CHAPTER I
INTRODUCTION

1.1 Background

Physics is part of the natural science related by way of find out about natural phenomenon that can be observed and can be measured systematically. Physics is not only a mastery of knowledge in the form of a collection of facts, concepts, or principles, but also the a process of discovery. Science learning process is characterized by the emergence of the scientific method that materialized through a series of scientific work, values and scientific attitude.

Based on the experience of researcher, Teaching experience program in school at Senior high school during 3 months, learning process is done in the classroom showed that students only receive information during learning activities take place. Students just think that to learn it was only done in the classroom or school. Researchers result from the number of students who giving less attention and actively participate in learning activities. Students were bored, and less interested in the subjects of physics and ultimately the acquisition of learning achievement is not as expected. However, learning more emphasis on mathematical calculation without a deep understanding of the concepts contained in physics.

Although it has been the implementation of the new curriculum, student achievement has not yet reached a maximum. Many students who have not be able to achieve the competency standards set by the government. This occurs from Several factors reviews such as students interest in learning. Based on the analysis on student test results showed there are many students who received low score. Therefore, we need a method or model of learning which is very appropriate to enable students in the learning process.

Based on the analysis of the problems given in the replay, we known that such questions are made to test the students cognitive abilities that include aspects of the understanding and application of concepts. From these data, it can be shown that the level of student achievement is still low. Teacher should strive using the approach, methods and models to achieve the purpose that engage

learners in understanding a concept. It is intended that the knowledge that a student can mean minimal for himself.

Students choose to study physics with experiments. Students are easier to understand and be able to clearly understand the concepts contained in physics. Students can remember in a longer period of time when compared with the results obtained from the lecture method. Furthermore, students are very difficult to work on the problems of physics because they have to memorize formulas are very much without knowing the meaning / concept of what is contained in physics. Creativity of teachers that less encourages students to interested in the subjects of physics, so that the results of the learning process is not as expected.

Teachers most influence on the learning process, because the teacher as transmitter of material to students, should be able to convey the material to be covered by appropriate methods and media and attractive. It will be impact on student success in learning to follow and do the assignment of teachers. According Chrispeels (2015) both of teachers and students valued working in collaborative team. Collaborative learning refers to students working together toward a common goal in small groups. Based on Dole and Bloom (2015) identified five factors that play an important part in teachers decision to use students centered pedagogy. Those factor are : (1) recognition acceptance of new roles and responsibilities on the part of teachers and learners, (2) comfort level of teachers and learners, (3) tolerance for ambiguity and flexibility, (4) confidence in integrating technology and (5) integration of the new pedagogy within the larger realities beyond the classroom.

There are three main requirements that must be owned by a teacher in order to be a good teacher, as follow : (1) master teaching materials, (2) learning skills, and (3) evaluation of learning. In the teachers mastery of learning skills required to use a variety of instructional strategies. Appropriate learning strategies and can attract the attention of students so as to create a fun learning environment and can achieve the expected learning objectives.

The curriculum of 2013 have three learning models proposed, as follow: Discovery Learning, Project Based Learning and Problem Based Learning and using a scientific approach. Researchers chose to use a model of problem based

learning as it is considered very appropriate to make the learning process. Problem based learning model is one of the innovative learning model that can provide active learning conditions for students. According Jin, Bridge, and Botelho (2015) Problem Based Learning is scaffolded, indeed, through the different strategies embedded process. Skinner, Mayer, and Winning (2015) said that problem based learning have three stages, such as : stage 1: Importance of Knowledge; stage 2: Gathering Information; stage 3: Exchanging Information. Problem based learning an instructional model that involves students to solve an instructional model that involves students to solve a problem through the stages of scientific methods so that students can learn the knowledge related to these problem and also have the skills to solve problems.

According to research result Sakai, D'eon, Trinders (2015) using problem based learning model, comparison of scores on the modified essay question (MEQ) examinations were conducted separately for first and second year students. Statistically significant difference among the three group of tutors was found (F(2.611) = 1.70). statistically significant difference with a effect size, where faculty performed on average 1.7% point better on the MEQ than senior students under supervision. Makin research result (2015) which also applying problem based learning model from 142 responses for this equestion, 35.2% (n=50) of reqcruit recommending more PBL elements,26.8% (n=38) recommended more paramilitary training. It's mean that problem based learning more effect than another model.

The problem previous research at the above is need a long time to carry out experiments and sometimes overwhelmed teachers in implementing coach against the group in turn. Based on the description above, the results of research conducted, researcher is interested in doing research with different materials, a study, research lesson plan shape don't have problems to be solved by the students so that researchers try to cover up the shortcomings of previous research that objective to improve the learning outcomes of students with physics lifting the title **"The Effect of Problem Based Learning Model For Students Learning Outcomes In The Subject Matter of Thermodynamics In Class XI SMA Negeri 2 Kisaran Academic Year 2014/2015"**

1.2 Problem Identification

Based on above background, which is the identification of problems in this study are as follows:

1. The ability of class XI SMA Negeri 2 Kisaran to understanding the of Thermodynamics still low cognitive
2. Teachers didn't have idea to create learning process so that students are less interested to learning
3. The learning model used has been not effective for teaching proccess
4. Teacher not making students more interesting to think about find out the concept of physics in our life
5. Teacher response to the student's work just answer right and wrong without giving a reasons
6. Teacher not using media in learning proccess
7. The low cooperation among students in solving problems during learning process
8. The Learning outcomes is low
9. The existence of a false perception of the concept of physics
10. Implementation of the learning process is still using a teacher-centered methods

1.3 Limitation Problem

Because of the breadth of the problem and less of expertise, time and cost, the researcher needs to make the Limitation Problem in this study are:

1. The subjects were students of class XI SMA Negeri 2 Kisaran T.P. 2014/2015
2. The learning model used is a model of problem-based learning
3. The results of student learning in the subject matter of Thermodynamics
4. The result of learning process only the affective aspect
5. The learning process in subject Thermodynamics until the second law of Thermodynamics

1.4 Formulation of Problem

Based on the limitations problems described above, the formulation of the problem in this study are:

1. How the student learning outcomes in Thermodynamics of the material by applying a model of problem-based learning in class XI SMA Negeri 2 Kisaran Academic Year 2014/2015?
2. How the student learning outcomes in Thermodynamics of the material by applying the model of convensional class XI SMAN 2 Kisaran Academic Year 2014/2015?
3. Are there any influence of problem-based learning model for student learning outcomes in the material Thermodynamics of class XI SMAN 2 Kisaran Academic Year 2014/2015?

1.5 Objective of Research

The purpose of this research are :

1. To find out how are student learning outcomes in Thermodynamics of the material by applying a model of problem-based learning in class XI SMAN 2 Kisaran Academic Year 2014/2015.
2. To knowing how are student learning outcomes in Thermodynamics of the material by applying convensional method class XI SMAN 2 Kisaran Academic Year 2014/2015.
3. To knowing are there any influence of problem-based learning model for student learning outcomes in the material Thermodynamics of class XI SMAN 2 Kisaran Academic Year 2014/2015.

1.6 Benefit of Research

The benefits of this research include the following:

1. As the information for schools to determine student learning outcomes in the material Thermodynamics,
2. As an input for the teacher to determine the application of problem-based learning model for student learning outcomes in Thermodynamics,

3. To increase the knowledge of the authors related the learning process in schools,
4. As a reference for other writers who will held a research with related titles,
5. As input for researchers as prospective teachers in the task of teaching, especially in learning the material Thermodynamics for the future.