CHAPTER I

INTRODUCTION

A. Background

Science is observing the world, asking questions, and making discoveries. It is about developing experiments and increasing one's knowledge and sharing knowledge with others. Understanding science can be a powerful thing because it can change one's view of the world (Archer et al., 2010). Unfortunately, most students do not have an accurate perception of science (Skamp & Logan, 2005). In their view science is associated with memorizing facts and completing lab sheets. Despite the excitement that science can bring into one's life, a majority of middle school students do not have a passion for science. Many students enter a science classroom with the idea that science is boring and irrelevant to their world (Skamp & Logan, 2005). A majority of students view science as something that is unexciting, just boring facts that scientists know, and that students are required to learn (Pickens & Eick, 2009).

Science begins for children when they realize that they can learn about the world and construct their own interpretations of events through their actions and experience. Doing science, as opposed to simply hearing or reading about it, engages students and allows them to test their own ideas and build their own understanding (Ewers, 2001). Therefore, it is difficult to imagine a science-teaching program without doing science experiences.

Physics as a natural science subjects are objects of interesting and requires a lot of understanding rather than memorization. However, the reality of physics is often seen as a difficult subject and less attractive and therefore contributes to the learning outcomes and learning achievement by students. For students, physics is

difficult subject to understand and less attractive if only delivered in a lecture, students tend to get bored and the material presented is not really understood by the student while in physics there are many interesting things is known due to the physics can be connected with our daily life. In addition, the problems that appear in the process of learning physics is teachers rarely use the appropriate media and tend to be monotonous.

The low student achievement in physics can be caused motivation, interests, health conditions, subject matter, and learning strategies. Thus factors are influence in learning outcomes students. Learning strategy models and methods have a role in improving student achievement. Implementation of appropriate learning models will affect the learning achievement because it will allow students to learn in a given absorbing material. Contextual learning model is a model that involves students in searching, finding and applying materials into daily life.

Based on the study literature, teacher rarely use experiment in their learning. Teachers are often using conventional method that makes students get bored. Students need experiment for their learning. Students should to explore and understand the scientific environment and students need to know that physics is related to their daily life.

According to (Mary LeFever, 2011) Light is simultaneously concrete and abstract to middle school students. It is concrete because students have direct experience with it daily. It is abstract because it is intangible. The lessons and activities in this section are designed to facilitate the abstract to the familiar so that students are able to construct accurate conceptions of the nature of light. According to (Lauren Beal, 2006) about reflection lesson, nearly all of the students represented

light in some sort of straight-line path, with many adding direction (or multiple directions) with arrows. Also, the majority of students recognized the reflection occurring through the mirrors, glass and other smooth surfaces. What they did not recognize, however, was the diffuse reflection occurring as light interacted with all of the objects in the room. Students supported their ideas – even though they were often misguided – by using their personal experiences. This shows that the students need to experience the scientific concepts through hands-on activities so the concepts can become part of their personal experience. Although students struggled with some ideas about light interactions, most understood light traveled in straight-line paths. In light reflection lesson, teachers predominantly use conventional learning models with lecture methods, notes, and give the problems so that student interest in physics tends to decrease.

One effort that can be done to solve the problem is to implement *hands-on learning activity*. According to previous research (Özlem Ates and Ali Eryilmaz, 2011) hands on activity will allow students to build on personal experience, use a hands-on approach to understand more about reflection and connect this scientific concept to real-life activities, Providing junior high school students with hands-on activities that directly involve them in the learning process have been shown to improve students'‟ science learning and achievement as well as improve their attitudes towards science (Satterthwait, 2010). Not only do hands-on lessons increase student interest, these lessons provide opportunities for students to see and experience an event for themselves, test predictions based on their (or others‟) ideas, and to experience doing "real" science (Skamp, 2007). When instructing students on a hands-on activity, it is important for teachers to draw on real-world experiences and help students find ways to connect content with their lives (Ramey-Gassert, 1997).

Discovering personal meaning in a topic will most likely increase student interest and motivation to learn (Skamp, 2007). Students need to have the opportunity to experience what real science is, not just hear about it. Based on the description above the researchers interested in conducting research with the title: ***The influence of hands on activity on students achievement in the concept of light reflection in junior high school***

B. Statement Problem

"How is the effect of hands-on activity on student's achievement in the concept of light reflection in junior high school grade eight science learners?"

Specifically this research is formulated in several specific problem questions, there are:

1. How is the influence of hands on activity to student's achievement in the concept of light reflection?
2. How is the respond of students after teaching by using hands on activity?

C. Research Limitation

To avoid misunderstandings and expansion problems, in order to research more focused and clearly it is necessary to limit the problem as follows:

1. Student achievement to be studied is a success rate of student learning in the cognitive aspects, namely aspects such as remembering (C1), Understanding (C2) and applying (C3).
2. The material used in this study is light reflection (law of light refraction, diffuse reflection and regular reflection, the light reflection on a flat mirror and the light reflection on concave mirror)

D. Objective

1. To know the influence of hands on activity to student's achievement in the concept of light reflection.
2. To know the respond of students after teaching by using hands on activity

E. Research Benefit

1. For teacher

Hands on activity make a teaching method fun. If the kids are learning and having fun doing it, then I am having fun at my job, and I am a happier person overall. (*Jeff G. Brodie, fifth and sixth grade teacher, East Side Elementary, Edinburgh, IN)*

2. For students

Increased students learning, increased motivation to learn, increased enjoyment of learning; increased skill proficiency, including communication skills, increased independent thinking and decision making based on direct evidence and experiences, and increased perception and creativity. Explore and understand the scientific environment.

3. For researchers

1. As input and adds insight for researchers as prospective teachers in teaching physics to the future.
2. As the improvement of variety learning of research especially in the world education**.**
3. As comparative material for the next researchers who will examine with the same learning.

F. Assumptions

1. Hands-on learning has been shown to increase learning and achievement in science content *(Bredderman, 1982; Brooks, 1988; Mattheis & Nakayama, 1988; Saunders & Shepardson, 1984)*
2. Hands-on learning means many different things to different people. It has become a slogan and is often used to describe any activities in classrooms that use materials. As a slogan, it can easily become a fad. Hands-on learning, however, is not simply manipulating things. It is engaging in in-depth investigations with objects, materials, phenomena, and ideas and drawing meaning and understanding from those experiences

G. Hypothesis

Ha: There is significant influence in improvement of student's knowledge in the concept of light reflection in eight grade student's class using hands on learning activity strategy comparing with >80 KKM physics minimum standard

Ho: There is not significant influence in improvement of student's knowledge in the concept of light reflection in eight grade student's class using hands on learning activity strategy comparing with >80 KKM physics minimum standard