and based on data from the information.

Based on these findings followed by interview sessions, it is found that the lack of mastery of the physics is influenced by their habit while they were studying physics they just applying physics equation without understanding the physics concept underlying. This is in line with that expressed by Kristianingsih,*et al* (2010) also says that due to the teachers are prone to give more lectures or simply delivering product, resulted the poorly trained students in developing the ability of thinking in order to develop application concept that has been learned in real life .

Additionally, the learning activity should not be done only one way though the subject of the learners are the students. This is because the process of learning itself is a process that emphasizes providing direct experience to develop the competencies so that students are willing to explore and understand the universe around scientifically. Based on those direct experiences, all students' learning activities will be monitored by the teacher.

In line with this statement, Subali. *et al* (2015) argued that "the activity of the students is a real phenomenon that is evident in students and can be observed as well as be measured by students, in this case the most involved is lecturer.

Based on this study, an improvement learning program was made in order to improve student's thinking skills. The improvement is important because physics is not a science which can only rely on mastery of concepts or rote alone. Thus, students should be able to understand a concept by relying with their thinking ability.

Many of solutions can be performed by a teacher to create learning method that able to attract students, One of the learning models using scientific method is scientific inquiry Inquiry scientific learning is a learning through scientific investigation where students learn how to solve problems and scientific investigations that enable students to learn about real life in science and scientific knowledge in life. This learning model includes identifying the problem, proposing hypotheses, identifying relevant variables, designing experiments to test hypotheses, performing investigative procedures, collect data based on experiments, change data in tables and graphics, and draw conclusion. Scientific Inquiry train students accustomed to seek information, explore, solve problem and find new understanding.

Students are now ready to wrestle with the most difficult aspect of engaging in scientific inquiry, the creation of a fruitful and productive research question. Students are tasked to design an answerable research question, propose a plan to pursue evidence, collect data using the present astronomical database (or, in special circumstances, another suitable source pre-approved by the instructor), and create an evidence-based conclusion about the nature and/or frequency of galaxies. Students are explicitly reminded that their written research report needs a: (1) Specific Research Question; (2) Step-by-Step Procedure, with Sketches if Needed, to Collect Evidence; (3) Data Table and/or Results; and (4) an Evidence-based Conclusion Statement (Slater & Lyons, 2011)

The scientific method, as presented, is logical, objective, and impersonal. Textbooks and teaching leave students with the view that all of science proceeds in much the same way. To the degree that students and the public have any sense

of inquiry and the nature of science, this is it. Unfortunately, this view is neither entirely correct nor absolutely wrong. Perhaps some scientists might conduct their work in this manner. Certainly they report their work this way at scientific meetings and in journals (Bybee, 2006)

Based on the results of research by Anggraini & Sani (2015) stated that, (1). Skills of the student's science process taught with learning models Scientific Inquir is better than with students taught with conventional learning. Students who are taught with learning models Scientific Inquiry earns on average value of science process skills 70.07 and students are taught with learning models conventional gain an average value of science process skill 64,13. (2). Scientific process skills in groups students who have the ability to think High creative is better than with groups of students who have low creative thinking ability. Skills the process of science students in groups students who have the ability to think High creatives gain an average score 74.21 and in groups of students who have the ability to think creatively low gain an average score of 59.18. (3). There is an interaction between the learning model Scientific Inquiry and ability think creatively in improving skills student science process. Skills the student's science process will show results which is better if taught with Scientific Inquiry learning model on groups of students who have the ability High creative thinking.

Based on the Dian Clara Natalia Sihotang (2014), research results concluded that the Scientific Inquiry learning model can improve student learning outcomes. Attitude Scientifically owned students also influence student learning outcomes. Interaction between Scientific learning model Inquiry and scientific attitude towards learning outcomes seen from the hypothesis test interaction graph concluded that the learning model Scientific Inquiry is more suitable to apply to students who have a high scientific attitude. Model this learning is not well applied to students who have low scientific attitudes. Unlike the case with the learning model direct is good for students who have a high scientific attitude and low because the DI learning model together role to improve learning outcomes.

The project's approach is to identify best practice in teaching scientific inquiry skills, particularly the effective use of educational technologies to promote understanding of the scientific method of inquiry and to develop skills necessary to conduct successful investigations. Through the pedagogically sound use of proven educational technologies it is expected that bioscience graduates will enter the workplace better equipped with the skills to conduct investigative research (Elliot *et al*, 2008).

