CHAPTER I

INTRODUCTION

1.1 Background

The use of animals in daily life is extremely beneficial to humans. Animals are used to test the safety of potential medicines, to check the safety of other chemicals before they are tested on humans, and to gain science knowledge. Animals are used in science practical classes to help students understand their own bodies and how they function through observation and experimentation (Prior et al., 2019). According to data on the use of experimental animals in the world, up to 7% of animals are used for educational purposes (Vallejo G. et al., 2010). In this case, the use of animals in education includes animal observation, dissection, and treatment.

The use of animals in laboratory practical classes is a common practice used to illustrate and consolidate concepts in science learning. Working with animals in a laboratory environment allows students to develop valuable cognitive skills while also providing opportunities for analytic thought, which potential support students' understanding of science laboratory experiences, as interactive components for developing hands-on skills in science education, can be used to complete active learning lessons. Furthermore, data gathered through laboratory observations assist students in posing specific questions, motivating them to seek answers that support their hypothesis and solving problems (Agüera et al., 2015; Durand et al., 2019).

Besides being used as models in science learning, animals are also used as objects in biology learning through animal dissection. The quality of science learning is partially determined by students' classroom activities. Many science topics at lower secondary school level involved animal use and organ dissection in order to introduce the curriculum of life and earth science. This indicates that the use of living animals and plants in learning life science has a wide range of applications in life (Amahmid et al., 2019). On the other hand dissection of organs as part of the biology laboratory has been recognized as positive with arguments that dissection may help students develop observational and comparative abilities, discover the common and distinctive structures of certain organisms and develop a greater understanding of the complexity of life. The practice of dissecting an animal while it is still alive is known as vivisection. Dissections

of animal organs are used to teach certain concepts and develop specific skills, such as research, investigation, and problem-solving abilities (Špernjak & Šorgo, 2017). Animals have been used in experimental science for a long time, despite the fact that animal dissection is a contentious pedagogical practice. Furthermore, some high school plans do not restrict or prohibit their use in the field of sciences as an activity intended to achieve the curricular goals of sciences learning (Oakley, 2012).

Nonetheless, over the last 20 years, there have been discussions about the use of live species in terms of ethics, morality, and educational utility. Furthermore, criticism has been leveled because living preparations can be replaced with alternative solutions. In fact, there was a significant decline in animal use in science courses from 1980 to 2000. Most medical schools in the United States do not use live species in any of their physiology, pharmacology, or surgery courses. Simultaneously, the use of alternatives, especially those based on virtual technologies such as slides, video, computer-assisted instruction, and computer simulations, is increasing (Agüera et al., 2015; Durand et al., 2019)

Ethical issues have become more widespread in many areas of life, and they are commonly the topic of broad government policies in this world. When it comes to the use of animals for educational purposes, ethics and animal welfare are high on the political agenda and in people's minds. The question of animal status has been debated extensively; many philosophers have represented on it; however, controversy persists, and no agreement on the status of animals in relation to humans has been reached. The public's views range from complete opposition to strong support for the use of animals in research, whereas scientists who use animals in research may be more supportive than the public (Hagelin et al., 2003; Miziara et al., 2012)

Scientists undertaking animal studies should not only have intellectual validity and replicability in their test findings, but they must also have appropriate attitudes against animal welfare and bioethics. Although public lack concern about animal experiments, an unavailability information suggests that the public does not correctly understand animal studies. As a result, recognizing public awareness of animal studies is critical when considering future science and technology policies, as well as animal welfare policies (Uchikoshi & Kasai, 2019).

The perception of students and their learning preferences should be considered one aspect related to this the development of science education. Some of the perception can be unpleasant for education activities involving animals, while others are exciting and helpful.

In this reference, the cognitive perceptions of students in various subject areas especially in science can occasionally affect their performance. With this background, this students ethics perception on the animal experimental needs to be analyzed particularly with regard to the 3R principle described by W. Russell and R. Burch. (Durand et al., 2019; Russell 1959)

Indonesia is one of the countries that uses of experimental animals for medical and life science research. There is currently no other effective alternative to replacing animals as science learning materials in Indonesia. However, several trials showed no measurable advantages of practical activities using live species as compared to recent alternate educational modalities in terms of knowledge acquisition (Dewhurst, 2008). There is also no standard rule for using animals as observer material, dissection items or experimental animals in this case. The science learning curriculum in Indonesia has not yet regulated this, so there may be errors in the practice of science with animals.

With the many positive effects obtained from the use of animals in learning, eliminating the use of animals in science activities in Indonesia cannot be done easily. Although it is being replaced with renewable technology, especially in the midst of the COVID-19 pandemic where everything is done online, it is not yet known how students will react to this. Because education is an investment for the future of a nation's people, and continuity of education is extremely crucial, education policy cannot be changed without appropriate data (Handayani Tyas & Naibaho, 2020).

