

CHAPTER 1

INTRODUCTION

A. Background

United Nations Educational, Scientific, and Cultural Organization (UNESCO) on Education for All Global Monitoring Report (EFA-GMR) shows that the education for all development index (EDI) of Indonesia in 2014 was ranked 57 out of 115 (UNESCO, 2010). PISA, O. (2012) reported that Indonesia has been in the second lowest comparing with 64 countries. According to the Indonesian education activist, Anies Baswedan said that “the problem of education comes from the number of education facilities in Jakarta area are proportional, but we have a problem in the rural areas and it is causing urbanization to Jakarta” (USAID, 2013). In the big city, the facility such as text book, computer, and other learning materials are proportional, but in the rural areas are not. This condition shows that the education system in Indonesia still have a problem and need to be solved.

Indonesian government make several solutions for Indonesian education problem especially on the learning facility such as text book. Students and teacher now can get the electronic book or called as *Buku Sekolah Elektronik (BSE)*. This regulation has purpose to minimize the bad distribution of text book so that students and teacher can download the text book directly from the internet. The Indonesian curriculum 2013 focus on integrated science, scientific method and character development (Permendikbud No. 81A, 2013) thus the text book that is used in the school should on integrated approach/one subject with another subject is correlated each other.

Fogarty (2009) stated that there are 10 ways of curriculum arrangement: (1) cellular model, (2) connected model, (3) nested model, (4) sequenced model, (5) shared model, (6) webbed model, (7) threaded model, (8) integrated model, (9) immersed model and (10) networked model. The most model used in the science topic arrangement is cellular model and integrated model. Fogarty (2009) stated that cellular model is the traditional curricular arrangement dictates separate and distinct disciplines while integrated model

views the curriculum in interdisciplinary approach, rearranged it around overlapping concepts, emergent pattern and design.

Researcher figured out and analyzed the curriculum arrangements on text book that school used in the school object of research by interview the science teacher. The results are: (1) the usage of science learning activity is still in separate model which are biology, physic and chemistry were in different subject of study although the school using curriculum 2013. (2) Results of students' achievements in learning science also still low, only several students who passed from *KKM (Kriteria Ketuntasan Minimal)* 60. This condition comes from the integrated learning material resource in that school that is still not available and the teacher difficult to combine the three subject of science into holistic/ integrated science. This condition makes contradictive between the text book that is used by the school with the Indonesian curriculum 2013 which are emphasized on integrated science.

Based on the problem above, the researcher made the text book using integrated model following the standard criteria from *Badan Standar Nasional Pendidikan/ BSNP* and do the research regarding the effect of the integrated science text book towards students' conceptual understanding and motivation. Izati (2013) stated that students can reach minimum score completeness criteria (*KKM/ Kriteria Ketuntasan Minimal*) 75 with using integrated science learning material through lessons study in learning food chemical additives.

Students achievements arev not only about students' conceptual understanding but also students' motivation. Amrai et al. (2011) stated that the relationship of students' motivation has positive and significant correlation. Students' academic achievement requires coordination and interaction between different aspects of motivation. The aspect of motivation based on Keller (1987) are: (1) Attention (2) Relevancy (3) Confidents and (4) Satisfaction. The learning process can be good while teacher performance, resource of learning and students' motivation is also good. Based on that problem, the aimed of this research is to create the learning resource which can increase the students' conceptual understanding and students' motivation rather than another text book.

Not all the topic can be arranged using integrated model. Several topics are even more likely to use other models. One of the topic that can use integrated model is global warming. Global warming become a big problem for human because the effect of global warming makes several animal and plants is rare and the other is die. Intergovernmental Panel on Climate Change (2007) reported that some effects of global warming increasing the temperatures and gives the effect towards ecosystem such as ice is melting worldwide, especially at the Earth's poles. This includes mountain glaciers, ice sheets covering West Antarctica and Greenland, and Arctic sea ice. Global warming not only danger for plants and animals, but also its dangerous for human. From the real problem in human life, the topic of global warming is very important to deliver to the students as a solution for mitigating the global warming. Global warming topic can be seen by three science major which are biology, physic and chemistry so that the global warming topic is suitable for applying the integrated model.

