

Needs Analysis of Creation of Biology Module with Characters Nuance Supplemented Concept Maps for Students at Class X

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ABSTRACT

Based on the observations at class X students and teachers of SMA Negeri 1 Rengat indicate that the teaching materials used in learning biology have several shortcomings such as language that is difficult to understand, topics and assessment instruments that are not in accordance with the indicators of competency achievement designed by the teacher, and colour and image design not attractive. The other hands, it showed too the lack of student character such as discipline, curiosity, and love to read, care about the environment and be responsible. The lack of students' ability to relate concepts in biology learning is another identified problem. This problem can be overcome by developing character learning biology modules equipped with concept maps. This research uses the initial investigation phase (preliminary research phase), the first step of Plomps Models. It has been carried out by distributing questionnaires and observation sheets and then analyzing the problems of learning activities, students' needs, curriculum and concepts. The results showed that student at class X need a biology module with character nuance supplemented concept maps.

Keywords: *biology learning, characters, concept maps, module.*

1. INTRODUCTION

Education is a systematic process to develop the potential of students to become quality human beings. Education in Indonesia is guided by the Law of the Republic of Indonesia Number 20 of 2003. Based on the Law on the National Education System, the basic, functions and objectives of national education are explained. The basis of national education is the Pancasila and the Constitution of the Republic of Indonesia in 1945, its function is to develop the character and civilization of the nation in order to educate the life of the nation, with the aim of making people who believe in and have faith in God Almighty, have noble, healthy, knowledgeable, competent, creative, independent, and become citizens who are democratic and responsible.

The purpose of national education reflects the character that is expected to exist in the next generation in order to support Indonesia's development in various fields while still holding fast to the existing noble values. The progress of the times accompanied by the entry of various cultures as well as science and technology caused a shift in norms and culture that had taken root in the Indonesian people. According to Hamalik [5] the intended change causes social changes caused by internal and external forces that

exist in society. These social changes can cause the fading of the norms that exist in Indonesian society. Planting character education in students is inseparable from the role of teachers in school in learning. The role of teachers in preparing generations according to the goals of national education is very large.

Strengthening character education in schools based on RI Minister of Education Regulation No. 20 of 2018 Article 2 is implemented by applying the values of Pancasila in character education mainly covering religious values, honesty, tolerance, discipline, hard working, creative, independent, democratic, curiosity, national spirit, love of the motherland, understanding achievement, communicative, love peace, love to read, care about the environment, care about social, and responsible. Changes in character according to [12] will be achieved if the teacher performs his duties not only as a teacher, but also as an educator. The teacher must be able to install values by helping to develop character by integrating them in learning. In addition to transferring knowledge, values that have been transferred by the teacher are expected to be inherent to the students themselves, even after graduating from the education unit where they are studying.

Efforts to install character values in learning require teacher creativity in packaging learning. Learning is expected to imprint on the hearts of students, not boring

and cause active students during the learning process. Teachers are expected to be able to manage learning by paying attention to all components contained in the learning system. The components in the learning system referred to according to [11] consist of students, goals, conditions, learning resources and results. The effectiveness of learning will be achieved if these components are taken care of optimally.

Students of class X in SMAN 1 Rengat still lack animating character values, this is felt by the teachers who teach in class X. The character values that are still lacking are observed during the learning process, and outside the learning hours. Research on the development of modules containing character values by [8] provides positive results for learning. This is known from: results of validation by material experts 81%; 89% of media experts; physics teacher 84%; module trials in large groups 84% and small groups 85%. The results of the post-test assessment also increased with an average rating of 81.0 from the pre-test results which obtained a value of 59.3. This research proves that the use of modules is very good and can help students in character development.

Learning according to [2] is an effort made by the teacher that causes students to carry out learning activities. The learning process can be influenced by various factors of adequate facilities and infrastructure such as study rooms, teaching aids, libraries, laboratories and so on that are relevant to the learning activities of students. Various kinds of learning resources are included in the learning support facilities that are important so that learning runs smoothly.

The selection of learning resources must be adjusted to the learning needs. One of the learning resources is a module. Modules can be developed by the teacher in accordance with their wishes in facilitating the learning process. Learning resources in the form of modules are expected to provide motivation for students in understanding the material so that learning becomes more effective [4]. The development of biology learning modules carried out by [13] obtained positive responses from students, because with the module learning can be done independently with language, instructions, pictures, supporting information that is able to guide students to understand the learning material.

