

Need Analysis of Module in Material of Virus and Bacteria Based on *Problem Based Learning* Model for Students of Senior High School 1 V Koto Kampung Dalam Grade X

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ABSTRACT

Biology topics must develop thoughts, skills, and understanding of students towards concept. In learning the implementation independent concept needed a teaching materials designed specifically that can be studied by learners independently. One way is to improve student ability to solve problems in accordance with one of the objectives of applying the 2013 curriculum. Therefore, researchers conducted a needs analysis of 30 students of Class X MIPA in SMAN 1 V Koto Kampung Dalam. The aim of it to find the need to Module in Material of Virus and Bacteria Based on *Problem Based Learning* Model for Students of Senior High School 1 V Koto Kampung Dalam Grade X. The data collection using observation techniques, questionnaires/interviews, needs analysis and curriculum. Based on the analysis of the need to develop problem based learning biology modules on topics of virus and bacteria for Students of Grade X State Senior High School 1 V Koto Kampung Dalam it can be known that, teaching materials used are still in the form of textbooks and student worksheet that have not been valid, practical, and effective. The teaching material used cannot help students in the process of thinking critically in the problem solving process. Competence of students in the problem solving process has not been trained. The unavailability of problem based learning teaching materials. It can conclude that need to develop the module in Material of Virus and Bacteria Based on *Problem Based Learning*.

Keywords: *analysis, competence, concept, improve, module.*

1. INTRODUCTION

Virus and Bacteria is is one of the biology grade X learning materials in semester I of curriculum 2013. This material included in KD 3.4 analyzes the structure, replication, and role of viruses in life and 3.5 identifies the structure, way of life, reproduction and the role of bacteria in life. The characteristic of virus and bacteria material contains many problems about diseases that exist in our environment, such as influenza, measles, and dengue fever caused by viruses and vaccination procreation in terms of preventing the spread of viruses and bacteria. The characteristics of this material need the ability to think critically in solving problems in the environment around students so that it is appropriate to use problem-based learning model.

This problem based learning model has many advantages, one of which can improve student ability to solve problems in daily life. In order to create good learning, teachers must provide opportunities for students to play an active role in the learning that is conducted. The activeness and independence of students must be seen in every learning process. One of the things that can be done so that students can play an active and independent role in developing their knowledge is the use of modules.

Based on the result of interview by writer with one of the teacher of State Senior High School 1 V Koto Kampung Dalam and in State Senior High School 1 V Koto Timur, information was obtained that at the two schools, teaching materials used by students were textbooks. This book is loaned to students during the learning process and returned to the library after study hours are over. The teacher also provides a Student Worksheet (LKPD) to

support teaching materials provided at school. But LKPD provided by teachers has not facilitated the ability to think critically and solve students' problems. In addition teaching materials available at school have not facilitated students to be able to improve their problem solving skills in accordance with the implementation of the 2013 curriculum. One of the ways is by implement *Problem based learning*-based learning model in module that is used by students. Based on problems that have been explained above, then analysis about the development needs of *Problem based learning*-based teaching material in material virus and bacteria for student grade X Senior High School was conducted.

2. MATERIALS AND METHODS

This research is a descriptive because it has purpose to find out the development need of *Problem based learning*-based teaching material in material virus and bacteria for students of grade X Senior High School. The need analysis was conducted in State Senior High School 1 V Koto Kampung Dalam and State Senior High School 1 V Koto Timur. The product test subject of this research are teachers and 30 students of grade X State Senior High School 1 V Koto Kampung Dalam and 30 students of State Senior High School 1 V Koto Timur. The object of this research is text book and LKPD which is used in State Senior High School 1 V Koto Kampung Dalam as teaching material. The data of this research was collected by interviews and distribution of questionnaire. The instruments used were interview guidelines, teacher and student questionnaires. The data analysis used is the analysis of problems and needs, this analysis was conducted to find out the problems faced by students in the biology learning process and determine the characteristics of the learning modules that will be developed. Next is the analysis of students. This analysis is carried out to see the needs of students who are the targets of the development of this PBL-based learning module. Then curriculum analysis. This analysis is carried out to determine the order and scope of the material to be developed in accordance with existing basic competencies and concept analysis. Concept analysis aims to identify, detail and arrange the concepts contained in virus and bacterial material systematically which will be used as a guide in the development of this PBL-based learning

