CHAPTER I
INTRODUCTION

1.1 Background

The current situation of the covid-19 pandemic limits people activities, including student activity teaching and learning in school. The limitation held because Covid-19 is a disease caused by SARS virus and spread through droplets, air borne, also touch the surface contaminated with the virus (Bender, 2020). Therefore, the crowd of people able to cause the spreading which may be dangerous for the people. The crowd policy that is implemented by the government give impact for the people in several aspects, such as people's mental health due to the sudden change in people daily activities (Pfefferbaum & North, 2020; Usher et al., 2020; Xiong et al., 2020). Not only that, Covid-19 has made an already difficult situation even worse, such as impacted the micro-tourism and micro-entrepreneurship (Sigala, 2020) besides, the restriction regulation by the government also impacted the economy in Indonesia (Caraka et al., 2020). The Covid-19 pandemic also affecting the education field from lower education to higher education.

Due to pandemics, the teaching and learning process in school by changing into distance learning. This reason gives a challenge for student because the learning situation change from offline to online. The change greatly impacted the students because the teaching and learning process relies on face to face learning besides, the primary or younger students still need more assistance in learning (Putri et al., 2020). Besides of assistance in learning, the limited access to the technology also gives challenge for students in implementing distance learning (Marinoni et al., 2020). Therefore, the teacher needs to combine the technology in distance learning to engage the student in online learning and make the teaching and learning process more effective. To support distance learning, the parents and students need guidance further in using new technology (Bond, 2021). From the challenges that

both students and teachers face, distance learning may affect the students, one of them is students' motivation.

In the implementation of distance learning, the students experience a lack of motivation. One of the main reasons is the class is unable to be conducted in face-to-face learning (Yulismayanti et al., 2020). Due to the implementation of distance learning, the students had lack motivation rather than conducting the teaching and learning process in school (Meladina & Zaswita, 2020). As a result, the students experience another challenge. Some of the challenges that student face in implementation distance learning is the students is limited internet access, lack of feedback from the teacher, couldn't afford the internet package expenses, and limitation of the gadget they use (Rahayu & Wirza, 2020; Sufyan et al., 2020). Besides the technical issues, the students are also not engaged in distance learning. The students think that online learning is tedious and not effective (Wijaya et al., 2020). Therefore, due to the lack of students' motivation during distance learning, we need to implement engaging online teaching and learning processes during distance learning.

Although the teaching and learning process changed into distance learning, the teaching and learning process still have the same goal. One of the goals in teaching and learning in science is scientific literacy. As the time goes on, the science and technology is growing and people need a skill that able to support both of them, one of the skill is scientific literacy. Scientific literacy became crucial because scientific literacy is the ability to engage with scientific-related topics and science ideas as a reflective citizen, which is willing to engage in discussion regarding science and technology, which requires the acquisition of scientific competencies (OECD, 2018). Further, scientific literacy is composed by concepts and ideas about science and integrate science into society (Costa et al., 2021). From the definitions of scientific literacy, the students need to require several scientific competencies in discuss or apply their science knowledge.

Because of its importance, there are several ways in promoting students' scientific literacy. In several countries, the efforts that have been made are

improving the quality of science education, facilitating the implementation of a new science curriculum, and strengthening science education research (Yao & Guo, 2018). To measure the scientific literacy among students around the world, the measurement was done by Programme for International Student Assessment (PISA). PISA assessed students' scientific literacy by requiring students to analyze socio-scientific settings, comprehend science concepts, and evaluate scientific ideas using a proper scientific design (Hwang et al., 2018). The result of the assessment was then ranked based on the highest to the lowest. From the assessment that is done by PISA, the mean science score of Indonesian students is 396 which is lower than the average score (OECD, 2019). With the score lower than the average, we need to find a way in order to improve the students' scientific literacy. One of the solution that we can done is implementing learning model and learning media to the students.

