

CHAPTER I

INTRODUCTION

1.1. Background

Learning is a process of change in the human personality and the change is manifested in the form of an increase in the quality and quantity of behavior such as an increase in knowledge, attitudes, habits, understanding, skills, thinking and other abilities. Human ability to learn is one of the things that distinguishes one human from another human being. There are so many advantages when humans want to learn, one of which is that it can have an impact on society and especially on oneself. Everyone has a different way of learning. So, learning is not only done by students, but everyone can do it to gain even better knowledge.

Educational values that characterize the interaction between teacher and students when learning in school. The activity is carried out to achieve the learning objectives that have been stated in the learning plan. The teacher consciously has planned the teaching activities systematically and utilizes the tools or materials used in learning to make supporting these learning activities. The expectation of the teacher is how the subject matter that has been delivered by the teacher can be mastered by students.

Implementation is an activity that is planned and carried out seriously to achieve certain activities. According to Guntur, implementation is the expansion of activities that mutually adjust the process of interaction between goals and actions to achieve them and require a network, effective bureaucracy. In this research an implementation is needed to determine the improvement of science process skills by implementing project based learning (Setiawan, 2004).

Respiratory system was chosen in this research, because in learning does not involve students. So far students only accept what is given by the teacher, while the material of the respiratory system has characteristics in the form of interrelationships in structure, function, and processes that occur in the nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, and alveoli. In connection with the

characteristics of these materials, the material of the respiratory system is less objective if taught only by the lecture method. Therefore, in the learning process especially the subject matter of the respiratory system it is necessary to use a learning model that can make students active and can improve the mastery of student concepts, so that the subject matter of the respiratory system can achieve the minimum completeness criteria set by the school.

Based on observation, several obstacles were found when students accepted their lessons. For example students get bored easily when receiving lessons, are easily sleepy, talk with their friends outside the material being discussed in learning. And teachers sometimes only focus on one student so that other students feel ignored. In addition, there are still students who think that biology is less interesting because they consider only memorization. One reason is because teachers are still teaching conventionally, giving lectures or explaining in front of the class so students are less able to understand broadly the subject matter provided by the teacher and also students are less enthusiastic in participating in learning so that student's activeness, creativity, and skills do not increase. Based on this experience, researchers want to try a learning model that can engage students more actively and understand more biology learning so that their science process skills become improved by applying the Project Based Learning model.

Project Based Learning is motivated by constructivist theory which provides many opportunities for students to create an active learning environment (Cakici, 2013). Project Based Learning is a model that regulates the learning process through project activities. Projects are complex tasks that are based on challenges in the form of questions and problems, which involve students in designing, solving problems, making decisions, and doing research, giving students the opportunity to work at a predetermined length of time and produce a product or make a presentation. Students are involved to solve problems and make decisions through various activities to facilitate the process of storing cognitive memory more permanently (Thomas, 2000). The Project Based Learning criterion according to Tamim (2013) is that the project must be in accordance with the curriculum,

focusing on problems that invite students to connect with the main concepts, involving students to make constructivist, realistic, and independent observations.

Project-Based Learning has a significant role in improving learning outcomes. because the focus of Project Based Learning lies in the concepts and core principles of a discipline of study, giving students the opportunity to work independently to build their own knowledge, and apply it in tangible products. This is supported by the results of the study of Made et al (2014) using a Project-Based Learning model, showing that there are differences in the improvement of student learning outcomes with conventional Project-Based Learning (Purnamasari, 2015). Meanwhile, according to Mukra (2016), the average learning outcomes differ between Project-Based Learning and Problem-Based Learning and other models, because Project Based Learning is higher than Problem Based Learning. This difference is because the Project Based Learning model has advantages, namely increasing motivation, increasing the ability to solve problems, increasing the ability to study literature, increasing collaboration and improving resource management skills.

With the Project Based Learning model, students will certainly be more active in the learning process because students are motivated by teacher questions so they are challenged to find out the answers. In addition, this learning model also motivates students to reflect on what they are learning in the form of a tangible product. Learners can work in a concrete manner that can produce products realistically. So in the end, the goal of this learning model is students can improve scientific process skills (Salmi, 2017).

