

Preliminary Analysis of Problems in Biology Learning at SMPN 15 Kerinci

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Abstract - The purpose of this study was to determine the initial analysis of problems in biology learning at SMPN 15 Kerinci. The study was conducted in January 2019. This type of research is quasi experimental research. The population was students in grade VIII of SMPN 15 Kerinci registered in academic year 2018/2019. For the sample because it consists of two classes, all classes are sampled. As a result, VIIIA was as experimental class and VIIIB as control class. The instrument used is a test. Data analysis was performed using the t test. The findings showed that there is a significant difference between student' biology competence in experimental class and control class, in which students' biology competence in experimental class is higher than in control class. Average score of students' biology competence in experimental class is 78,77 and in control class is 71,92. So, it can be concluded that biology learning with the help of Student Worksheets based on Problem Based Learning can improve student competence in the knowledge aspect.

Keywords - Biology Learning; Competence; Student Worksheet; PBL.

I. INTRODUCTION

Education according to the law No. 20 of 2003 is a conscious and planned effort so that students can actively develop their potential so that they have religious spiritual strength, personality, intelligence, and skills needed by themselves and society. If we want to improve achievement, surely we will not be separated from efforts to improve the quality of learning in schools. The applicability of the 2004 curriculum based on Competency which has been revised through the Education Unit Level Curriculum (KTSP), requires a paradigm shift in education and learning, especially in the type and level of educationl. The change

must also be followed by the teacher responsible for organizing learning in school.

Such conditions increasingly get the moment of enactment of the 2013 curriculum. This is because the theme of the 2013 curriculum development is to be able to produce productive, creative and innovative Indonesian people. Then the 2013 curriculum focuses on the scientific education approach, which is an approach that emphasizes five steps in gaining knowledge, namely observing, asking, gathering information, reasoning, communicating. This is where the character values of students are expected to be built (Al-Tabani, dkk, 2014: 10). Given the importance of biology learning, efforts from various parties are needed to improve

the quality of biology learning in schools, including: improving the curriculum, holding training for teachers, adding educational facilities and infrastructure, and developing various learning methods.

Based on observations made in the field, it is known that the teachers have not applied the learning process well, where students are not encouraged to develop thinking skills. Weak ability of students in addition to being caused by the low desire of students to explore the concepts of biology through the process of thinking, also influenced by the weak initial ability of students. If the initial ability of students is low, it will affect the process of forming new understanding in the student. This is because, the initial ability is the foundation in forming a new learning concept. The teacher does not emphasize the importance of the role of each student in the group to achieve learning goals. Students who have high abilities appear to dominate so that when the learning process takes place, students who are willing to present in the future are only the ordinary ones, and vice versa, students who have low ability or passive do not take advantage of the opportunities to develop their potential so that students become more passive and depend on friends who are considered capable.

Based on these problems, it is necessary to attempt to improve the quality of biological learning. One effort that can be done by teachers to be able to help students to be active and better understand learning material is to use the Problem Based Learning. With the Problem Based Learning students are given the opportunity to solve problems in a collaborative environment, create mental learning, and form habits of independent learning through practice and reflection (Yew and Goh, 2016). This is in line with the study of Mountinho (2015) which states that through Problem Based Learning students can gain experience in dealing with problems that are present in real life, and emphasize the use of communication, cooperation, and various existing resources to form ideas and develop abilities reasoning.

In Problem Based Learning Learning that is used there must be teaching materials that become supporting, namely Student Worksheets. According to the Indonesian Ministry of Education in Gustinasari, Lufri and Ardi (2017), the use

of LKPD as written learning material is more useful than the use of books. With the existence of teaching materials namely Student Worksheets as learning resources that can support students think critically and construct understanding with the existence of learning activities that include the Problem Based Learning syntax. According to Slameto (2010: 25) "How new materials can be studied properly, depending on what is known". Therefore, students' initial ability is a prerequisite for students to take lessons, so that they will achieve better learning competencies.

The initial ability and learning model are two very important things to be noticed by the teacher before starting the learning process. The initial ability of students is a prerequisite for participating in learning so that it can carry out the learning process well.

Based on the explanation above, it is interesting to do a research entitled "Preliminary Analysis of Problems in Biology Learning at SMPN 15 Kerinci".

