CHAPTER I
INTRODUCTION

1.1   Background

To overcome the challenges faced in the twenty-first century on the industry of science and technology, students need to have the skills that can guarantee their competitiveness in the globalization age, the skills needed are called 21st century skills. Therefore, incorporating abilities in science education in the 21st century is essential. One of the abilities needed in digital age is scientific literacy. According to PISA (Programme for International Student Assessment) Worldwide Ranking in 2016, Indonesia is ranked 62 out of 70 countries in math, science, and reading. This fact indicates that there is still a lack of scientific literacy ability in students and an improvement is needed. In this study, students' scientific literacy includes 3 indicators; concept, competencies, and attitude.

The framework on PISA in Scientific Literacy Assessment 2015 stated that students must have a competency to explain a phenomenon exist on the world scientifically, that can be achieved through oral communication. The ability to explain a phenomenon, hypothesize the possible changes, identifying correct descriptions, explanations, and predictions are included in the competencies important for students to have (OECD, 2013). The ability to reflect and argue is not generally known as a personal communication ability, and the aim is to instill familiar learning, and to learn by listening to other people (Wahlström, 2010). Lack of creativity shows a reflection of weaker level of thinking that became one of the reasons for low quality of education in Indonesia (Suryadi, 2016). As the results from Indonesia's PISA (Programme for International Students Assessments) shows that school education system needs to use education resources and method more efficiently (PISA, 2018). Therefore, an innovation in teaching-learning is necessary.

Education and Literacy is an introduction to social and cultural approaches to literacy leading to youths and teachers negotiating the everyday activities of schools and communities (Pahl & Rowsell, 2012). Changes in literacy definitions have taken place throughout the decade of this century. Definitions extend beyond reading and writing skills to reasoning and communication in a wide range of

contexts (Goldenberg & Gallimore, 1991). The definitions focused on the complex constructive process of understanding and making meaning, development of causal interpretations, prediction and hypothesis, and organization and communication of ideas (Weaver, 1998). The development of literacy encompasses three areas: (1) the use of four basic components of communication; which are reading, speaking, writing, and listening; (2) the application of pragmatic communication in social life; and (3) the use of technical academic language, such as in science communication (Lee & Fradd, 1996). Based on the 2018 English Proficiency Index, Indonesia ranks 51/88 countries and 13/21 Asian countries in terms of English skills (EF EPI, 2018). The need for language development and improvement of scientific performance are priorities and it could be achieved by digital learning where the material needed for learning is highly accessible.

Millennial generation in the 21st century must survive digital society. The potential that match a private for living, learning, and dealing an exceedingly digital society is needed to face the development of the world (JISC, 2014). Digital literacy is one of the capabilities. Digital literacy works as a catalyst as a result of it allows the acquisition of different vital life skills as well as communication and creativity (Moeller, Joseph, Lau, & Carbo, 2011). The education of personal development is centered on social interaction that student needs to achieve global-oriented faculties and careers in the 21st century (Jacobson-Lundeberg, 2016). In the digital era of 2017, the quantity of net users in Indonesia reached 143.26 million folks, or 54.68% of Indonesia's population (Indonesian Internet Service Provider Association (APJII). In the spare-time experiences of youths, computers are a great device for info retrieval, where they seek fantasies and figures, give chances for originative expressive playstyle, and function as a place where personal relationships are conducted (Buckingham, 2010). Students' usage of technologies adopted and personalized everyday life, to support students' learning in the school using technology (Corrin, Lockyer, & Bennett, 2010).

Creation on the digital world is the most suitable technology for students' where creativity needs to be involved in which it became an important part in education (Nottingham Trent University, 2017). Creative teaching may well be same to accommodates putting in place a learning surroundings that motivates students to work out the essence also because the details of the topic, to formulate and solve issues, to work out the connectedness between numerous areas, to require in and react to new ideas, and to incorporate the component of surprise in their work (Reid & Petocz, 2004). Embedding twenty first century skills like creativity and communication is critical, thus students' personal development using digital-based learning is required.

Digital-based learning is one method to teach students interactively and to maximize the usage of technology. Teaching digital literacy and style of thinking to youngsters at primary schools and secondary schools, with a specialization in the exploration of tools that will support students' learning, needs a proper platform (Bekker, Bakker, Douma, Van Der Poel, & Scheltenaar, 2015). Digital scrapbook is one of the platforms and it has connected scrapbooks to computer network, wherever they'll be digitally created, updated, saved, and shared, which is also environmentally-friendly (Kohut, 2011). Digital scrapbook used in this study is Canva website and it is considered as an appropriate and suitable learning media for students.

The focus topic of this research is environmental pollution. This topic is suitable in this study because since students will make their own digital scrapbook by a presentation, their results (products) could be uploaded on the internet as a source of others peers for learning related to the topic and also may increase internet users' awareness towards environment. In learning environmental pollution, students will understand and remember the content and also understand theories through multiple teaching media in order to master the theory. Students' are also expected to explain a phenomenon thoroughly regarding the topics. The clarification itself needs an interpretation through transmission that could be achieved by a presentation.