One of the learning methods that possible to be implemented is inquiry-based learning. inquiry-based learning is a learning strategy in which the students generate knowledge by using methods and procedures that are used by the scientist (Keselman, 2003). With the phases of inquiry, it aims to involve students in an actual scientific process (Pedaste et al., 2015). By implementing inquiry-based learning, the students must actively learn and solve the problems in order to achieve the learning objective (Utami & Sundari, 2019). This is because in inquiry-based learning, students faced problems that should be solved with the scientific process, such as propose a hypothesis, observing, collect data, and draw a conclusion. The use of inquiry-based learning is also able to make the learning more effective. This is because ineffective learning methods may affect the students' motivation (Sandika & Fitrihidajati, 2018). Therefore, we need to set effective learning motivation to engage the students in the teaching and learning process, especially during the pandemic situation.

As stated before, the teaching and learning process changed into distance learning. Therefore, the teaching and learning process cannot be separated with technology. Due to distance learning, the content delivery process relies on

technology use. In implementing inquiry-based learning, it is still possible if combined with technology. As a result, the teaching and learning process must be inventive when it comes to teaching approaches (Yulismayanti et al., 2020). In conducting distance learning or online class, the students not always find challenges. By conducting online class, the students are more flexible in learning, become independent in order to find more information, and facilitate shy student to participate in class discussion (Sufyan et al., 2020).

Due to the situation that we faced today, the technology that can use in teaching and learning process is limited. The possible technology that we can implement is online platform such as social media or learning management system. Based on the problems stated before, we need to maximize the use of technology as well as increase students' scientific literacy skill and students' motivation in learning science. One of the possible way is integrate social media to the teaching and learning process. With the main function is to communicate, the communication process between teacher and students offers benefits in teaching and learning process (Haşiloğlu et al., 2020). In using social media in teaching and learning process, there are several opportunities such as active learning, collaborations, and communication aspect (Greenhow et al., 2019). By using social media, the students also believe it has effective role such as acquiring new information, easier in sharing the information, and grow motivation by its multimedia feature (Bal & Bicen, 2017). Therefore, the use of social media is possible to help students' motivation as well as acquire information and further increasing students scientific literacy.

One of the possible social media to be implemented is Instagram. Instagram become one of the most popular social media with 1.074 billion users worldwide (Mohsin, 2021). With the high amount of the users, this does not make it impossible that the users come from teenager age group. Students of middle school are starting to use social media at a young age, with the girls starting to use social media younger compared with boys (Martin et al., 2018). With the features that offered by Instagram, the teaching learning process may engage the student in

learning. As stated before, the students gain motivation in social media because of its multimedia feature.

In most of the study, Instagram is used to gain the students' motivation and students learning outcomes, as well as the students other skill, such as writing skill and creative skill. In the other subject, Instagram used in language learning, especially in learning English as foreign language (Erarslan, 2019; Pujiati et al., 2019). Instagram also used in other subject, such as geography by maximize its photo sharing feature to share the students photograph in different places (Davies et al., 2019). In science learning, Instagram also already implemented in delivering physic content (Irwandani et al., 2020; Rohim & Yulianti, 2020) and chemistry subject for teaching the laboratory skill (Lim et al., 2017). There are several studies which already implemented with technology. inquiry based learning already implemented with the game (Hwang & Chen, 2017). In the online platform, inquiry-based learning already combined with learning management system, such as Edmodo (Iskandar et al., 2019). However, this study try to combine inquiry-based learning supported with Instagram in teaching and learning process to improve the students' scientific literacy and students' motivation.

The light and optic is chosen because from the information gathered from the students, they are difficult in learning light and optic. Due to online learning, the students need to learn by themselves. The teacher provide the materials and ask the students to read and understand the material, then discuss the material through online meeting. Due to online learning, the teaching and learning process is lack in activities too. The implementation of experiment is difficult to be implemented.