II. RESEARCH METHOD

This research is a quasi experimental research. The population was students in grade VIII of SMPN 15 Kerinci registered in academic year 2018/2019. For samples because they consist of two classes, they are all used as research samples. As a result, VIIIA was as experimental class and VIIIB as control class. The instrument used is a test. Data analysis was performed using the t test.

III. FINDING AND DISCUSSION

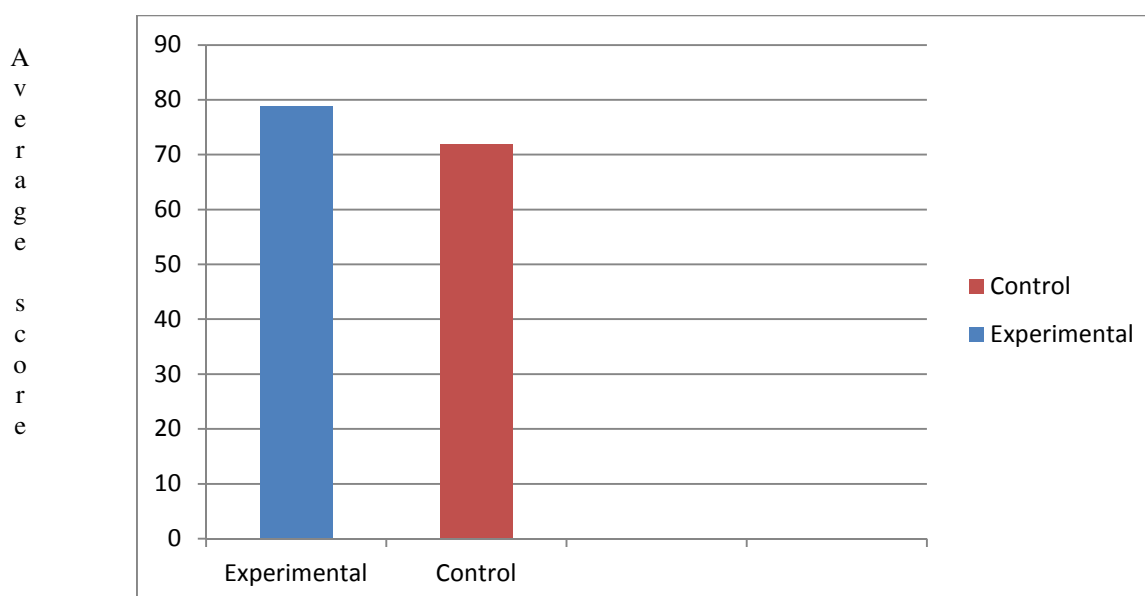
Data obtained in the research are students' knowledge competence in both experimental and control classes.

3.1 Data of Students' Knowledge Competence

Data of students' knowledge competence are presented in Table 1 below.

Table 1. Data of Students' Knowledge Competence

Class	Average Score
Experimental	78,77
Control	71,92



Graphic 1. Average Score of Students' Knowledge Competence

The assessment of student knowledge competency is done using test questions. Based on Table 1. and Graph 1 above, it is clear that the average score of knowledge competency students in the experimental class is higher than in the control class, which is 78.77 in the experimental class and 71.92 in the control class. This shows that the realm of student competency in the experimental class that uses the problem based learning learning model is higher than the control class using conventional models based on high low initial abilities. This is because the problem based learning model is a learning approach that presents contextual problems, thus attracting the attention of students to learn. This is in line with Dewi, Eka and Jatningsih (2015), which states that PBL has special characteristics that produce a product and present it in front of the class. It makes students discover their own knowledge so that the learning process becomes more meaningful. (Aswan, Lufri and sumarmin, 2018).

According to Uno (2012) the problem based learning model is a learning model that requires students to work on authentic problems with the intention of developing their own knowledge, developing inquiry and critical thinking skills, developing students' independence and confidence. Next, Bachtar (2018) said that PBL can help students find solutions to topic learning problems to make the learning process more meaningful. According to Erda (2018) the learning model requires students to play an active role in the learning process. According to Yunanda (2018) the initial

ability is the basic ability or ability possessed by students before participating in learning.