3. RESULT AND DISCUSSION

3.1 Analysis of problems and needs

Analysis of problem and needs was begin with development and assessment. The instrument used in observation and interview to biology teacher and students. Based on result of interview in October 15, 2018 with Mrs. Yelisnawati, S.Pd. Biology teacher of State Senior High School 1V Koto Kampung Dalam it is

found that one factor that caused the low of student learning outcomes is the student difficulties in understanding the teaching materials. While the selection of appropriate teaching materials can increase student interest in learning and can support student learning outcomes. Teaching materials used by students are textbooks and LKPD. This textbook is loaned to students during the learning process and returned to the library after class. Based on the result of interview with 30 students grade X State Senior High School 1 V Koto Kampung Dalam, it is found that 100% of them answered that they do not have teaching materials beside as learning support. They only depends on books which borrowed from library and LKPD which they bought personally, 17% students stated that they copy the textbook to be read at home to learn the biology material. The material that is considered difficult by students is Virus and Bacteria which is 51.72%, the material of the circulatory system and the regulation system is 17.24% while for the material of the excretion system is 13.79%. The teaching materials used in State Senior High School 1 V Koto Kampung Dalam both textbooks and LKPD have in common that have not facilitated the ability to think critically and improve students abilities in the process of solving problems. One effort that can be conducted is by applying *problem based learning* model in the material of virus and bacteria.

3.2 Student Analysis

The subjects used in this research in this research are students of grade X State Senior High School 1 V Koto Kampung Dalam. This student analysis was conducted to get illustration in developing PBL-based learning module which will be used by students in biology learning process. The *problem based learning* biology learning module to be developed is designed for student of high school with average age of 11-18 years old. Based on the learning theory put forward by Piaget (1980), children aged 11-18 years are at the formal operational stage. At this stage students can think logically in drawing conclusions, interpreting, and developing hypotheses. The results of this analysis are the assumptions that class X high school students who are in the age range 11-18 years have been able to apply the steps in *problem based learning*-learning model. The implementation of steps in *problem based learning* model is important for students because it can help student in create and develop the manner of critical thinking also the process of problem solving related to learning materials that are around students environment.

3.3 Curriculum analysis

The curriculum analysis is conducted to determine the order and scope of the material in accordance with basic competencies, as well as looking at the logic of the material, identifying the material and presenting problems

related to the surrounding environment. This curriculum analysis is focused on SK and KD of virus and bacteria material that are, KD 3.4 analyzes the structure, replication, and role of viruses in life, KD 3.5 Identifies the structure, way of life, reproduction, and the role of bacteria in life. Curriculum analysis on virus and bacteria material is expected to help students fulfill the learning purposes to be achieved.

3.4 Concept analysis

The concept analysis is conducted as basis for identifying, detailing, and arranging concepts in material of virus and bacteria to make it systematic so that it can be used as guidelines in development of PBL-based learning module. The researcher compile the important concepts to be learned systematically also arrange the order of learning module to ease students in understanding it. The important concept to be identified in material of virus and bacteria must be adjusted to curriculum 2013.

4. CONCLUSION

Based on primary need analysis of PBL-based module development in material of virus and bacteria, then it can be concluded that, the teaching material used is still in the form of textbook and LKPD that is not yet proven as valid, practical, and effective. The teaching material used cannot be helped the students yet in the process of thinking critically and process of problem solving. Student competency in process of problem solving is not yet trained. The unavailability of *problem based learning*-based teaching materials.

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