

Analysis of Needs for the Development of Learning Module Based On Science Environment Technology and Society (Sets) Helpful Learning Journal on Environmental Change Materials For High School Students

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Abstract - This study aims to analyze the need for developing learning modules with a biological approach to Science, Environment, Technology and Society (SETS) assisted by learning journals that are devoted to environmental change material. Learning modules are structured to improve mastery of concepts, train students' analytical skills, and can apply their knowledge to real life, and can help students reflect on their learning independently. The research method used is a qualitative method. Data obtained using questionnaires and analyzed descriptively. The research subjects included 93 students of class XI science at SMAN 5, SMAN 12, and SMAN 13 Padang. The results of the research and discussion indicate that the development of SETS-based learning modules assisted by learning journals about environmental change material needs to be done to help students understand concepts and reflect on their learning independently, and can apply their knowledge to everyday life.

Keywords - Module, Science Environment Technology And Society (SETS), Learning Journal.

I. INTRODUCTION

Various efforts have been made by the government to improve the quality of education; one of them is by applying the 2013 curriculum as a complement to KTSP. Curriculum 2013 began to be implemented in the academic year 2013/2014. Permendikbud No. 69 of 2013 states that the purpose of the 2013 Curriculum is to prepare Indonesians to have the ability to live as loyal, productive, creative, innovative, and affective individuals and citizens as well as being able to contribute to the life of the community, nation, country and world civilization. The purpose of the 2013 curriculum was achieved by the learning process.

The learning process in education, especially formal education that takes place in schools is the interaction between teachers and students. In essence learning is the process of interaction of students with an environment coordinated by the teacher, where the teacher is the creator of the conditions of the learning environment [11]. The process of interaction between students and the environment, students are expected to be able to get a variety of new information that will support their lives in the future [4], where the information can come from anywhere, anytime, does not depend on direction information from the teacher [7].

One of the biology learning materials in the 2013

curriculum is the environment change found in KD 3.11. This material is interesting material for students because it is directly related to the real reality they encounter in everyday life.

Based on interviews, it is known that students have not been too able to understand the application of the environment change material into real life. This is because learning is still focused on concepts or theories. In the learning process students are also not directly involved with the environment, and learning has not been able to direct students to analyze issues or problems related to the material, because the learning time is not enough.

Other information obtained from interviews, that teaching materials used do not provide examples of problems or issues related to the material. As a result, students are less able to connect between the learning material with technology, environment, and society so students are less able to apply the knowledge gained in real life. Though one of the important factors to improve quality in learning is a source of learning [2].

One example of learning resources that are suitable for students related to the above problems is the module. Modules are one source of learning that allows students to learn independently, which contains learning objectives, learning materials, worksheets and evaluations [1].

Modules can provide a better understanding if using an approach. In biology learning, an approach that is in accordance with the 2013 curriculum is one of them is the Science-Environment- Technology-Society (SETS) approach. SETS aims to foster understanding of concepts creatively and critically and is an innovative model by utilizing environmental issues or problems in the learning process [3].

The SETS approach can also increase students' knowledge of the environment and can make students have a caring attitude towards the environment [10].

However, the SETS approach is not always easy to implement, because students sometimes have difficulty connecting between the elements in SETS learning, so that the possibility of misconception of students during the learning process can occur [8]. To cover the possibility of such misconceptions, one of them is by asking students to make learning journals.

Learning journals are written documents made by students and contain reflections after experiencing the learning process, so that the teacher will know the

misconceptions of students through reflection of students [6]. Besides, learning journals can also be used as teacher feedback for subsequent learning [12].

Learning journals also have the potential to increase interest and encourage students to be more responsible in learning, so students are more active [9].

Given the main points of the problem in this study are teaching materials, in this study a needs analysis will be carried out whose results will be used as a basis for developing SETS-based learning modules assisted by learning journals on environmental change material.

II. METHOD

This research was conducted at SMAN 5, SMAN 12, and SMAN 13 Padang. The research subjects were students of class XI IPA who had studied environmental change material with a total of 93 people.

Data collection uses an open questionnaire with the number of 13 question items.

Data analysis was carried out descriptively qualitatively which included data collection, data analysis, data presentation and conclusion drawing.