Based on the problem found in junior high school, the information about the research was done to find out the effect of integrated science text book on the students in the previous statements, knowing about the demands of Indonesian education especially on science education that the learning process should be on integrated approach, therefore the researcher decided to conduct the research entitled "The Effect of Integrated Science Text Book towards Students' Conceptual Understanding and Motivation in Learning Global Warming".

B. Research Problem

Based on the background, the research problem on this research is:

1. How is students' conceptual understanding after using integrated science text book in learning global warming?
2. How is students' motivation after using integrated science text book in learning global warming?

C. Research Objectives

Following the research problem, the research objectives on this research is:

1. To investigate the students' conceptual understanding in learning global warming after use integrated science text book.
2. To investigate the students' motivation in learning global warming when use integrated science text book.

D. Research Benefits

The results of this research are expected to raise some following benefits:

1. Teachers
 - a. This research will be useful for teachers to know which learning materials are better to increase students' conceptual understanding and motivation in learning global warming
 - b. Teacher has experience to combine the science into integrated science which are biology, chemistry and physic are in one topic.
2. Students
 - a. Students will have experience to learn science in integrated model.
 - b. Students will be motivated to learn after learning science using integrated science text book.
 - c. Students has new learning materials that can be used for their learning resources.
 - d. Students will easy to understand the science in unity and they can recognize the science unity as one discipline.
3. Schools
 - a. School will provide which text book that can increase students' conceptual understanding and students' motivation in learning sciences.
 - b. School have new science learning material that can be used for teaching and learning process.
4. Other researchers

- a. The results of this research will be useful for other research as the consideration for the next research

E. Organization Structure of Research Paper

The structure of research paper consists of five chapter which are:

1. Chapter I. Introduction, this chapter contains: background of research, research problem, research objective, research benefits and organization structure of research paper
2. Chapter II. Literature Review, this chapter contains: learning materials, Integrated model, students' conceptual understanding, students' motivation, global warming topics and relevant research.
3. Chapter III. Research Methodology, this chapter contains the method and design that used in this research, population and sample, operational definition, assumption, hypothesis, research procedures, research instruments, instruments analysis results and data processing
4. Chapter IV. Results and Discussion, this chapter contains the analysis of students' conceptual understanding and motivation
5. Chapter V. Conclusion and Recommendation, this chapter contains conclusion of the research and recommendation of the research.

F. Limitation of Problem

1. The curriculum arrangements that researcher used to create the integrated science text book is integrated model by Fogarty (2009). Integrated Model using cross-disciplinary approach which means that the integrated science text book describes the global warming content using three disciplines: (1) biology, (2) chemistry and (3) physic. Students learn about natural global warming, photosynthesis, illegal logging, ecosystem, food chain, greenhouse effect, greenhouse gasses, chemical reaction, heat transfer, Earth atmosphere, electromagnetic waves, energy and temperature.
2. students' conceptual understanding that is measured in this research involves level cognitive only 3 from 4 categories in Bloom Taxonomy. The categories are remembering (C1), understanding (C2), and applying

(C3) based on revised Bloom's Taxonomy. On this research, the level cognitive based on revised Bloom's Taxonomy only using C1 until C3 because its suitable for global warming topic on junior high school level.

3. students' motivation that is measured in this research using ARCS (Attention, Relevancy, Confidence, Satisfaction) model by Keller (1987).
4. In this research, the topic is global warming that limited by core Competence No. 3 "*Memahami pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata*" and Basic Competence No. 3.10 "*Mendeskripsikan tentang penyebab terjadinya pemanasan global dan dampaknya bagi ekosistem*".