CHAPTER I
INTRODUCTION

1.1. Background

Teaching and learning process is the core of the educational process as a whole the teacher become the primary role holder. Teaching and learning activities is a series of activities between teachers and students as a basis of reciprocal relationships that occurs in an educational situation to achieve educational goals. Learning process is regard to the cognitive, affective, and psychomotor.

Learning often emphasize only to the cognitive aspects on remembering activity, understanding activity, and applying activity. In future, the learning in the cognitive aspects required and must develop problem solving ability. Include in the teaching and learning of physics.

Basically students have skills or ability in learning, for example, questioning skills, hypothesis, investigation, observation, classification, prediction, interpretation, and communication. However, these skills are sometimes not appears to learn problem solving ability that gave rise to these students. Therefore, to develop and improve the skills or ability of the learners need a model of learning so that students can be actively involved.

According to one of the International Study on student's cognitive abilities are TIMSS (*Trends in Mathematics and Science Study*) conducted by the IEA (*International Association for the Evaluation of Educational Achievement*). TIMSS 201 results in physics field shows that the Indonesia gained 397 values, and this value is below the international average is 500. The data indicates that the absorption of students in physics learning. Based on the results of TIMSS, it can be said that the students' ability of problem solving skill Indonesia is still low.

Results of interviews with physics teacher about student learning outcomes are seen from daily test is still low and evidenced by average value in semester exams in class X SMA Negeri 1 Panyabungan. Students in X just reached 64 score in final examination physics lesson. Student in XI achieve score 62, then student in XII just

reached 62. Those are average score student reached in final physics examination. It's too far from absolute score (KKM) 75 who students must reached. In addition, students are not familiar to solve physics problems in divergent question.

Based on observations made by researchers and distributed to students in Senior High School (SMA) Negeri 1 Panyabungan is still dominated by the conventional learning. Teacher use conventional learning from beginning till end of learning process, teacher just use question and answer, discussion tends to procedural and more emphasis on learning outcomes, instead of the understanding of the concept. From the data of learning physics is still relatively low about the cognitive. And also obtained the students are have less interested with the physics subject. Most of the students said that physics is a difficult subject to understand, boring, and most formulas, concepts, theories also considered complicated. This is also evidenced by the low activity of students in the learning process. Besides that, the questions that presented by teachers and also the examples of which are given focused by the formulas. Without explaining the detail concept beforehand, this causes student using the wrong formula for completing the assignment from teachers, and if the problem is different from the example given by teacher, the students will be confusion solve it.

It is also due to the learning model used is less varied. Teachers simply use the conventional model, where the learning system centered on teachers, and more actively and students only passively. The Student follow the direction of the teacher and listen to what the teacher explained, and are not required to express an opinion, discuss or investigate the knowledge that obtained so significantly less tedious and experience saturation. In addition, the lack of ability of the students to connect the concepts of physics are taught by teachers with daily life as causes less interest students learn physics.

In achieving learning standard and to obtain a high learning outcomes include problem solving skills are not only supported by facilities, learning models are also influential. In the subject matter of physics, not all the learning model can be implemented well, therefore the selection of learning model leads to successful learning objectives. If the learning model used involves an active role in the learning

process, it is able to improve student learning outcomes to achieve problem skill. In problem-based learning (PBL) courses, students work with classmates to solve complex and authentic problems that help develop content knowledge as well as problem-solving, reasoning, communication, and self-assessment skills (Stanford University, 2001: 1).

Research of models with the type of problem based learning has been made by Pinar Celik, *et al* (2011) about success in Physics course. The result showed that the average score of students who give problem based model 78.85 and control class just raised 61.45. Hasanul Hadi, *et al* research showed control class using conventional learning and experiment class using problem based learning model. The result showed that the average score of students who give problem based learning model 62.3 and control class just raised 56.

Based on the above explanation, so the student need a learning environment that engages students actively or in other words emphasize the involvement of students in the learning process so that the students are more understand and also understand the material being taught and become more active. Because basically learning is a change in behavior that results from the learner's interaction with the environment (Michael, 2003: 3) .In this case the process of the work done by a person to obtain a new behavior change as a whole, as a result of experience by itself in interaction with the environment. The researcher proposes problem based learning model to overcome or to be solution to solve the matter. Problem based learning is one alternative that is innovative learning with constructivism based.

However, the problem based learning model has weaknesses in its application. Weaknesses of the problem based learning model, for example the conditions not conducive to school, need tools and infrastructure that not all schools have them, and require a long time. Based on the above description, the researchers will conduct research under the title **"The Effect of Problem Based Learning Model toward Student's Learning Outcome in Dynamic Electricity Subject Matter at SMA Negeri 1 Panyabungan Academic Year 2015/ 2016".**

1.2. Problem Identification

From the explanation above, can be identified the scope of the problem, namely:

1. Students assume that physics is a lesson that still less interesting and difficult to understand.
2. Less interest in learning that is focused on the formula, physics learning process is teacher center, and rarely to conduct with experiment.
3. Teacher respond to the student's work just answer right and wrong without the reason, and less of problem solving skill.
4. The using of a less varied learning models, as well still a low level of understanding of the concepts.

1.3. Problem Limitation

Based on the identification, the researcher limit this problem, there are:

1. Learning model that use is problem based learning model.
2. Research conducted in two classes namely control class and experiment class that implement of problem based learning model.
3. Subject matter that will be present is Dynamic Electricity.
4. The results of the study examined only cognitive aspect actually problem solving skill.

1.4. Problem Formulation

Based on the above problem definition, formulation of the problem in this study as follows:

1. How the results of the student's learning outcome as a student's problem solving ability using problem based learning model in Dynamic Electricity subject matter at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017?
2. How the results of the student's learning outcome as a student's problem solving ability using conventional learning model in Dynamic

Electricity subject matter at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017?

3. Is the result of the student's learning outcome as a student's problem solving ability using problem based learning model better than using conventional learning model in in Dynamic Electricity subject matter at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017?

1.5. Research Objectives

There are some research objective items, namely:

1. To Analysis student's learning outcome as a student's problem solving skills by using problem based learning model in Dynamic Electricity subject matter at at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017.
2. To Analysis student's learning outcome as a student's problem solving skills using conventional learning model in Dynamic Electricity subject matter at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017.
3. To analysis which one better use about student's learning outcome as a student's problem solving skills by using problem based learning model and conventional learning model in Dynamic Electricity subject matter at SMA Negeri 1 Panyabungan Academic Year 2016 / 2017.

1.6. Research Benefits

After the research is completed, the expected the research benefits are:

1. Student likely and mastery study physics, because can pull out, thinking, discuss, foster a scientific attitude to develop a fundamental skill, conclude the physics lesson.
2. For physics teacher as output in an effort use the model in physics learning to improve student's problem solving skill and as varied of model that can used.