As explained previously, students' ability to explain the content through a presentation is required in the students' communication competency. Schools

should give a fruitful yet interesting learning experience in the teaching learning process to students that can be achieved by using digital based learning. Canva as a digital design platform is able to be the learning media to measure students' scientific literacy and communication skill since student-centered in teaching learning process is essential. Therefore, the researcher decided to conduct the research titled "Digital Scrapbook Learning on Environmental Pollution by Using Canva to Construct Students' Scientific Literacy and Communication Skill".

1.2 Research Problem

The research problem of this study is "How is students' scientific literacy and communication skill in learning environmental pollution by using digital scrapbook via canva?"

1.3 Research Question

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

1) How is students' learning process in learning environmental pollution by using digital scrapbook via canva?

2) How is students' scientific literacy after learning environmental pollution by using digital scrapbook via canva?

3) How is students' verbal and visual communication skill after learning environmental pollution by using digital scrapbook via canva?

4) How is the correlation between students' scientific literacy and students' communication skill in learning environmental pollution by using digital scrapbook via canva?

1.4 Limitation of Problem

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

1) Digital Scrapbook

Digital scrapbook in this study is limited to the presentation design produced using Canva. The conception of the Digital scrapbook is to line up a private info that helps creators to pin down the looks of characters the designers wish to sketch (Motegi, Kanematsu, Tsuchida, Mikami, & Kondo, 2016).

2) Students Scientific Literacy

Students' scientific literacy in this study is limited to 3 indicators; concept, competencies, and attitude (PISA, 2018). It will be measured through the test items in the topic of environmental pollution.

3) Students' Communication Skill

Students' communication skill in this research is limited to verbal communication through students' presentation on their digital scrapbook (presentation design), and visual communication on how students interpret the presentation design related to the given topic (Dunbar, Brooks & Miller, 2006). Students' communication skill rubric will be adapted to analyze the verbal and visual communication skill of students. This rubric will be used to evaluate student performance, normally educational speech of student skills and programmatic evaluation.

4) In this study, the subject is environmental pollution that restricted by core competency no.3 and basic competency no 3.8 for 7th grade that are attached in 2013 National Curriculum of Indonesia. This topic is also limited to four sub topics which are air pollution, water pollution, soil pollution, and the effect of pollution towards environment.

1.5 Research Objectives

Elaborating from the research questions, the research objectives are specified as follow:

1) To profile students' learning process in learning environmental pollution by using digital scrapbook via canva.

2) To investigate students' scientific literacy after learning environmental pollution by using digital scrapbook via canva.

3) To investigate students' verbal and visual communication skill after learning environmental pollution by using digital scrapbook via canva.

4) To investigate the correlation between students' scientific literacy and students' communication after learning environmental pollution by using digital scrapbook via canva.

1.6   Research Benefit

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

1)   Students

Students are able to use canva to make an interesting presentation media to be presented publicly, to improve their designing soft skill that can be used in the work field for their future, and they can also make design for another purpose such as poster, social media posting, banner, flyer, card, certificate, brochure, resume, etc.

2)   Teachers

Teachers are able to use the design method to turn learning materials into a simpler format for students to understand. Teachers can also use the interesting media and appearance by using canva to make learning activities more enjoyable for students. This digital scrapbook can also be used as a media for the assessment of students' communication skill and students' scientific literacy

3)   Another researcher

This paper can be used as a reference or example in the making of research about digital scrapbook as an assessment tool. Canva can also be used as an accessible design tools to make another design purposes.

1.7   The Organization of Research Paper

This research paper contains of five chapters and several appendices. Each chapter consists of sub-chapters. The systematic of this research paper is as follows:

1)   Chapter I: Introduction

This chapter outlines the background, research problem, research question, limitation of problem, research objectives, research benefit, and research paper structure. This chapter is the base of the research. All the discussion was based on research problem and question stated in this chapter. Every thoughts of this research are served in the background.

2)   Chapter II: Literature Review

This chapter contains information, theory and literature of research variables. Those explanations consist of digital scrapbook, canva, students'

scientific literacy, students' communication skill, environmental pollution as the subject of the lesson topic, and the research relevant with this study.

3)   Chapter III: Methodology

This chapter describes about the methodology used during the research. It consists of research method, research design, research subject, operational definition, research instrument, instrument analysis result, data analysis and research procedure.

4)   Chapter IV: Result and Discussion

This chapter concerns with the data result and discussion of findings. The researcher analyzed and interpreted the data based on the research question. The data are presented in the form of tables and figures.

5)   Chapter V: Conclusion and Recommendation

This chapter contains the conclusion of all the research results as the answer of research questions, also the suggestions and recommendation of the research.