

CHAPTER 1

INTRODUCTION

1.1 Background

These days, the contribution of science is increasing steadily. It has become important for students, regardless age, to understand and comprehend science concepts. According to Science assists humans to appreciate life and view the world and society systematically. It brought us ideas to revolutionary change and contributed a lot in the development of human civilization and society. In some countries, the decline in continuation of students in science has recently shown signs of setback. (Oon, P. T., Cheng, M. M. W., & Wong, A. S. L., 2020). Since the main purpose of education is for human to be prepared in life, and science, in most countries, are being pushed and popularized among the younger learners as part of important education. The importance of science in life cannot be left out from taking vital place in the school curriculum. Binwal, H. K. (2020) stated that the growth, prosperity, and welfare of any society depend on a fast, calculated and sustained development in the quality and extent of education in research, technology, and science. Students' attitudes toward science is one of the element in achieving the desired prospectus (Najafi, M., Ebrahimitabass, E., Dehghani, A., & Rezaei, M., 2012). This is also only possible when students adopt positive attitudes toward science because students who possessed positive attitudes toward science gain more benefits in science compared to those with negative attitudes toward science. By admitting and being aware of this, the development of science will be much better.

As the progress of science continues, Rutjens, B. T., Heine, S. J., Sutton, R. M., & van Harreveld, F. (2018) stated that attitudes towards science appear to become even further polarized. Although some believes in science, others often reject and unaccepting of scientific evidence. Thus, constructing and sustaining students' attitudes toward science consistently become a goal in science education and a frequent research topic, as the attitudes toward science holds an important role in students' determination in science class at school and their interest in pursuing careers in science (Osborne, Simon, & Collins, 2003; Tytler & Osborne, 2012). According to Astalini, A., Kurniawan, D. A., Kurniawan, N., & Anggraini,

L. (2019), Indonesian students' attitudes toward science are tend to be majorly in good categories and positive.

However, the world was strike by an unexpected deadly virus outbreak in early 2020, originating from Wuhan, China, around early December back in 2019 (Adnan Shereen et al., 2020; Rodriguez-Morales et al., 2020). This virus is specified as Coronavirus Disease-2019 or COVID-19. On January 30 2020, the World Health Organization (WHO) declared COVID-19 as a universal wellbeing crisis of worldwide concern and furthermore acknowledged it as a pandemic on March 11 2020 (Cucinotta & Vanelli, 2020). As COVID-19 outbreak became higher in numbers, many aspects of life were forced to change abruptly, and one of the aspect was the learning and teaching activities in schools. Indonesia also instantly adjusting the education system to minimize the spreading of COVID-19 pandemic within students at school.

Indonesia ministry of Education and Culture issued a new policy immediately on March 2020. The new policy stated that learning from home through online/distance learning is carried out to provide a meaningful learning experience for students, without being burdened with the demands of completing all curriculum achievements for grade promotion and graduation (Surat Edaran Mendikbud Nomor 4 Tahun 2020 pasal 2a). Because of that, schools and universities involuntarily diverted to distance learning systems. Nonetheless, the poor and sudden implementation worsen the situation. Churiyah, M., Sholikhan, S., Filianti, F., & Sakdiyyah, D. A. (2020) explained that Indonesia was well prepared in virtual infrastructure, but the teachers and schools were still unable to understand the core of distance learning and utilizing technology. This made the students less self-regulated and unable to control their activities during distance learning.

Because of COVID-19 pandemic, worries about the students' attitudes toward science roused. The previously positive attitudes toward science might be negative due to the unexpected changes in science learning activities. Since the effectiveness of learning science during COVID-19 pandemic is still low (Churiyah, M., Sholikhan, S., Filianti, F., & Sakdiyyah, D. A., 2020), students may found difficulties they did not have before COVID-19 pandemic in learning science. These difficulties may lessen the students' motivation in learning, for

example because they faced with a screen (phone or laptop) that only contained a bunch of texts every time (Toquero, 2020). The drop in motivation then will possibly lead to the students' attitudes towards science, since according to Binwal, H. K. (2020), the more negative students' attitudes toward science are, the less motivated they are in learning science.

The students' attitudes toward science before COVID-19 pandemic, based on what happened to the changes in science learning today, will be different with during COVID-19 pandemic. Whether the difference is positive or negative, no research has been conducted to prove it. Considering the things mentioned, an investigation on students' attitudes toward science before and during COVID-19 pandemic is needed to ensure the students' view on science and their prospect in science careers. With the current wave of COVID-19 outbreak, students' return to the school is seemingly very difficult in many countries. Hence, conducting arranged examinations according to the current schedule is also a formidable challenge (Ray, S., & Srivastava, S., 2020). Thus, this research attempts to investigate the attitudes toward science, specifically of junior high school students, in Indonesia before and during COVID-19 pandemic since the attitudes toward science holds a very important part in the future of science development contribution for the sake of human civilization (Binwal, H. K., 2020).

