CHAPTER I
INTRODUCTION

A. Background

Science sometimes cannot be understood easily by students so it needs innovation in teach science to make the students can understood the topic easily, make the students more active and creative and make them sharper their thinking. The common situation in the learning process is the teacher stands in front of the class, explaining and illustration by help of the white board and it can make the students' cannot express their creativity. It generally happened in all subject include science subject. Those teaching method will make the students not interested to learn in the class.

This problem might be solved by using other teaching method such as experiment or practical method. According to Demircioğlu and Yadigaroğlu (2011) stated that laboratory method can enhance more students' understanding of the reaction rate than the traditional teaching. While based on Usman, et al. (2014) stated that the use of practical methods can effect in improving the students' learning outcomes in cognitive and affective compared to the use of demonstration methods. So, it means the learning process should be interesting and the teacher is able to make the students become more creative by triggered them and conceive them using certain ways that can enhance students' understanding and stimulate students' creative characteristic and curiosity for example by using experiment or practical teaching method.

Nowadays, students have to involve more in the learning process. The teaching methods must be students centered and the teacher should encourage them by several teaching methods and also trigger them to be more exploring their thinking and more think creatively. The roles of teacher in the lesson also very influence the students' thinking like creative thinking. According to Ndeke, Okere and Keraro (2015), in teaching, science teacher should include scientific creativity, especially in their teaching methodology. So, the teacher can teach the

students by triggering the students to encourage the creative character of students' can comes out. Lucas, Claxton and Spencer (2014) stated that there is increasing consensus regarding the disposition that could become as an indicator of the creative power of the individual mind. The one of indicator in creative disposition is imaginative and still according to Lucas, Claxton and Spencer (2014), teaching should be carried conducive for students to use their imagination, they need the confidence to believe that they could be imaginative (particularly girls). This will help teachers to identify the characteristics of creative students and encourage them and also provide a suitable environment for its development. The students should more active, not only sit, pay attention to the teachers' explanation and writing but also should be more active like the statement of Saavedra and Opfer (2012) that students need argue and the students need to get another way of learning not only the basic reading and writing, skills and knowledge across disciplines but also core competencies in critical thinking, creativity and innovation, problem solving, communication and collaboration.

According to Widodo and Ramdaningsih (2006), there are several ways to observe the students' creative disposition when the learning process is conducting which is observing the learning process directly and observe the learning process by record the learning process using camcorder. It can help the researcher to observe students' creative disposition. But, directly observing the learning process in class is little bit difficult and the data may not complete because of something missed. But observing the learning process with help by camcorder, it can be replay and possibility of missing in the observation is small so it can help to analyze students' creative disposition using the video. It is hard to analyze the video by only watch the video, so it needs software that can help to analyze the video. The software itself called Videograph.

As teachers, it is very important to allow the students to express their creativity. There are several ways to measure the students' creativity. The creativity of student also can be seen by their result of their product or their project making. According to Corazza and Agnoli (2016) history has shown that most of the important creative product produced at a young age. Product refers to

an idea in a real form. A product can refer to physical objects, ideas, systems, services or processes.

In instructional outcome, students' understanding is one of important element to be measured because students' cognitive skill can be represented as students' understanding. Then, the students can be included as students who understand have several characteristic like the statement of Anderson, Krathwohl, and Bloom (2011) which is student can be conclude as understood students if they are can construct meaning from instructional message, including oral, written and graphic communication, however they are presented to student during lectures, in book or on computer monitor. Student understands when they able to build connection between the new knowledge to be obtained and their prior knowledge.