Therefore, the use of inquiry-based learning in teaching and learning process supported by Instagram might influence the students understanding as well as the students' motivation. This is because the learning model help the students to acquire knowledge by doing scientific phase, such as making hypothesis and observing. The activities also able the students to fully engage in learning process. To help the students in gaining the motivation, the Instagram can be used. The multimedia features that offered by Instagram, which facilitate visual content for

the students able to engage them in teaching and learning process, especially science learning during distance learning. The communication feature that provided by Instagram also able the students and teacher to have communication, such as conducting discussion.

1.2 Research Problem

The research problem of this study is "How is the students' scientific literacy and the profile of students' motivation by using inquiry-based learning supported by Instagram in learning light and optic topic?" From the research problem that already stated, this research will investigate based on the following questions:

1) How is the implementation of scientific literacy supported by Instagram in light and optic topic?
2) How is the improvement of students' scientific literacy after implementing inquiry-based learning in light and optic topic?
3) How is the profile of student motivation after implementing inquiry-based learning in light and optic topic?

1.3 Research Objectives

Based on the research question that already stated before, the objectives of the research are stated below:

1) To investigate the implementation of inquiry-based learning supported by Instagram.
2) To investigate the students' scientific literacy before and after implementing inquiry-based learning in light and optic topic.
3) To investigate the profile of students' motivation after implementing inquiry-based learning in light and optic topic.

1.4 Research Benefit

The result of this research is expected to give good benefit for certain parties that listed below:

1) Teacher

This research discuss about the students' motivation and also concept mastery in scientific literacy. The result of this research can be used for teacher to develop their teaching and learning process in gaining students' motivation and improving students' scientific literacy, especially during distance learning.

2) Student

This research discuss about the current situation of motivation and concept mastery in scientific literacy in light and optic topic. This research also able to motivate the student in learning science.

3) Other Researcher

This research expected to be used by other researcher as a reference to conduct further research in the similar field. Besides, this study can be used to develop the teaching and learning process during pandemic, especially combining inquiry-based learning with social media in teaching and learning science.

1.5 The Organization of Research Paper

To make this research systematically structured, this research is arranged based on the arrangement below:

1) Chapter I: Introduction

This chapter consist of background, research problem, limitation of problem, research objectives, research benefit, and the organization of research paper. This chapter is the foundation of the research.

2) Chapter II: Literature Review

This chapter discuss detailed theories that used in this research. The theories including scientific literacy, inquiry-based learning, students' motivation, and the use of Instagram in education.

3) Chapter III: Research Methodology

This chapter explains about the research method, research design, subject of research including sample and population, instrument that used in the research, data analysis and procedures of the research.

4) Chapter IV: Result and Discussion

This chapter describe the result of the research and also the reason of the data result that gained. The result is used to answer the research questions and testing hypothesis that already stated before.

5) Chapter V: Conclusion, Implication, and Recommendation

This chapter consisted of the conclusion based on the data that already analyzed in previous chapter. The implication talks about the implementation during the study. This chapter also describe the recommendation for teachers and other researcher for the future research.

1.6 Limitation of Problem

Several terms are used in order to avoid misinformation in this study, the terms are stated below:

1) Scientific literacy is the ability to engage in science problems with scientific approach (OECD, 2018). In this study, the study limited into two aspects, there are competency aspect and knowledge aspect. The competency aspect consist of several competencies, there are explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically. The knowledge aspect consist of content knowledge, procedural knowledge, and epistemic knowledge.

2) Students motivation affected by several aspects that consist of students' self-efficacy, science learning values, students' learning strategies, and learning motivation (Tuan et al., 2005).

3) The topic for this research is light and optic. This topic chosen is limited to 8 grade which include properties of light, mirror, and lens. Light and optic topic is limited by core competence no. 3 and 4. This topic also limited into basic competence no. 3.12 and 3.14. The basic competence is attached in 2013 National Curriculum of Indonesia.