Problems with implementing scientific inquiry in the classroom include the follow ing: (i) Teachers may manipulate classroom science to obtain the expected results (10). (ii) Teachers' demonstrations merely simulate scientific inquiry, (iii) The incomplete development of students' reasoning abilities may limit their ability to construct complex scientific arguments (9-12). (iv) Scientific inquiry often requires detailed knowledge of a topic that students have yet to master environment thus seems desirable for the students, provided that they are the designers, executors, and interpreters of their experiments, not simply spectators of the performances of others (Hanauer *et al*, 2006)

The findings from Anne Hume (2009) this initial exploration or teachers' views on authentic scientific inquiry point clearly to some gaps in their own scientific literacy and a willingness on their part to engage in professional learning opportunities to enhance their science content knowledge and in turn their pedagogical content knowledge. Practising scientists can play a valuable role in enhancing teachers' capabilities by telling stories or their real-life inquiries in ways that reveal how they think and work. Such stories, if told well, can provide ideal learning contexts for teachers and students alike.

Scientific inquiry based classroom activities help students develop critical thinking skills and enable them to construct knowledge like a. A strong foundational understanding of scientific inquiry has positive effects on both student achievement and attitudes towards mathematics and science. Therefore, scientific inquiry is widely accepted as an effective instructional practice to teach

science in today's classrooms and teachers need to excel in guiding their students to construct knowledge like scientists (Çorlu, 2012).

In scientific inquiry study the students conduct an investigation so that students are accustomed to experiment. Through this activity students use different senses by touching, feeling, moving, observing, listen, and smell. The students then answer the discussion questions on the lks in groups, so students can interact and exchange ideas with friends of his group. This activity trains communicating skills. When doing a presentation in the classroom a question and answer between students, the activity helps improve the ability in communicating (Turiman et al., 2012).

The scientific inquiry learning strategy significantly improves students' science process skill p (0.00) < 0.05; contained in Table 2). Postes value after being given a study with scientific inquiry significantly increased compared to pretest values, pretest grade control values and post control class values. Further test results with LSD show that the postes value after learning with scientific inquiry is significantly different from the pretest value, the control class postes value, and pretest control classes. Postes value after learning with scientific inquiry has the most significant influence to the students' science process skills with an average of 73.6 (Rofi'ah *et al*, 2016)

Based on the descriptions that have been exposed above, then this research is titled " **The Effect Of Scientific Inquiry Learning Model On Student's Science Process Skill In Simple Harmonic Vibration Matter For Class X SMAN 1 Perbaungan** "

1.2. Problems Identification

Based on a background was authors identified above, the problem as follows:

1. Student learning outcomes for physics lessons are still low
2. Students find it difficult to understand physics.

3. Learning media conducted/applied by the teacher has not been optimal so that students have not been motivated to learn.
4. The expected competencies have not been fully achieved in learning.
5. The lack of time when follow Simple harmonic vibration.
6. Students do not understand certain material that is abstract.
7. Students are bored and tired of the material physics.
8. Physics learning generally with lecture or conventional methods.
9. Use of teaching media relying on the blackboard,
10. The Score of Physics Examination still under of average.

1.3 Problems Limitation

To provide a clear scope in the discussion, it is necessary to limit the problem in this study as follows:

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

1.4 Problems Formulation

Based on the limitations of the problems that have been stated above, then the formulation of the problem in this study at SMA Negeri 1 Perbaungan academic year 2017/2018 Class XI of Semester 2 in sub Simple harmonic vibration.

1. How the science process skills of students taught using Scientific Inquiry learning model?
2. How the science process skills of students taught using conventional learning model?

3. Is there an increase in Scientific Inquiry Learning Model on student's science process skill?

1.5 Research Objective

Based on the formulation of the problem, the objectives to be achieved in this research at SMA Negeri 1 Perbaungan academic year 2017/2018 1. Class XI of second semester.

1. To know the science process skills of students taught using Scientific Inquiry learning model.
2. To know the science process skills of students taught using conventional learning model.
3. To know the effect of Using the Scientific Inquiry Learning Model to the students' science process skills compared using the conventional model.

1.6 Research Benefits

1. For provide opportunity to student for expand insight knowledge in the learning process.
2. For material input for physics teachers in selecting appropriate learning model.
3. For provide experience on reader in embed concept - the concept physics.
4. For reference for researcher in do more research further.

1.7 Operational Definition

Operational definition presented in this study as follows:

1. Effect is the power that exists or arises from something (people, things) which contributes to the forming of a person's character, belief, or deed. In this study the intended influence is the power that arises due to the use of interactive multimedia that it can deliver changes in student learning outcomes.

2. student’s science process skill are the occurrence of behavioral changes eg from not know to be know and from not understand to be understood. the learning outcomes in question is a change that occurs on students both change attitudes and knowledge gained during the learning process of optical devices..
3. Model is an example, a pattern, a reference. "Scientific inquiry" is a learning model that emphasizes the process of finding and discovering the subject by guidance, but the teacher still acts as a facilitator and student coach in learning.