Learning Biology at SMA Negeri 1 Rengat uses teaching materials in the form of textbooks from publishers found in the school library. Teaching materials created by publishers have several disadvantages such as learning materials that are not arranged systematically, appearance that is less attractive and so on. Teaching materials developed by teachers themselves such as biology learning modules do not yet exist, so researchers are interested in conducting research by developing Biology learning modules in schools. Class X students also have difficulty connecting one concept to another in learning Biology. An understanding of concepts is needed to avoid misconceptions. This can be overcome by making concept maps in teaching materials so that it helps students to more easily understand the inter-concept linkages in learning.

Based on the background that has been described, the writer is interested in conducting research on the Development of Character-Loaded Modules. Equipped with a concept map for high school students in Class X Semester 2 with the aim of producing valid, practical and effective learning modules. The module developed is expected to make it easier for teachers to carry out learning and students are more helped in learning and are able to instill positive character.

2. METHODS

This type of research is descriptive research. The purpose of this study was to analyze the needs of character-filled learning modules equipped with concept maps of class X semester 2 students. This research was conducted at SMA Negeri 1 Rengat. The subjects of this study were 36 grade X students and teachers as a source of information (analysis of teacher needs for learning biology in schools). In this study an initial investigation (preliminary research phase) with preliminary analysis to determine the problems of learning Biology in schools. This stage is carried out observation, collection, analysis and look for definitions of problems during the Biology learning process at SMA Negeri 1 Rengat. The steps taken consisted of analyzing the problems of learning biology activities in schools, analyzing students' needs, curriculum analysis and concept analysis.

2.1 Analysis of problems in Biology learning activities in schools

This analysis aims to determine the constraints that are felt during biology learning activities taking place at school. The technique used is observation through giving questionnaires to the teacher.

2.2 Analysis of student needs

This analysis aims to determine students' needs for teaching materials. The technique used is giving questionnaires to 36 students.

2.3 Curriculum analysis

This analysis includes the 2013 curriculum structure, namely basic competencies, learning indicators, and learning objectives that are in accordance with the selected material. Curriculum analysis aims to develop learning indicators so that they can be outlined in learning modules.

2.4 Concept analysis

This analysis aims to identify the suitability of the material with the learning indicators so that it is used as a foundation in the formulation of material studies on module development.

3. RESULT AND DISCUSSION

3.1 Analysis of problems and needs

Based on the results of a questionnaire that was conducted in April 2019 with Biology teachers at SMAN 1 Sungai Rumbai with Ibuk Suginah, S.Pd, it was found out that the practicum guide used in La Biology Boratorium class XI of SMA N 1 Sungai Rumbai had not yet formed a special book for practicum, but comes from textbooks for students of class XI IPA which are rewritten by students in bundles of books called Student Worksheets (LKKS), LKKS contains a collection of assignments, quizzes, Daily Tests and practical guiding work. The worksheets that are sampled from the textbook are more similar to recipe books containing practicum titles, goals, tools and materials, and ways of working .

LKKS is used from year to year always the same and almost does not change or add information. This situation causes students to copy-paste the results of the practicum, besides that students also have difficulty understanding the language that comes from the textbook. An interview conducted on April 14, 2019 revealed that Biology practicum guides did not have an approach and did not detail guiding practicum.

Based on a questionnaire that was filled out by 26 students who had done Biology lab class XI at SMAN 1 Sungai Rumbai, found several problems regarding the implementation of the practicum as follows. First , students tend to be passive and not fully involved. The results of the questionnaire showed that only 46% of students were active in practicum activities. Second, the guide has not facilitated students in working scientifically. It was revealed in the student statement that only 30% of students answered mastering the steps of the scientific method such as formulating problems, formulating hypotheses, testing hypotheses, analyzing data, and concluding. Third. Practicum guides in the eyes of students are not interesting because 73% of students stated that the guides are less attractive with color combinations. Also revealed that 38 % pe nuntun practicum not have basic terori, 4 % said pe nuntun not use discipline in carrying out practical work, as well as 27 % of students stated that the language pe nuntun practicum difficult to understand.

