

## CHAPTER I

### INTRODUCTION

#### 1.1 Background

The world is shaken by the emergence of a mysterious virus known as COVID-19 or known as the Corona Virus Disease-2019. The initial emergence of this virus was first revealed in the city of Wuhan, China, at the end of December 2019. In just a few month, the virus is spread very quickly and has blow-out to almost all countries, including Indonesia. Thousands or even hundreds of humans have been exposed to this virus, and not a few died. The complexity of the treatment of this virus makes the world governments also move a policy to prevent this virus chain (WHO, 2020). In Indonesia, the government issued and provided several policies regarding the COVID-19 outbreak. One of them is the prohibition of people gathering and doing activities outside the home, and advocating to stay at home "Stay at Home, worship at home, work from home, learn from home." This policy is called PSBB or Large-scale Social Restriction (Zaharah & Kirilova, 2020).

The cause of COVID-19 has a very big impact on the economic, social, and other fields. The sector, which is also affected by the emergence of this virus is the education sector. Ministries of education in various countries have taken steps in every school and university to conduct learning through online learning. In Indonesia, most schools and universities temporarily closed the teaching and learning process system, which usually conducted as an online learning system. These online learning systems conducted as a form of vigilance and prevention. All learning activities are carried out through distance learning in the form of online lectures, online model lectures, or in the form of assignments at home. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) stated that COVID-19 has an impact on the education of around 290.5 million students worldwide. UNESCO Director-General Audrey Azoulay said disadvantaged children and adolescents were those who

tended to be most affected by the closure of schools. Although the temporary closure of schools as a result of health problems and other crises is not new, however, the current global scale and speed of educational disruption are unmatched and, if extended, could threaten the right to education. UNESCO also stated that while it is temporary, school closures have an impact on reduced teaching time and can have an impact on achievement (Wajdi et al., 2020).

Learning is a transformation in behavior which is the process of actively changing behavior, the process of reacting to all situations that exist around the individual, the process directed at a goal, the process of acting through various experiences, the process of seeing, observing, and understand something that is learned (Purwanto, 1990). In other words, learning is a process to help students to learn well, and also learning is a process of conscious effort made by individuals for a change from not knowing to know, from not having an attitude to being right, from being unskilled to being skilled at doing something. Learning is not merely mapping the knowledge or information conveyed but how to involve individuals actively make or revise the learning outcomes they receive into a personal experience that is beneficial to them (Hardianto, 2005).

The interaction between students and teachers does occur, but through cyberspace, virtual, or interactions occur using tools or technological devices such as computers, notebooks, and mobile phones. It can also use the distance learning application that is currently provided by the government for free or paid if that provides private parties. Distance learning or referred to as distance learning at this time, is needed by all students ranging from elementary school to tertiary level, and this is not only happened in Indonesia, even almost all over the world carried out learning by E-learning. Situations and conditions may not be conducive, but learning activities can be carried out anywhere. Especially that there is a lot of technology equipment available that can support the activities. Digital technology has grown up and lived in the current generation of people. The fact that most people are familiar with downloading files or audio files from the internet and makes the adoption of the method of learning. The use of technology improved learning has formed essential changes in the transfer of authorized learning within classrooms, as well as in the coordination of communication and cooperation outside the classroom (Prensky, 2001). The implementation of learning

by E-learning is also meant by the ministry of Education and Culture with the application of independent learning, which before the pandemic COVID-19, was echoed by Nadiem Makarim as independent learning. Students are compulsory to be technologically literate, to be creative, to have extraordinary motivation, to be able to make an innovation whose purpose is to prepare the future millennial to be ready with the challenges of globalization (Kemendikbud, 2014).

The usage of learning models is an effort to facilitate the delivery of material to be taught. A learning model is mainly an arrangement of learning that is demonstrated from beginning to end, which is typically delivered by the teacher (Komalasari, 2010). The development of learning models in a constructivist view need to pay attention and consider students' initial knowledge that might be obtained outside of school and in their learning must involve students in real activity. The learning model is one way for teachers to deliver the teaching material presented (Rustaman, 2011).

