

CHAPTER I

INTRODUCTION

1.1 Background

In this era some researchers found that there are difference needs of education in a new age. According to Kaufman (2013) in the 21st century there are some competencies that very basic to adapt with, skill such as critical thinking and problem-solving skills, communicative skills, information and media literacy skills, contextual learning skills, and an ever-important collaboration skill set. One of the skills that have an essential role from 21st century is critical thinking and it also states in the students' competence that is encouraged by the government in Indonesian national curriculum 2013.

In national curriculum 2013 of Indonesia state that this curriculum could enrich content for students' knowledge and also can burnish students' critical thinking (Kementerian Pendidikan dan Kebudayaan, 2017). The critical thinking skill is an essential life skill. According to Nazmi (2015), critical thinking is high order thinking that has precept process which encourages conceptualizing, applying, analyzing, synthesizing, and evaluating information. Critical thinking also could be applied in many sectors, especially in an educational setting in school and focusing on learning science. Critical thinking is one important concept in the 21st century and it is a model of thinking in any kind of subjects, contents, or problems which can give improvement to the quality of their ability in taking charge of the structures that intellectual standards upon them (Atabaki, Keshtiaray, & Yarmohammadian, 2015)

Critical thinking is the use of cognitive skill or as a strategy that can increase the possibility of a desirable outcome (Kerr, 2009). According to Inch (2006), the process that people have to think rationally and make a judgment for answering the question that cannot easily be answered is called critical thinking. To think critically about the issue, someone will be directed to analyze the issue by investigating the relevant arguments, fact, and reasons that promote good decision making. The indicators of a student who has the ability to think critically

about some concepts are the students can identify key concepts and states clearly, stating the alternative concept or definition of alternative concepts, and can use concepts carefully and thoroughly (Rusyati & Firman, 2016).

Furthermore, the researcher argues the factor which can influence critical thinking skill. Critical thinking skill concern to the ability to think logically and to reflect upon known information (Myers & Dyer, 2006). Salahshoor and Refiee (2016) said that male and female was not significantly differences in use critical thinking skill. The other research regarding the critical thinking skill finds that learning style of each individual had a significant difference (Ghazivakili, Nia, & Panahi, 2014). Researcher wants to take this point of view in the research.

Critical thinking is one of skill that urgently need and it cannot be overemphasize. So, it is importance to focusing this present study in profile student critical thinking skill. Although, most of students profiling is done in higher education level. But, this study use a junior high school student as the target of this profiling study.

The critical thinking element was developed by Inch (2006) which focus are the critical thinking element of generate purpose, raises question at issue, makes assumption, embodies point of view, uses information, utilizes concepts, makes interpretation and inference, and generate implication and consequences. Those eight elements focus on general thinking competencies (Paul & Elder, 2005)

According to the International Student Assessment (PISA) 2015, Indonesian get low in mean score for science literacy that gets 382 and has 64 ranks from 65 participating countries. The questions that were tested in PISA consist of 6 levels (level 1 lowest and level 6 highest) and the questions tested are contextual questions the problem is taken from the real world. Its mean that critical thinking quality in Indonesia is below the average of any country that tested. So, it is still important to develop critical thinking skill in Indonesia while the critical thinking is one of complex thinking process to evaluate or analyze the information that someone gets from other sources (Duke, 2011)

Discussing students' evaluation and test, in the 21st century the role of technology has widely spread as a crucial and adaptable to communication and

education field. This digital era also has to root to human activity and it also affects to the usage of technology into Indonesian National curriculum 2013. In 2015, minister of Education and culture of Indonesia try to use Computer-based as the assessment that uses for National Examination. The computer-based test has recently used and existed as one of the most demanded as the alternative assessment throughout the world (Khoshsima, Hosseini, & Toroujeni, 2017). There are some reasons to administer Computer-based as an assessment for Indonesia National Examination, one of them is to reduce the cost. Nowadays, computer technology has continued to be widespread into the 21st century as a crucial and versatile instrument for communication and education.

Maulida et al. (2016) said that there is considered since bringing critical thinking and digital technologies have a relationship and it might be beneficial in providing an additional opportunity for increasing students' skill to achieve the higher level of knowledge or to practice the process of critical thinking skill. In Rosyidah (2016) science virtual test give a higher score if it compared to paper-based test score in a living thing and an environmental sustainability topic in most elements of critical thinking.

The theme of digestive system topic is learned science elementary school. the student learns about the organ and the general function on it. While in 8th grade the students learn a digestive system from the topic of the organ of a digestive system specifically, the diseases that may occur inside the organ, and the effect of the environment on healthiness. According to Istikomayanti (2017) junior high school student have a difficulty of interpreting the process of physical and chemical digestion before it delivered into exact model of those.