This research differ with other research in terms of investigating both students' attitudes toward science before and during COVID-19 pandemic. Due to the high demand on how are the students' attitudes toward science right now, a research on this topic is initiated. Therefore, the researcher decided to conduct a research titled "Investigating Attitudes toward Science Before and During COVID-19 Pandemic of Junior High School Students". Previously, there is a research comparing in attitudes toward science involving two rural schools in Jambi, conducted by Tanti, T., Kurniawan, D. A., Perdana, R., & Wiza, O. H. (2020). Cermik & Fenli-Aktan (2020) conducted a research to examine the primary school students' attitudes toward science in Turkey. Also, there is an investigation of middle school students' attitudes toward STEM (science, technology, engineering, and mathematics) conducted in Turkey during COVID-19 pandemic by Demir, Önal & Önal (2021). Based on these recent researches, a research including all

junior high school students in Indonesia to investigate solely on their attitudes toward science during COVID-19 pandemic has yet to be done. However, this research investigated the difference between junior high school students' attitude toward science before and during COVID-19 pandemic in Indonesia. The respondents for this research also originated from 20 different provinces in Indonesia with the total of 348 students, which makes this research the most inclusive one for now.

1.2 Research Problem

The research problem of this study is “How is the Junior High School Students' Attitudes toward Science Before and During COVID 19 Pandemic?” Elaborating the research problem, this research attempts to address the following questions:

- 1) How is the attitudes toward science of junior high school students before COVID 19 pandemic?
- 2) How is the Attitudes toward Science of junior high school students during COVID 19 pandemic?
- 3) How is the difference between attitudes toward science of junior high school students before and during COVID 19 pandemic?

1.3 Research Objective

Following the research problem, the research objectives of this research are:

- 1) To investigate the attitudes toward science of junior high school students before COVID 19 pandemic.
- 2) To investigate the attitudes toward science of junior high school students during COVID 19 pandemic.
- 3) To investigate the difference between students' attitudes toward science before and during COVID 19 pandemic.

1.4 Research Benefit

The result of this research is expected to raise some following benefits:

- 1) For students, they will be able to recognize the level of their attitude toward science. By knowing this, students within the low and average range might

improve their attitude toward science. On the other hand, students within the high range might be able to pursue the prospects of becoming a scientist.

- 2) By recognizing the students' level of attitude toward science, teachers might be able to encourage the students within low and average range to improve their attitude toward science. Teachers will also be able to sustain the attitude toward science of students within high range and guide them in orienting their view towards the prospects of being a scientist. This research will also be useful for teachers to give motivation for the students in learning science.
- 3) For another researcher, this research might be able to help as a foundation for another research that investigates about junior high school students' attitudes toward science before and during COVID 19 pandemic. Furthermore, by analyzing the process and result of this research, other researcher might be able to identify the strengths and weaknesses of this research that will aid them in developing a better research in the similar field of interest.

1.5 Organizational Structure of Research Paper

The structure of this research paper consists of five chapters:

- 1) Chapter I: Introduction

This chapter contains the background of the research, research problem, research objectives, research benefits, the organizational structure of research paper, and the limitation of problems.

- 2) Chapter II: Literature Review

This chapter contains the literature review about the independent variable, which is Junior High School Students' Attitudes toward Science, and the other variables, which are Science Learning in Indonesia before COVID-19 Pandemic and Science Learning in Indonesia during COVID-19 Pandemic.

- 3) Chapter III: Research Methodology

This chapter contains the method that used to complete this research paper, which are research method and research design, population and sample, operational

definition, research instrument, and research procedure.

4) Chapter IV: Result and Discussion

This chapter contains the result along with the discussion and explanation about the result of this research paper.

5) Chapter V: Conclusion and Recommendation

This chapter contains the conclusion of the research paper along with recommendation for the future or next research.

1.6 Limitation of Problem

In order to narrow down the focus of the research, the problem is limited as follows:

1) Attitudes toward Science

Attitudes toward science in this research will be measured through a questionnaire adopted from Said, Abd-El-Khalick, Summers, Culbertson, & Friesen (2013), which consists of five sub-scales: Attitudes toward Science and Science Learning, Unfavorable Outlook, Control Beliefs, Behavioral Beliefs, and Intention. From the questionnaire, an average score will be calculated for both students' attitudes toward science before and during COVID-19 pandemic.

2) Junior High School Students

Junior high school students are for students in grades seven through nine. According to Tucker (2016), students at junior high schools usually partake six to eight classes per day and the classrooms are organized by grade level.

3) Science Learning During COVID-19 Pandemic

In 2020, Indonesia Ministry of Education and Culture released a new policy on education in emergency time of COVID 19 Pandemic. The new policy stated that learning from home through online/distance learning is carried out to provide a meaningful learning experience for students, without being burdened with the demands of completing all curriculum achievements for grade promotion and graduation (Surat Edaran Mendikbud Nomor 4 Tahun 2020 pasal 2a).