One of the learning models that can be used in the learning course is discovery learning. Students are stimulated to learn through their active participation with concepts, knowledge, values, and beliefs, and the teacher encourages students to have understanding, experiences, knowledge, and conduct experiments that allow them to discover concepts, knowledge, and beliefs for themselves in learning by the discovery (Hosnan, 2014). This is in line with that discovery is a sequence of learning activities that involve the maximum ability of students to examine, explore, and investigate to find their knowledge, attitudes, and skills (Hanafiah & Suhana, 2010). Discovery learning is a model of learning for developing active student learning by discovering, determining, examining, and investigating on their own, so the results obtained will be faithful and long-lasting in memory, not easily forgotten by students. By learning discovery, children can also learn to think analytically and try to solve their problems. This practice will be transmitted in social life (Hosnan, 2014).

Teaching digital literacy and style of thinking to teenagers at primary schools and junior high schools, with a specialization in the exploration of media that will support students' learning, needs a proper platform (Bekker et al., 2015). One of the appropriate learning media to overcome these problems is by using the Screencast-O-Matic application. Screencast-O-Matic is a remote presentation for students. It can be used as a presentation learning media in this pandemic condition where the students

were learning online from home. Screencast-O-Matic is an easy-to-use screen recorder that can be used to capture any area of your screen with the option to add narration from your microphone and video from your webcam. Screencast-O-Matic is a video screen capture learning and sharing which takes visual collaboration.

The focus topic of this research is about climate change. This topic aims to produce long-term behavioral change and encourage more individuals to develop ideas and expertise for future climate change solutions. This learning should also not only focus on the scientific aspects of climate science, but also how it relates to things directly related to life such as social science, economics, development, environment, and also behavior. Education is an important factor of the comprehensive response to climate change. It supports students to understand and comprehend the impact of global warming, increases climate literacy between them, promotes changes in their mind-sets, viewpoints, and behavior, and helps them bend with climate change-related trends.

In the process of learning about climate change, students tend to lack the knowledge and not good enough in communicating their opinions about environmental problems related to climate change that are happening nowadays, both verbal and written communication. In addition, when given a more complex problem, most students do not feel challenged to think of a solution. This condition makes students have low critical thinking skills and low communication skills.

Critical thinking skills need to be authorized in learning process (Phan, 2010). Students could be educated to critically investigate different perspectives on problems regarding the impacts of science and technology on daily life and estimate these problems through critical thinking (Mapeala & Siew, 2015). The capability to think critically along with an consciousness of local and global problems have been recognized as essential competencies that could help students as they journey through life in the 21st Century (Voogt & Roblin, 2012).

According to Program for International Student Assessment (PISA), most of Indonesian students is in the low level of thinking skills. The results of Science literacy research that conducted once-a-year closely related to high-order-thinking skills because with scientific literacy students must have the capability to explain a phenomenon that exists in the world scientifically, which can be accomplished through verbal communication. The ability to explain a phenomenon, hypothesize the potential

transformation, recognizing accurate explanations and predictions are included in the competencies important for students to have (Gasior, 2013). The PISA result also presented that Indonesia ranked 60th out of 65 participating countries in 2009, the 64th of 65 participating countries by 2012, and 69th of the 75 participating countries by 2015 (OECD, 2010; 2014; 2016). These results show that Indonesian students have not been skilled and educated to think high level so the results of each PISA assessment still put Indonesia at the lowest rank and mostly still below the average score standard of the Organization for Economic, Co-operation, and Development (OECD) (Suprpto, 2016).

The ability to suggest, expose, and debate is generally known as individual communication ability, and the purpose is to encourage common learning and to learn by listening to other people (Wahlström, 2010). The expert blind spot (EBS) stated that some experts with a high content knowledge could have problems in science communication because they are more enjoy to learn the structure of the concept rather than their addressee's requirements as an preference (Nathan, Koedinger & Alibali, 2001). Based on these problems, it is necessary to try the media that can encourage the learning process to explore the students' critical thinking skills and communication skills. The Screencast-O-Matic application allows students to create visually compelling and authentic video solutions for learning and collaboration. This application, as a digital platform, can be the learning media to measure students' critical thinking skills and communication skills since student-centered in the teaching-learning process is essential.

The difference in this research from other researchers is that this research measures communication skills and critical thinking skills. Also, discovery learning in the learning process could help the students in building their character because, in this model of learning, students need to be active learners. The use of Screencast-O-Matic applications also is the difference between other researchers. Therefore, the researcher decided to conduct the research titled "The Implementation of Discovery Learning by using Screencast-O-Matic application on Students' Communication and Critical Thinking Skills in Learning Climate Change."