This research wants to introduce the science virtual test as an interactive and attractive computer-based test to assess students' critical thinking. While in the two school where researcher choose is still have not command to critical thinking test through Science Virtual Test. The teachers also said that, student have not introduce to critical thinking test that have high order thinking ability. So, this profiling study is to measure students' critical thinking through science virtual test on 8th grade in the theme of digestive system. In making this research more

specific, the profiling of students' critical thinking also will be viewed based the factors that consider influencing critical thinking, there are students' logical thinking, students' learning style, and students' gender.

1.2 Research Problem

Based on the previous explanation in the background above, the research problem of this study is "How is profile of students' critical thinking measured through science virtual test on 8th grade digestive system topic?"

1.3 Research Question

Elaboration the research problem, the research attempts to explore the following question:

- 1) How is the level of students' critical thinking measured through science virtual test on 8th grade in digestive system topic for overall and each critical thinking element?
- 2) How significantly difference between students' critical thinking and students' logical thinking measured through science virtual test on 8th grade in digestive system topic?
- 3) How significantly difference between students' critical thinking and students' learning style measured through science virtual test on 8th grade in digestive system topic?
- 4) How significantly difference between students' critical thinking and gender measured through science virtual test on 8th grade in digestive system topic?

1.4 Limitation of Problem

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

- 1) The research is explanation about the profile of students critical thinking from the result of science virtual test with theme of digestive system limited by 2013 national curriculum. The critical thinking elements that researcher use in science virtual test was been developed by Inch's. There are eight elements that adapted from Paul and Elder which included question at issue,

purpose, assumption, point of view, information, concept, interference, implication and consequences.

- 2) Science content that used in science virtual test in this research is limited by the Indonesian national curriculum 2013 basic competence 3.5 for 8th grade science subject. The topic is digestive system that simplify into theme digestive system disease, lifestyle in digestive system, food and its importance, human digestive system.
- 3) Logical thinking that used in this research paper is determined students' logical thinking preference with formal, transitional and concrete level.
- 4) Learning style that used to determine students' learning style preference is visual, aural, read and kinesthetic.
- 5) Gender classification used in this research is consist of male and female group who enrolled in 8th grade Junior High School.

1.5 Research Objective

- 1) To investigate the level of students' critical thinking measured through science virtual test on 8th grade in digestive system topic for overall and each critical thinking element
- 2) To investigate significant difference between students' critical thinking and students' logical thinking measured through science virtual test on 8th grade in digestive system topic.
- 3) To investigate significant difference between students' critical thinking and students' learning style measured through science virtual test on 8th grade in digestive system topic.
- 4) To investigate significant difference between students' critical thinking and gender measured through science virtual test on 8th grade in digestive system topic.

1.6 Research Benefit

The result of this research is expected to give a good input as follow;

- 1) For student: Give motivation to student when they know the result of the test and also give motivation to student in develop student critical thinking skill in learning science. Then, the follow up for better improvement of student critical thinking skill when using science virtual test based in learning digestive system
- 2) For teacher: This research is expected to become reference and description regarding students' critical thinking when they using science virtual test, also teachers are able to develop new strategy or idea in order to make meaningful teaching-learning process. To make meaningful evaluation in Digestive system topic. As one option to conducting new assessment that would be use in learning process.
- 3) For researcher: This research gives a clearer description about the profile of students' critical thinking based on logical thinking, learning style, and gender measured trough science virtual test.
- 4) For further researcher: As input and reference in profiling the students' critical thinking when they using science virtual test as their assessment or make some innovation of science virtual test.

1.7 Organization Structure of Research Paper

This research paper is arranged with several chapter. The chapters consist of chapter I to chapter II. Chapter I is Introduction. In this first chapter contains background of this study, research problem, research questions, limitation of the problem, objective of the research and the limitation of this research. Chapter II is Literature Review. In this second chapter contains the theory and literature of the research variables. Those explanation consist of critical thinking skill and element, computer-based test (CBT), logical thinking of student, students' learning style, students' gender different, digestive system as the big theme of this study and the research relevant with this study. Chapter III is Research Methodology. In third chapter contains the research method, data gathering sample and population, research instrument that used for this research paper, data analysis technique and research procedure. Chapter IV is Result and Discussion.

This chapter contains the data result with interpretation and analysis, and the discussion of findings. Chapter V is Conclusion and Recommendation. In the fifth chapter contains the conclusion of all the research result as the answer of all the research question, also the suggestion and recommendation for other teacher and teachers