

CHAPTER I

INTRODUCTION

1.1 Background

Learners are usually different on one another in terms of their gender, ethnicity and economics condition (Neupane, Joshi, Acharya, & Acharya, 2018). In further, the ways in which students can learn best also become one of those different aspects that can affect students' learning. Students have different way in learning, so that they can not be evaluated in a similar way (Fayazi-Nasab & Ghafournia, 2016). Howard Gardner in 1993 argued that there are no individuals can define as intelligent or not, but individuals have their own intelligence in different spectrum (Santos, 2019). The intelligences that Howard Gardner intended recently are visual-spatial, verbal-linguistics, logical mathematical, bodily-kinesthetic, musical-rhythm, intrapersonal, interpersonal, naturalist intelligence, and he discussed the possibility of a ninth which is existential intelligence in 1999.

Generally teaching and learning process conducted in classroom only apply two kinds of intelligence: verbal-linguistic and logical-mathematical intelligence, which causes disadvantage to students who are weak in either of these two intelligences (Lai & Yap, 2016). Therefore, teacher should consider many teaching and learning strategies to facilitate students so that students can learn best and meet successfully learning outcome with different intelligences that students have by implementing all types of multiple intelligences in the classroom. Not to mention that learning outcome becomes a trend as an achievement standard used in school. Therefore, students have to understand every concept they learn in order to gain learning outcome as well. From this consideration, students' understanding is an important variable to be measured.

In facing these facts, multiple intelligences theory can be applied as teaching and learning strategies to students. The learning theory that has a powerful impact to solve the differences of students in the way of their learning is multiple intelligences theory that have been proposed and developed by Howard Gardner firstly in 1983 (Adcock, 2014). In addition, Mohd Ali Samsudin, et al (2015) stated that science learning will be successfully achieved much better if teachers know about multiple intelligence theory that bcome the part of thinking style.

According to Yaghoob and Hossein (2016), multiple intelligences boost the idea that every students are able to learn through different kind of intelligences. Instead of explaining about the theory, multiple intelligences theory gives the important impact for practical teaching. The implementation of Gardner's intelligences theory will not burden teachers in conducting teaching and learning process (Batdı, 2017). The multiple intelligences have been widely used in the field of teaching and learning process by researchers as their framework. In other word, multiple intelligence theory must be applied along teaching and learning process in order to gain more excitement in learning activities by experiencing various ways of learning to students.

On the other hand, multiple intelligences theory also impacted on students' science motivation as stated by (Chang & Hung, 2018) in his research result that students who experienced multiple intelligences theory in learning activities performed science learning motivation much better compared to students who has not experienced this theory. As known that science is an important thing in our daily life. Almost all problems exist in daily activities can be solved by understanding science. Therefore, science is very important to be learnt by students in the classroom. In accordance to this, there must be a motivation from students themselves to learn science. Motivation is an important thing along the teaching and learning process. Motivation in science learning can be defined as a desire of learning science. According to Chan, Y. L and Norlizah C. H, (2018),

motivation can promote students in constructing the comprehension of science concept.

However, until nowadays students' motivation in science learning is still in the low up to moderate level. It is similar with the result of what have been researched (Salih, Mai, & Al Shibli, 2016) and (Chan, Y. L & Norlizah, C. H, 2018). Lack of motivation will affect students learning, especially when it comes to difficult topic such as electrical circuit topic in physics. This topic forces students to put their more effort to understand. And if there are some motivations, students will have the willingness to learn science (Salih et al., 2016). Thus, the core is that students' science learning motivation underlined as the supporting conditions to the improvement of academic performance in school (Libao et al., 2016). The improvement of academic performance in school indicates the level of students' understanding as well. Therefore, students' science learning motivation becomes an urge as a variable to be measured after considering students' understanding in this research.

Hence, the strategy that can be implemented to fulfill the solution of the problem of teaching and learning process in improving students' understanding and motivation is by applying the multiple intelligence based learning. This multiple intelligence based learning refers to pluralized learning applies multiple intelligence theory as learning activities delivered to students that having a purpose to develop students in order to have more various preferences profile of multiple intelligence. This also becomes a novelty of this research since it is rarely applied in many research already existed especially in science learning. Researchers mostly apply the multiple intelligence theory as an individualized learning which requires students to learn materials only using their strongest profile of multiple intelligences they have.