## 1.2 Research Problem

Based on the background stated, the research problems of this study is "How is the effect of discovery learning by using a Screencast-O-Matic application on students' critical thinking and communication skills in learning climate change?". Based on the research problem stated, the research attempts to explore the following questions:

- 1) How is the effect of discovery learning by using a Screencast-O-Matic application on students' critical thinking skills in learning climate change?
- 2) How is the effect of discovery learning by using a Screencast-O-Matic application on students' communication skills in learning climate change?
- 3) How is the correlation between students' critical thinking skills and students' communication skills in the learning climate change?

## 1.3 Research Objective

The objective of this research is limited as follows:

- a) To investigate the effect of discovery learning by using a Screencast-O-Matic application on students' critical thinking skills in learning climate change
- b) To investigate the effect of discovery learning by using a Screencast-o-Matic application on students' communication skills in learning climate change
- c) To investigate the correlation between students' critical thinking skills and students' communication skills in learning climate change.

## 1.4 Research Benefit

The results of this study are expected to provide benefits as follow:

- a) Students  
The results of this research are supposed to give positive effort by improving students' science knowledge toward climate change topics, improve the flexibility of learning that is not regulated by place and time, and encourage the students to develop critical thinking skills and communication skills in learning science.
- b) Teachers

The research is expected to develop teachers' new strategies or ideas in order to enhance meaningful teaching and learning process, make the valuable teaching and learning process, and generate chances using media to learning that in line with learning science in the 21st century.

c) Researchers

To other researchers, the result of this research can be a reference for conducting other research in the future.

## 1.5 The Organization of Research Paper

This research paper consist of five chapters and several appendixes. Each chapter consists of some sub-chapters. The arrangement of this research paper is as follows:

a) Chapter I: Introduction

This chapter forms the background, research problem, research question, research objectives, research benefit, research paper organization, and limitation of problem. This chapter is the base of the research. All the discussion was based on the research problem and question stated in this chapter. Every theory, opinion, and ideas of this research is fulfilled in the background.

b) Chapter II: Literature Review

This chapter contains information, theory, and literature of research variables. In this chapter, describes explanations that consist of the discovery learning model, Screencast-O-Matic application, students' critical thinking skills, students' communication skills, climate change as the lesson topic, and the research relevant to this research.

c) Chapter III: Methodology

This chapter explains the methodology used during the research. It consists of research research design, research participant, operational definition, research instrument, instrument analysis result, data analysis, and research procedures.

d) Chapter IV: Result and Discussion

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

e) Chapter V: Conclusion and Recommendation

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

## 1.6 Limitation of Problem

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

### 1) Students' Critical Thinking Skills

The skill and capability to think critically by understanding consciousness of local and global problems have been recognized as main competencies and capabilities that could promote students as they journey through life in the 21st Century (Voogt & Roblin, 2012). Critical thinking skills are classified into five indicators, which are Basic clarification, Bases for a decision, Inference, Advance clarification, and Non-Constitutive, But Helpful/formulating an action (Ennis, 2018). In this research, students' critical thinking skills measured by using critical thinking indicators limited to 4 indicators, which are Basic clarification, Inference, Advance clarification, and Non-Constitutive, But Helpful/formulating an action (Ennis, 2018). Students' critical thinking will be measured by using a rubric. It will be measured through the test items on the topic of climate change.

### 2) Students' Communication Skills

The expert blind spot (EBS) stated that some experts with a high content knowledge could have difficulty in science communication because they are using the arrangement of the concept rather than their individual fundamental as an orientation (Nathan, Koedinger & Alibali, 2001). In this research, students' communication skills is limited to verbal communication through students' argumentation on the Screencast-O-Matic application while doing a presentation. Students' communication skills measured by using a rubric. The rubric will be used to assess students' communication skills through presentation.

### 3) Climate Change Topic

In this research, the topic is climate change that restricted by core competency no.3 and basic competency no 3.9 for 7th grade that are attached in the 2013 National Curriculum of Indonesia. This topic is also limited to three sub-topics,



which are climate change, global warming, and the effect of global warming on the environment.