The one of topic that can be taught to investigate the creative disposition in the lesson and students' creativity for Junior High School students is heat transfer. Heat transfer topic can be taught by methods that can more involve the students in the learning process because there's lot of experiment on it. Those experiments can increase the knowledge of students in learning heat transfer. Then, Heat transfer is needed to be taught to Junior High school seventh grade students as stated in Physics for Cambridge IGCSE that are attached in document of Cambridge curriculum for secondary one of Junior High School Students. By learning heat transfer, not only the cognitive of students that can be measure but also students' creativity. It is because there are several products that students can create by learning heat transfer topic and the example is creating a thermos. Thermos is one of product that taught in one of sub-topic of heat transfer which is the application of heat transfer that stated in Physics for Cambridge IGCSE for secondary one of Junior High School Students. The creativity of students can be measured by analyze their product.

B. Research Problem

The research problem of this study is 'How is The Impact of Practical Works on Creative Disposition, Students' Creativity and Understanding in Learning Heat Transfer?''

Elaborating the research problem, the research attempts to explore the following questions:

1. How is the impact of practical works on creative disposition in learning Heat Transfer?
2. How is the impact of practical works on students' creativity product in learning Heat Transfer?
3. How is the impact of practical works on students' understanding in learning Heat Transfer?

C. Research Objectives

The objectives of this research are as follow:

1. To investigate the impact of practical works on creative disposition in learning Heat Transfer.
2. To investigate the impact of practical works on students' creativity product in learning Heat Transfer.
3. To investigate the impact of practical works on students' understanding in learning Heat Transfer.

D. Research Benefits

The results of this research are expected to provide the benefits as follow:

1. Teacher

   For teacher, this research will help the teacher to decide which teaching method that can improve the creative disposition in the lesson. And also this research will help the teacher to decide which teaching method that can encourage the students' creativity product and understanding. The teacher will know which method between experiment or practical method and

demonstration method that affect the creative disposition in the lesson, students' creative product and also students' understanding.

2. Students

   For students, this research will tell them that the role of teacher is influencing their thinking. And also they will know that their creativity can be encouraged by someone especially teacher and also the teaching method. Then, they know that they must have creative thinking because it can affect their understanding.

3. Another researcher

   For another researcher, this research will be a consideration if the researcher will make a research that related with observing the creative disposition in the learning process by helped of camcorder. Then, it will give them more information about which one between experiment method and demonstration method that can affect the creative disposition in the lesson, students' creativity and students' understanding in learning heat transfer. This research might inspire other research to make a research about the creative disposition in the lesson by observing the learning activity but to learn another topic in science or maybe another subject and also using another method of teaching.

E. Organization Structure of Research Paper

The structure of this research paper consist of five chapters:

1. Chapter I. Introduction. This chapter contains the background of the research, research problem, research objectives, research benefits, organizational structure of research paper and limitation of problem.
2. Chapter II. Literature Review. This chapter contains literature review about Experimental or Practical Method, Creative Disposition Model, students' creativity, students' conceptual understanding, Heat Transfer, and relevant research.
3. Chapter III. Reseach Methodology. This chapter contains the method that is used to finish this research paper, which are research method and research

design, population sample, operational definition, research instrument, data collection, instrument analysis, data collecting, data analysis technique, research procedure, and research scheme.

4. Chapter IV. Results and Discussion. This chapter contains the results as well as the discussion of this research paper.
5. Chapter V. Conclusion and Recommendation. This chapter contains the conclusion of research paper as well as the recommendation for future research.

F. Limitation of Problem

In order to make the research become more focused, the problem is limited as follow:

1. The creative disposition that is measured in this research involve the five creative disposition models which are inquisitive, persistent, imaginative, collaborative and disciplined that stated by Lucas, Claxton and Spencer (2014) and for students creativity product use three creativity dimensions, i.e novelty, resolution, and elaboration and synthesis that stated by Basemer and Treffinger (1981).
2. Students understanding that is measured in this research involves level cognitive of Understanding (C1, C2, C3 and C4) that stated from Anderson et al., which is, Construct meaning from instructional messages, including oral, written, and graphic communication.
3. In this research, the topic is Heat Transfer and the sub topics are conduction, convection, radiation and application in daily life that limited by Physic for Cambridge IGCSE that are attached in document of Cambridge curriculum for secondary one Students.