

# CHAPTER I

## INTRODUCTION

### A. Background

The world is moving and everything inside is developing. Knowledge and technology are two of the influential subjects that contribute on complexity of world and let life to get easier at the same time. Appliances to support living, stuff to help working, informational transfer system, and other new inventions are letting creativity as well as innovation to become increasingly important for the development of the 21<sup>st</sup> century knowledge society. Before the need to invent, people are basically forced to be able to work and operate certain features, which technically require skills such creativity. Creativity is a conceptualized as a skill for all (Ferrari *et. al*, 2009). This skill is needed by everyone, used for any discipline, and can be developed through certain habit. Creativity is linked to many areas, not only in arts. Creativity also plays important role in technological advance, social and behavioral, entrepreneurship, as well as science and education. At the same time, creativity needs knowledge expertise to assess relevant information in expressing ideas as it play important part in cognitive area through the function of brain.

The condition is, creativity is not considered as an important aspect in educational system. Schools tend to train students only on remembering

knowledge. Educational system in Indonesia also not yet provide a conducive place for potential creative students to develop their skills. Rather than developing creativity and thinking process, students in school are forced to remember materials only (Sebastian, 2010). Cultural and Educational Department of Indonesia stated that education has to be able to maximize the potential of talented students to develop life in nowadays and a better future by participating to create a better life. The problem is, creativity seems to be determined as an additional skill. Creativity is not an indicator of talented students that perform intelligence. Renzuli (1981) in Munandar (2009) explained that talented students are basically need to perform creativity and motivation in creating achievement, while Gardner (1993) in Chatib (2013) stated that students with intelligence are the one who able to find and solve problems to create products of value in one's own culture by involving problem solving and creativity. Creativity is not naturally given, but it is a skill that can be developed through certain habits, which means that every student are talented and perform intelligence, as if they can perform creativity in their habits.

Every student has the same right to be creative and get full access in developing their creativity from curriculum (Beetlestone, 2012). As most of learning processes are still grounded by remembering rather than understanding, teaching and learning activity needs to promote real experience in daily life or workplace that related with concept application, the essence, and the principle of knowledge that being learned (Departemen Pendidikan Nasional, 2013). Students should be equipped to develop their skill and potential through learning process, not only in term of achieving high score in remembering test. Especially in learning science, environmental issues are becoming an important focus of science implementation in daily

life nowadays. Science stated as a hard subject to be understood by students, but it is really important to be learned.

A preliminary study of diagnostic interview was done by interviewing science teacher in one of the private international school. The teacher explained that school is used to implement several teaching method in providing students with needed skills. One of the learning activities that provide students with creativity is science mini-project. Science mini-project activity consists of short practical problems in science which gives opportunities for students to construct their own knowledge through experience which leads into meaningful learning (Bhattacharyya & Bhattacharya, 2009). The problem is, even though the school is already used to apply science mini-project activity, and teacher is agreed that students gain more experience through it by showing motivation and better understanding, focus of creativity is still being neglected. The teacher is not really sure about the creativity of students itself as it has never been a subject of study before. In the end, related teacher, is questioning back how science mini-project able to equip students with creativity in supporting their concept understanding.

Based on this situation, researcher is get involved on one of the implementation of science mini-project in elaborated school as subject of research to investigate students' creativity and concept understanding in natural setting.

## **B. Problem Identification**

According to the elaboration on background above, facilitating classroom activity to provide students with their creativity is important. Not every classroom activities give an answer for this problem, and science mini-project is categorized to be one of them with supported condition without neglecting the importance of concept understanding.

Through science mini-project activity, students' creativity and concept understanding is investigated. How science mini-project could facilitate students with creative learning to show creativity profile based on product, and how concept understanding of students supports creative product ideas in giving solution toward given problems on science mini-project activity.

### **C. Research Problem and Questions**

Based on the background above, the research problem is “How is the profile of students' creativity and concept understanding on science mini-project activity in energy conservation?”.

By the problems above, this research purposed to answer the following questions:

1. How is the profile of students' creativity on science mini-project activity in energy conservation?
2. How is the profile of students' concept understanding on science mini-project activity in energy conservation?
3. How is students' response toward the facilitation of creativity and understanding on science mini-project activity in energy conservation concept?

### **D. Research Objectives**

Based on the problems that elaborated above, the objectives of this study are:

1. To investigate the profile of students' creativity in energy conservation concept through science mini-project activity,
2. To investigate the profile of students' concept understanding due to their creativity through science mini-project activity in energy conservation,

3. To investigate students' response toward the facilitation of creativity and concept understanding on science mini-project activity in energy conservation.

#### **E. Research Benefits**

This research is expected to give benefits for:

1. Researcher; in giving contribution towards the development of science education,
2. Subjects of research;
  - a. By giving new experience of learning science that differs from usual,
  - b. Providing opportunities to have classroom activity with several skills and competencies, especially creativity and concept understanding in creative product ideas making,
3. Educators; as an insight in giving towards new kind of thing as focus of research and learning; which is creativity,
4. Other researchers; as a point of reference and information in running further research in science education or comparative material for next research which may examine the same focus of problem.

#### **F. Organization Structure of Research Paper**

This research paper is arranged based on the following organization structure:

1. Chapter I: Introduction

First chapter is the elaboration of research background that followed by problem identification and research questions. Chapter I also consisted of research objectives and its benefits for various sides.

2. Chapter II: Students' Creativity and Concept Understanding in Science Mini-Project Activity

Second chapter covers the literature review about students' creativity, concept understanding, and science mini-project activity. It elaborates some relevant literatures, theories, and previous findings of the research. As this research is reviewing students' creativity, concept understanding in science mini-project activity, the present of chapter II is important to support data gained from research.

3. Chapter III: Methodology

The third chapter of methodology elaborated the method of research including its design, subject of study, operational definition, way of collecting and analyzing data, as well as the research plot.

4. Chapter IV: Result and Discussion

In chapter IV of result and discussion, data gained from research are presented and analyzed on discussion to elaborate the occurring phenomena of natural setting and correlate with the theories.

5. Chapter V: Conclusions and Recommendations

For the last chapter, it is elaborated the answer of research questions that stated before. Besides, obstacles that found during this research are presented as recommendation for further research.