CHAPTER I

INTRODUCTION

1.1 Background

Science is very important to understand the world and for future. It is in line with European Commission Directorate General for Research and Innovation Science with and for Society (2015) that science helps to explain and understand the world, to guide technological development and innovation and to forecast and plan for the future. Therefore, science should be learned for the better future. Especially in junior high school, students learn science in science education subject. The main purpose of science education should be to enable students to determine the decisions, actions that affect society and environment which is noted by Association for Science Education (2010).

Learning science is very important to affect society and environment, but learning science is relatively difficult, for both successful and unsuccessful students (United Nations Educational, Scientific and Cultural Organization, 2010). In a traditional science class, a teacher stands at the front of the class and teaching a passive group of students. Those students then go and do the homework problems from the textbook and take exams that are similar to those exercises (Wieman, 2007).The main actor in the class is the teacher and it is not appropriate with the condition that should be build which is the teacher is the facilitator inside the class and students should be the main. This kind of condition is not too good to learn science because in line with the statement of UNESCO that science is relatively difficult. Thus, the teacher should create a good condition to increase students willing and interesting in learning science that will make the students easier to understand science itself.

One of the ways to make students interested in learning science is making creative lessons. Creative lessons should encourage students to 'think outside the box' and come up with so many ideas. The creativity of students and teachers are a very important role in learning and teaching process. Students must feel that they are expected to be creative person. According to Trnova and Trnv (2014) the effective teaching strategies influencing creativity are: student-centred activities, link

between teaching contents and real life, management of skills in class, open-ended questions, encouragement of creative thinking and use of technology and multimedia.

Creativity is one of the output that should be existed in students. Especially in science, the student is treated to be creative in order to implement their knowledge in their daily life. There are many different views about what creativity is and how it should be assessed. And in many national curricula creativity is only implicitly acknowledged and seldom precisely defined (Lucas et al, 2014). Research on creativity often has three directions of impact: the creative product, the creative process, and the creative person (Hanke et al, 2011). In this research, students should make a product to show creativity as a creative process of a creative person. As science educators and science teachers can do is to provide an environment that increases the possibilities for creativity to emerge (Hadzigeorgiou, 2012). Creativity can be defined qualitatively and quantitatively: creative persons are able to create a lot of new (quantitative aspect) and useful (qualitative aspect) products (Hanke et al, 2011). The understanding of 'creative' is fairly different from one person to another. The cultural and educational background, perception, expectations, environment can influence the way people perceive the definition of 'creative'. In the simplest way, different people have a different way of interpreting creativity (Majid et al, 2015). Because of that kind of subjectivity, the creativity in this research will be measured by Creativity Measurement Tool (CMET).

Besides creativity, the creative disposition of students will be measured. A disposition is a pattern of behavior exhibited frequently and in the absence of coercion and constituting a habit of mind under some conscious and voluntary control, and that is intentional and oriented to broad goals (Katz, 1993). Dispositions are frequent and voluntary habits of thinking and doing (Voseles and Haughey, 2007). Teachers can diligently plan learning experiences that help children acquire skills and the disposition to use those skills (Voseles and Haughey, 2007). The creative disposition itself will be measured according to Lucas, Claxton, and Spencer (2012) which are inquisitive, persistent, collaborative, imaginative and disciplined.

Meanwhile, researcher expect that each students will produce different creativity based on their prior knowledge, learning process and their experience. By making product and state their creative thinking along the creative process, students be expected to be mastering or understanding the content regarding Newton Law in physics subject. Newton Law is chosen in this research because in this topic there are many things that can be implemented in student daily life. Beside that, in the previous research state that the student teachers' have significant weaknesses in understanding the terms of fundamental knowledge of Newton's Laws of Motion. This may stem from the lack of student teachers to relate scientific knowledge with real-life phenomena and experiences (Arslan & Devecioglu, 2010).Meanwhile according to Kelly and College (2011) Physics study should begin early in a student's academic life, which will promote their interest and potential for pursuing more rigorous physics courses later on. Instruction in the upper elementary years can introduce physics principles and provide the foundation for more in-depth physics learning. So that, researcher expect the students are able to create simple product regarding the topic in order to treat the student to relate scientific knowledge with real life and to promote students interest and potential in learning physics. In the last, students should fill the questionnaire that prepared by the researcher. The questionnaire will be based on five dispositions according to Lucas, Claxton, and Spencer (2013). The score of questionnaire and the score of creative products will be used to investigate the relation between their creative dispositions and the creative product that they made.

1.2. Research Problem

The research problem of this study is "How does the lesson on Newton Law build creative disposition and students' creativity?"

1.3. Research Question

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

a. How does the lesson build student creative disposition in the dimensions of inquisitive, persistent, imaginative, collaborative and disciplined?
b. How does the lesson build students' creativity in making the creative product?
c. How does the relation between students' creative disposition and creative product?

1.4. Limitation of Problem

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

a. Students' creativity disposition is measured according to Lucas, Claxton, and Spencer (2014) which are inquisitive, persistent, imaginative, collaborative, and discipline.
b. Creativity product is measured using creativity measurement tools (CMeT) that consist of 4 dimensions. Novelty dimension, there were 6 items: original, new, obvious, valuable, unexpected, and challenging. Next, is usability dimension, which included 6 items: learnable, operable, practical, size, dynamic, and material durability. Under effectiveness dimension, there were 4 items: cost, maintenance, safety, and marketability. Lastly, was aesthetic value dimension which consisted of 7 items: trendsetting, organized, commercialization, inspiring, green, elegant, and risk-taking (Majid et al., 2015).
c. In this research, the topic is Newton Law that limited by Core Competence No. 3 and Basic Competence No. 3.1 and 4.1. That is attached in Curriculum 2013. The topic that is going to be delivered is straight motion, the impact of motion based on Newton Law, the implement of motion in daily activities, and the impact of force on the motion.

1.5. Research Objectives

a. To investigate the effect of lesson towards creative disposition.
b. To investigate the effect of lesson towards students' creativity.
c. To investigate the relation between students' creative disposition and creative product.

1.6. Research Benefit

The results of this study are expected to provide the following benefits:

a. For teachers, the result of this is research can be used as:
    1) A reference to develop students' creativity that can be applied in the teaching process.
    2) Promote teaching activity which can improve creative teaching and learning process.

b. For students, using this model can make the student:
   1) Making students enjoy to learn, explore students' skills and communication.
   2) Providing students to learn how to work as a team in making project.
   3) Giving students a bigger chance to show their creativity in the learning process.
c. For another researcher, this research can be as a literature to develop creative disposition that used in science education.

1.7. Organization Structure of Research Paper

The structure of this research paper consists of five chapters:

a. Chapter I. Introduction. This chapter contains the background of the research, research problem, research questions, limitation of problem, research objectives, research benefits, and the organizational structure of research paper.
b. Chapter II. Literature Review. This chapter contains literature review about Creative Disposition, students' creativity, and Newton Law.
c. 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, research procedure, research scheme and Instrument analysis result.
d. Chapter IV. Results and Discussion. This chapter contains the results as well as the discussion of this research paper.
e. Chapter V. Conclusion and Recommendation. This chapter contains the conclusion of a research paper as well as the recommendation for future research.