1.2 Research Problem

The problem of this research is “How is the effect of multiple intelligence based learning to improve students’ understanding and motivation on electrical circuit topic?”

1.3 Research Questions

In accordance with the research problem, the research attempts to explore these following questions:

- 1) How is the implementation of multiple intelligence based learning on electrical circuit topic?
- 2) How is the effect of multiple intelligence based learning on students’ understanding in learning electrical circuit topic?
- 3) How is the effect of multiple intelligence based learning on students’ science learning motivation?

1.4 Limitation of Problem

In order to make the objective of this research is reached, problems that will be covered in this research need to be limited. The limitations of research are described as follow:

- 1) Multiple Intelligence of the research is limited to eight types of multiple intelligences. While the newest theory of multiple intelligences currently have nine types of multiple intelligences proposed by Howard Gardner in 1999. These eight multiple intelligences are including the verbal-linguistic, logical-mathematic, visual-spatial, musical-rhythm, bodily-kinesthetic, interpersonal, intrapersonal, and naturalist intelligence.
- 2) Students’ Understanding in this research is limited on four cognitive process dimension which are Remembering (C1), Understanding (C2), Applying (C3) and Analyzing (C4) based on Bloom’s Taxonomy Revision and limited only on two knowledge

dimensions which are factual and conceptual knowledge dimensions according to Bloom's Taxonomy Revision.

- 3) Students' Science Learning Motivation in this research is limited on students' motivation in science learning which focus on six aspects: self-efficacy, active learning strategies, science learning value, performance goal, achievement goal and learning environment stimulation. Those aspects are adopted from the questionnaire developed by Tuan, Chin, and Shieh (2005).
- 4) Electrical Circuit Topic is the teaching and learning materials proposed to 8th grade students and is based on Cambridge Curriculum. These materials are dominantly explaining about Series and Parallel Circuits, and others related materials.

1.5 Research Objective

The main objective of this research is to find out the effect of multiple intelligence based learning to improve students' understanding and motivation on electrical circuit topic. These are the specific objectives of the research:

- 1) To investigate the effect of multiple intelligence based learning to improve students' understanding on electrical circuit topic.
- 2) To investigate the effect of multiple intelligence based learning to improve students' science learning motivation on electrical circuit topic.

1.6 Research Benefit

This research brings several benefits for teachers, students and even other researchers. Here are the details:

- 1) For teachers

By implementing the multiple intelligences theory, teacher can gain the new ideas and resources regarding to the teaching strategies

and media that can be implemented on students along teaching and learning process.

2) For students

Benefit of the research for students is that students can develop all types of multiple intelligences to improve their concept understanding in science learning especially on difficult topic such as electrical circuit topic in physics.

3) For other researchers

a) This research can be used as information for supporting data or references for further research in multiple intelligences theory applied in teaching and learning process, concept understanding in learning science, and also science learning motivation itself.

b) By analyzing the overall process and result of this research, another researcher will be able to identify the strengths and weaknesses that might help them in developing a better research in the same or even different fields of interest.

1.7 The Organization of Research Paper

There are five chapters, several sub-chapters and appendixes in this research. The organization of this paper explained as follow:

1) Chapter I: Introduction

This chapter draws about the background of this research. It also contains research problem, research question, the limitation of research, research objective, and research benefit.

2) Chapter II: Literature Review

This chapter describes about the information or theory of research variables which consists of multiple intelligence theory, students' understanding, students' science learning motivation, electrical circuit topic, and relevant research.

3) Chapter III: Methodology

The methodology used in this research is described in this chapter. Specifically it contains research method, research design, research subject, operational definition, research instrument, instrument analysis result, and research procedure.

4) Chapter IV: Result and Discussion

This chapter relates to the data result and its analysis. The data is discussed and presented in tables and figures as findings of this research.

5) Chapter V: Conclusion and Recommendation

The conclusion of all findings in this research is summarized in this chapter. Suggestions and recommendations for this research are also presented.