3.2 Curriculum analysis

This analysis shows the performance indicators that are in accordance with the objectives of the practicum and the material contained in the practicum guide . The practicum guide has some material in the second semester of class XI including: Digestive System, Respiratory System, Expression System, Coordination System, Reproductive System, and Immune System.

Achievement Indicator Analysis in accordance with the learning objectives so that the material on the practicum guide is achieved. Practical skills are science skills. Practicum activities are never separated from the curriculum. Science process skills are cognitive and psychomotor skills used in problem solving. In the process

of solving the problem carried out several steps that are objective, systematic, methodical, universal and empirical which are known by the scientific method[5].

In this study, cognitive abilities were seen by using test questions to be given to students, affective and cognitive abilities were seen by using observer questionnaires . Guided inquiry has several steps including: Orientation, Formulating Problems, Formulating Hypotheses, Collecting Data, Testing Hypotheses, and Formulating Conclusions[13].

3.3 Guidance Analysis practicum

Results of the practical guidance analysis that has been used previously at SMAN 1 Sungai Rumbai. In this practical guide analysis, the first aspects are reviewed, namely the material or theoretical aspects. In this aspect, the compatibility of the material with the curriculum was reviewed, it was revealed that the material in the practicum guide included the learning outcomes that had been set in rpp, but the material presented in the practicum guide was still not too deep to reach each indicator and competency achievement. The truth of the concept, in accordance with the relevant scientific discipline, is complete with the desired competency achievements, and the concepts conveyed are still relevant to the present situation.

Both the preliminary study and the contents encompass the cover analysis, preface, table of contents, laboratory rules, user guides and introduction of practical tools and materials, in this procedure also seen the colors liked by students, work procedures, and evaluations that are overall lacking because the instrument is not yet complete in the guides used and the pictures presented in the lab guides are less attractive and colorful.

The three detectors used, in this guide the approach used has not been able to hone students' skills in practicum activities. Fourth is the analysis of the language used, in this language analysis it is seen that the guiding language is in accordance with the rules of correct and good language, sentence structure is not in accordance with the ability of students seen in the student questionnaire states it is difficult to understand the language in the practical guide, the choice of words is not with understanding students, have not been presented straightforwardly, and have not been in accordance with the level of students' ability to think.

The sum of the practical guide analysis is done by evaluating aspects where there are 29 aspects of assessment and 3 indicators, where each indicator is Good (B), Medium (S), and Less (K). final analysis of the use of practicum guides that have been used found 8 aspects with Good indicators, 7 aspects with Medium indicators and 14 aspects with indicators Less. From the results of the analysis it can be concluded that the practicum guide used is still not able to improve students' cognitive, affective and psychomotor, and therefore the need for the development of class XI biology practicum guides.

3.4 Analysis of Development of Student Needs

The subjects of this study were students of class XI Natural Sciences (IPA) of SMAN 1 Sungai Rumbai. The average age of students at Sungai Rumbai 1 High School 16-18 years. Based on Piaget's Theory which states that in children aged 11-18 years is the normal operation phase. Where in this phase students can think of abstracts, logically, draw conclusions, interpret and develop hypotheses [14].

The analysis looks at what is in accordance with the desires of students towards practicum guides that will be developed include: 96% of students want practicum guides that have covers, table of contents, preface, instructions, rules of thumb, instructions for use, and introduction of practical tools. 100% of students want practicum guides with interesting pictures so that students more easily understand the topic to be practiced. 92% chose light green to be used as a cover for practicum guidance, with 65% of students choosing to use Time New Roman writing for writing in the practical guide to be developed, as well as students choosing a cover with 3 pictures of 85%, 69% and 65% respectively pictures of the heart, appendicitis, and kidneys to be used as the cover of the practicum guide.

4. CONCLUSION

From the analysis conducted, the results of the initial research can be stated: first the practicum guides that are in schools are still in the form of LKS which are rewritten by students called LKKS that have not been tested for Validity, Effectiveness, and Practicality. The two practicum guides that have been used do not yet have approaches so that students are less active in the learning process because learning is centered on the teacher not the student. the third guide practicum is less attractive so that students are less enthusiastic in implementing practice in the laboratory. The four students do not understand the practical guide because it uses standard language so students find it difficult to understand the instructions and material contained in the practical guide.

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