According to Erkol (2014), scientific process skills can be defined as basic skills that make learning easier, which develops student's readiness to take responsibility, improves memory of what they learn and makes students learn research methods and approaches together by being active in domain of science and social science. Scientific process skills are also described as the abilities that scientists use during their work and also the competencies displayed when solving scientific problems. Taking this into account, scientific process skills are the basic information that generates and regulates skills related to the world around us, and

is therefore the most important means of reaching the information society. If we analyze research into scientific process skills, we can observe that they are classified in different ways. Scientific process skills are divided into basic process skills and Experimental Process Skills according to the framework of the Department of National Education "Basic Science and Technology Curriculum". In this skill, basic process skills; consists of observation, measurement, classification, prediction, inference and communication while the experimental process of skills consists of building model skills such as identifying and controlling variables, formulating hypotheses and testing, interpreting data, tapping job definitions, making experiments.

In the teaching-learning process, it is very important to train teachers who acquire scientific process skills, especially in the field of science with a reason to improve student skills. In the case of teachers who have acquired these skills, solely in pre-service education, obtaining basic skills such as critical thinking, creative thinking, making scientific research are also trained by teaching students the skills to have. In this way, the level of the prospective teacher's scientific process skills and the determined variables that influence this level are important with respect to establishing the deficiencies needed in this subject.

SMA Negeri 2 Tebingtinggi still applies direct learning in school. Direct learning in question is the teacher still uses the lecture method and students are only as listeners. Based on data obtained through interviews with biology teachers and observations, there are still many SMA Negeri 2 Tebingtinggi students who are less interested in learning biology so that the grades obtained are not complete.

Based on the background of the problem described above, the author is interested to improve scientific process skill through implementation of Project Based Learning on respiratory system.

1.2. Problem Identification

Based on the background explained above, the problem identification in this research includes :

1. Students are less interested in the teacher's explanation because it seems monotonous.
2. Student less scientific process skill.
3. Project Based Learning in schools has not been implemented well.
4. Teachers only pay attention to student learning outcomes without regard to process skills.
5. The teacher has not applied a Project Based Learning model that trains students to think critically, be more active, and learn independently by developing the ability to work together among students.

1.3. Problem Limitation

For more directed research, the problems identified in the above points are limited. Limitation problems in this study are:

1. The model used is Project Based Learning to improve student's scientific process skill.
2. The material used is a respiratory system.
3. This research was conducted on class XI MIA 2 and XI MIA 5, the second semester of SMA Negeri 2 Tebing Tinggi.

1.4. Problem formulation

Based on the identification and limitation of the problem, then the problem can be formulated as follows:

1. Whether Project Based Learning can improve student scientific process skill on respiratory system ?
2. What are the results of student's scientific process skills with direct learning ?

1.5. Research Objective

The objective of this research is:

1. Knowing the improve in student's scientific process skills by using the Project Based Learning model.
2. Knowing student's understanding of the respiration system by implementing project based learning.
3. Knowing the results of student's scientific process skills with conventional learning.

1.6. Research Benefit

This research will bring to:

1. For researchers, this research can be used as a researcher's insights in using learning strategies especially in learning biology.
2. For schools, the results of this study are expected to be used as input to improve the quality of learning, especially on biology learning using Project Based Learning model.
3. For teachers, this research can be used as donations thoughts in the implementation and development of learning activities in schools. The Project Based Learning model can be used as a material for educators to consider choosing a more innovative and effective learning model for students during the teaching and learning process.
4. For students, they can improve their scientific process skills.

1.7. Definition Operational

This research has several important meanings, namely:

1. Project Based Learning is a learning model that focuses on the main concepts and principles of a discipline, engages students in problem solving activities and other meaningful tasks, gives students the opportunity to work autonomously to construct their own learning, and ultimately produces student work products.
2. Scientific process skill is the overall directed scientific skills (cognitive and psychomotor) that can be used to find a concept / principle or theory, to develop an existing concept beforehand, or to refute an invention.

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