III. RESULTS AND DISCUSSION

Data from the questionnaire analysis of the needs and problems of students of class XI Science are presented in the following table:

Tabel 1. Results of Analysis of Student Needs and Problems Questionnaire

No	Question	Total	%
1	Interest in environmental change material		
	Interested	84	90,32
	not interested	9	9,67
2	Implementation of learning		
	Lecture	50	53,76
	Discussion	0	0
	Lecture and discussion	37	39,78
	Others...	6	6,45
3	Analyze articles		
	Ever	23	24,73
	Never	70	75,28

4	Observe the environment (school / home) directly		
	Ever	33	35,48
5	Knowing the relationship of learning environmental change material with technology, the environment and society		
	Knowing	37	40,89
6	Using teaching materials		
	There is	92	98,92
	There is no	1	1,08

No	Question	Total	%
7	Teaching materials used		
	Teks book	67	72,04
	Module	8	8,60
	LDS/LKPD	31	33,33
	Photocopy shet	12	12,90
	Other...	1	1,8
8	Teaching materials used are in accordance with all topics and include material indicators		
	Yes	37	31,18
	No	64	68,82
9	Teaching materials help understand material concepts		
	can	41	44,09
	can't/Less	52	55,91
10	Teaching materials used can build their own knowledge		
	can	31	33,33
	Can't	62	66,67

11	Teaching materials have presented problems or issues related to the material		
	Already	34	36,56
	Not yet	59	63,44
12	Can apply the material in daily life		
	can	41	44,09
	Can't/Less	53	55,91
13	make an evaluation of learning on the material that has been studied		
	Already	20	21,51
	Not yet	73	78,49

From Table 1, it can be seen that 90.32% of students are interested in environmental change material. However, 55.91% of students stated that they could not understand the application of environmental change material in their daily lives.

Based on interviews conducted with 3 biology teachers at SMAN 5, SMAN 12, and SMAN 13 Padang, it was found that the learning process environmental changes material that occur still use the lecture method (teacher-centered) and in the learning process students are not directly involved with the environment.

The learning process does not connects the theory or concept of environmental changes material in everyday life, because learning time is not enough to bring students directly involved with the environment. This is in line with the results of the student questionnaire in which 53.76% of students revealed that during the learning process environmental changes material more used the lecture method, and 64.52% of students during the material learning process never observed the environment or were directly involved with the environment.

Judging from the teaching materials used by students in schools, teaching materials have not too closely linked environmental changes material in real life and have not invited students to be directly involved with the environment. It is evident from the results of the questionnaire, that 60.21% of students do not know the relationship between the topic of technology, environment and society. And 63.44% of students answered that the teaching material used had not presented the issue or issues related to the material. As a result students are less able to

connect between environmental changes material with technology, environment, and society. In addition, it also causes students' ability to analyze problems not be applied, so students are less able to apply the knowledge gained in real life.

The results of the questionnaire analysis of students also showed that 55.91% of students answering teaching materials used were less able to help students understand the concepts of environmental change material. And 66.67% of students answered that the teaching materials used had not been able to help students build their own knowledge. This is caused by several things

such as; (1) the material presented is too much, (2) the language of the book used is difficult to understand, (3) there are many confusing terms, (4) there are no unclear images to support understanding the material.

Then in the question about learning evaluation, 78.49% of students answered never evaluating their own learning. Reflection on learning is usually done at the end of learning in the form of question and answer between students and teachers, and not all students can ask.

The results of the discussion show that it is necessary to develop SETS-based learning modules assisted by learning journals that focus on environmental change material.

By developing learning modules using the SETS approach, it is very helpful for students to be able to apply their knowledge to the environment and have a caring attitude towards the environment [10]. And with the existence of learning journals help students to be able to reflect on their learning, and support the development of insights and cognitive awareness of students [5].

IV. CONCLUSION

From the data analysis that has been done, it is concluded that students still find it difficult to apply environmental changes material in real life. In the learning process students never analyze problems or issues related to material because of limited study time. Teaching materials used do not provide examples of problems or problems in material changes to the environment and the majority of students never evaluates or reflects on their learning. Therefore, learning modules based on Science, Environment, Technology and Society (SETS) assisted by learning journals on environmental change material need to be developed to help students understand concepts independently, practice the ability to analyze students and be able to apply their knowledge in real life, and can reflect

the learning process independently.

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