The learning process in the problem based learning model and the initial ability assisted by the LKPD which is one form of independent training provided, which can be used to attract the attention of students to be more critical thinking and understand the concept. LKPD is given to each group, adjusted to the learning model used. LKPD which is distributed in each group contains problems and questions related to learning material. This makes it easier for students to conduct group discussions and collaboration with each group, and make them more active in learning. This is in line with Bayharti, Suryelita and Utari (2015), who propose that LKPD based PBL can make students think critically in solving a problem. Ayuningrum (2015) states that in PBL based on LKPD, there are several problems that must be solved by students so that they can actively engage, ask enthusiastically and communicate their opinions without doubt.

Learning activities with problem based learning have five main steps that begin by introducing students to the problem and ending with the presentation of the work of students. The five steps are: students' orientation to the problem, organizing students to learn, guiding individual and group investigations, developing and presenting the work, and analyzing and evaluating problem solving processes.

At the orientation stage of the students on the problem, the teacher gives problems to the students in the form of discourse, then the students are asked to understand the problems provided on the problem discourse sheet. Activities carried out by students are to find the problems contained in the problem sheet. Then students solve problems together and express opinions that are in accordance with their experiences so far through explanations given by the teacher. Students dare to give a complete explanation for the wrong answer. Giving real problems will stimulate curiosity, desire to observe, and the desire to be involved in a problem will be even greater.

At the stage of guiding individual and group investigations at this stage can improve students' critical thinking skills, this is because at this stage the teacher invites students to discuss the most appropriate strategies to solve the problem given, then find information about the causes and consequences of the problem which exists.

After students find alternative solutions that are used to solve problems, students conduct investigations in groups to find the right solution to the problem. At this stage, students are also asked to draw conclusions from the problem solving activities carried out. The next stage is that students are asked to develop and present their work.

When a group discussion has been chosen (the presenter) will read the question or problem found, then read the solution to the problem. One group of presenters delivered the answers to the discussion questions in front of the class while students from other groups listened to the answers to each question (listening activities). According to Slneto (2010), good listeners include focusing all physical and mental strength to listen, refraining from interrupting the speaker, showing interest and readiness to look for fields that are together with the speaker, looking for meaning and avoiding being stuck in words certain, show patience because of the emotionality of what is being discussed, ask if it does not understand, do not make a judgment before the speaker has finished presenting the description and we understand the material being discussed, provide clear and unquestioning feedback to the speaker.

After the presenter conveys the results of solving the problem, if the information received is not appropriate, then the other students add or correct, even ask about the problem being discussed by the presenter group by adjusting the understanding of the material and resolving the conflicts that occur in the discussion after that the teacher will giving emphasis to the material discussed. At the end of the lesson the teacher guides students to conclude the subject matter by

asking for the participation of students. Thus problem based learning is directed at finding problems and finding solutions to problems found together and learning is more centered on students and teachers only as facilitators and moderators.

In the competency control class the knowledge aspect is lower than the experimental class because the control class uses conventional learning models and initial abilities. This can be seen from the results of the students' test, students find it difficult to solve problems because the teacher does not give home assignments, only asks students to read the material learned by the school later. But not all students have the willingness to read material, so that the learning capital of students is low.

This results in students needing a long time in solving problems given by the teacher, students must open the book first, first read the material that is in accordance with the existing problems. Then understand the problem, and note if the problem has been found the answer, so that much time is used in orientation to the problem and investigation of the problem, while the development and presentation of the work and evaluating the problem solving process is not achieved optimally.

The teacher overcomes the problem by giving the time limit to students in orientation to the problem and investigation of the problem, but the time given is not enough to solve the problem given by the teacher. There are some groups that are finished in solving problems, some other groups are not finished in solving problems, some other groups are not finished in solving problems, so in the process of developing and presenting the work and evaluating the teacher's problem solving process more to direct students in the problem solving process. This resulted in not all students who were active in the discussion, only smart students dominated the learning process.

In other words, the learning process in the two sample classes namely the experimental class and the control class have significant differences. The experimental class using the application of the problem based learning model has an average value of competency in the knowledge aspect better than the average value of the knowledge class of the control class using conventional learning models.

IV. CONCLUSION

Based on the research finding, it can be concluded that the Initial Analysis of the Problem of Learning Biology with the help of Problem Based Learning based on LKPD

significantly affects students' competence because it can improve their biology competence.

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