Indonesia has implemented several curricula in accordance with the mandate of the state ideology. Eventually, a curriculum known as the 2013 curriculum was adopted. The implementation of the 2013 curriculum was a made by the government in order to address the demands of the ongoing literacy challenges and find the right solution with the flow of globalization. The curriculum is intended to help students master the three dimensions of knowledge which are attitudes, knowledge and skills. Furthermore, it is expected that students will be able to master a variety of skills, including creativity, productivity, critical thinking, independence, collaboration, and communication (Depdiknas, 2007; Khoiri, 2020). Aside from the Indonesian curriculum, no discussion of the ethics of using animals in science education has been found. A big question mark is whether there is a need for guidelines for the use of animals in science learning practices; regulations on how many animals can be used, or whether Indonesia will replace all use of animals with virtual reality or other media.

Considering the things mentioned, it is necessary to know how students feel about the ethics of using animals in science education currently. To this end, the development of an instrument for testing student ethical perception on the use of animals in science learning should be made. The research findings will be used as the foundation for developing a mutual science educational program that can be implemented to build and increase students' knowledge in science. It is also expected to be a resource for formulating the next steps in developing the ethics of animal use in science, whether for educational or non-educational purposes.

1.2 Research Problem

As outline above, the research problem of this research is "How do students perception on the use of animals in science learning activities?"

1.3 Research Question

Based on the research problem, the aim is to investigate the following questions:

1. What are the ethical concerns of students about the use of animals in science learning?

2. What influences student ethical perceptions on the use of animal in science learning activities?

3. How do students express their opinion about animals as a resource in science learning?

1.4 Limitation of Problem

There are several terms used in this study and in order to avoid misinformation, the terms are defined as followed:

1) Student ethical perceptions is the way in which student perceive their lives, conditions or positions. With an ethical perspective, students are able to identify and differentiate between the right ideas and concepts. This research investigates students' perceptions of the use of animals in science learning, the types of animals used in science learning, the ethics of using animals in science, as well as reducing the number of animals and replacing animals in science teaching with other methods.

2) Gender classification is used in this research for male and female who are officially registered as seventh, eighth, and ninth grade junior high school students.

3) Pet ownership classification is used in this research for students who have pets and students who don't have pets junior high school students. In the lives of many people, pets play a very important role. Pets have a strong intuition that people don't get, so that life is fulfilled by their owners.

4) Animals are obviously living, breathing, complex beings like humans, but at the same time, they differ from human in many ways. Human treat animals very differently than human treat other humans. It is emphasized to students that human beings are animals, but for purposes of this study, the term "animals" will be used to refer specifically to non-human animals.

1.5 Research Objective

This research is conducted to analyze student ethical perceptions to the use of animal in science learning activities. The objectives of this research are specified as:

1) To profile student ethical perceptions on the use of animals in science learning at middle school level

2) To investigate anything that affects student ethical perceptions on the use of animals in science learning

3) To profile student concern about ethics on animals used for science experiments at middle school level

1.6 Research Benefit

The results of this study are expected to provide the following benefits:

1.6.1 Students

The results may assert their knowledge about ethics related to animals used in science learning, and may also motivate them to develop their curiosity in science. This will also help students to respect fellow living beings and be wise in using animals in any form of science activities. Students may be inspired to find other alternatives to replacing animals as an object and learning sources in science education as a result of this.

1.6.2 Teachers

Teachers are able to apply alternative teaching methods while studying the structure and functions of living things. This also can make teachers use

animals in science learning wisely, and according to the conditions of the lesson, without reducing the essence of learning itself.

1.6.3 Researchers

Results of this study are expected to serve as a reference about ethical on use animal models for scientific practice. Many types of research may also detect the strengths and limitations of this research by developing the instrument and expanding the researches population, which can contribute to better studies in this field.

1.7 Organizational Structure of Research Paper

The research paper is divided into five chapters, each with its own subsections as follows:

1) Chapter I: Introduction

This chapter discusses the research problem, research questions, problem limitations, research objectives, research benefits, and the systematic structure of the research paper. This reveals that the ethics of using animals in science education have not been fully addressed by students, then developed into the problems that will be investigated in this research.

2) Chapter II: Literature Review

This chapter contains the relevant theories and studies related to the main variables of this research. The literature review includes the fundamental explanations about ethical use of animal in science learning and some of the variables that might influence them include gender and pet ownership. Findings from similar studies are also included at the end of the section to support and compare the result of this research.

3) Chapter III: Research Methodology

This chapter explains the details of methodology in conducting the research beginning from the research method, research design, research subject, operational definition, research instruments, instrument analysis, data analysis and research procedure. validity and reliability results are also discussed in this section

4) Chapter IV: Results and Discussion

This chapter describes the data and discussion related to the findings on the implemented research. The research problems stated is being answered in this chapter with analysis using figures, tables and relating the research to previous studies.

5) Chapter V: Conclusion and Recommendations

This chapter is the closure which consists of the conclusion of the research and recommendation for further related research. This section also concludes by answering the research questions that have been discussed in the previous chapter