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Based Module Development PBL (Problem Based Learning) in the Matter Excretion Systems for Class XI MIPA SMAN 3 Kerinci

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Student difficulties in understanding the material of the respiratory system and the excretory system for memorizing the material when the material is very close to everyday life, to the existence of modules that can guide students to discover concepts with issues close to the everyday life. Modules that are used in schools have not assist students in finding the concept directly to the material learned. The aim to be achieved from this development effort is to produce a module-based *Problem Based Learning* on the material of the respiratory system and the excretory system for high school students of class XI.

Research development Plomp is using a model consisting of three stages, namely a preliminary investigation, prototyping, and evaluation. Subject penilitian is a class XI student of SMAN 3 Kerinci. Validation is done by experts in biology education, education technology and Indonesian. Practicality module seen from the results of the questionnaire filling practicalities by students and teachers as well as conducting interviews with students. Seen the effectiveness of student competence and the data were analyzed by descriptive.

The results showed that the module-based *Problem Based Learning* obtain very valid category. Category practicalities of response are very practical teacher and student response practicalities category very practical. This module has also been effective in terms of student competence. In this case increase student competence more than the specified minimum attainment. Based on these results, we can conclude that Problem Based Learning modules based on the material excretion system for high school students of class XI can be declared valid, practical and effective.

Keywords -*Module, Problem Based Learning, Valid, Practical, and Effective.*

I. INTRODUCTION

Learning is essentially a process to achieve competence through systematic learning process. The process is an educator assistance provided to enable the acquisition of knowledge, the knowledge, skills and attitude formation in students. The concept of learning is in accordance with Permendikbud No. 103 of 2014, which states that learning is a process of interaction between students with educators and learning resources in a learning environment.

One goal is improve the students' learning because of an increase in the quality of education necessarily reflect the quality (Rohli, 2014: 58). One of the steps the government in an effort to improve the quality of education in Indonesia is making improvements on the Curriculum Education Unit Level Curriculum (SBC) to Curriculum 2013.

Biological materials are studied high school students grade XI on Curriculum 2013 second semester Diantfig is the excretory system. Excretory system is a very interesting material to study because it involves some concepts of physiological processes that occur in the human body. Material excretory system is not enough to rely on printed books and LKPD that has been provided by the school, but

there needs to be material and additional information.

Based on the analysis of the results of questionnaire responses Biology teacher in class XI SMAN 3 Kerinci on 6-7 December 2018, Professor of Biology reveals that the teaching materials in the learning process has not used a specific approach, learning resources rely solely on textbooks available at school, learning materials used still have not been able to develop a scientific attitude, learners not been actively involved in solving the problem and materials learning provided in schools do not meet the material needs and the information needed by the student.

Thus, it is important to develop materials that can be the solution of these problems. Teaching materials are designed in a systematic, complete, and attractive will affect the atmosphere of learning, so that learners are more motivated to learn. The use of teaching materials in accordance with the demands of curriculum in 2013 to help learners achieve learning objectives both the knowledge, skills, attitudes and other learning experiences (Hamalik, 2013: 51). One of the materials that can be considered is the module.

Module development is indispensable to foster learning more fun for students and teachers. Modules can be an attraction for students to be more concentration in This type of research is the study of design and development (design and development research) with the aim to produce a valid learning modules, practical, and effective. Development based modules PBL (Problem Based Learning) using the model of development Plomp, phases of the research consisted of three stages: the stage of the initial investigation the study while listening to the explanation of the material presented teachers, the module can also train students to be more independent in learning that is not glued to the teachers alone (Amelia and Suranto, 2016: 110). The research result Wibowo (2013: 79) points out that the application modules use significantly affect the ability of students' science process skills. This is in line with the results of the study (Abdillah, 2013: 43) suggests that the use of the module can improve learning outcomes and there are differences in learning outcomes between students who are taught using modules with students who are taught not to use the module.

II. METHOD

(Preliminary research phase), stage of development or manufacture of prototypes (development or prototyping phase) and a stage of assessment (assessment phase). Data analysis technique used is descriptive analysis. Descriptive data analysis to describe the validity, practicalities and effectiveness Based Modules PBL (Problem Based Learning).

III. RESULTS AND DISCUSSION

The analysis obtained in the initial investigation stage (Preliminary resiarch phase), the analysis of needs carried out to determine the characteristics of the module are used mainly in order to be able to dance students interest in learning. Based on an analysis of interviews conducted more students tertari module that has a color image, the material is clear, easy to understand and be able to provide examples on the material, results of curriculum analysis biology class XI SMA, analyze the curriculum aims to determine whether the material taught has been reached the expected competencies. Analysis curriculum is focused on the analysis of KI and KD on the material excretion system, analysis of the concept aims to define the content and subject matter needed to develop a module-based PBL.

Table 1. Results of Validation Module In overall.

No.	Aspect	Value (%)	Category
1.	aspects Didaktif	86.67	very Valid
2.	aspects constructs	79.6	valid
3.	Technical aspects	83	very Valid
Average		**83.05**	**very Valid**

In Table 1, shows that the percentage of the overall validity of the module is 83.05% with very valid category. Thus, it was concluded that PBL-based modules are valid. Seacara whole of the module can be seen in Table 2.

Table 2. Results of the practicalities Test Module In Overall by Students

No.	Aspect	value%	Category
1.	Ease of Use	81.69	very Practical
2.	The time required in execution	89.47	very Practical
3.	easily interpreted	82.23	very Practical
4.	choosing equivalent	85.52	very Practical
Average		**84.72**	**very Practical**

In Table 2, it appears that the overall percentage of the practicalities of the module is 84.72% categorized as very practical. Jasi concluded that PBL-based module has a practical by the student. Overall the practicalities of the whole of the module can be seen in Table 3.

Table 3. Results of the practicalities Test Module In Overall Master

No.	Aspect	value%	Category
1.	Ease of Use module-based PBL	91.67	very Practical
2.	The time required in execution	87.5	very Practical
3.	easily interpreted	93.75	very Practical
4.	choosing equivalent	87.5	very Practical
Average		**90.10**	**very Practical**

In Table 3, it appears that the overall percentage of the practicalities of the module is 90.10% categorized as very practical. Thus, it was concluded that PBL- based module has a practical by the teacher.

Table 4. Test Results Statistics Module Development Competency-Based PBL Against the Realm of Knowledge

No.	Parameter	Class		Information
		Control (X1)	Experiment (2)	X1> X2
1.	Average	73.53	85.10	X1 <X2
2.	Normality test	0.582	.982	distributed Normal
3.	Homogeneity test	.718		Homogeneous variance
4.	Hypothesis testing	0.00 <0.05		H0 is rejected, accepted H1

Based on Table 4 it can be seen that the average learning outcomes of students in the realm of knowledge control and experimental classes have differences. The study of students who use PBL-based modules higher than the study of students who use the module used by teachers, effective means.

IV. CONCLUSION

1. Based on expert assessment modules developed have very valid criteria. This assessment is based 3 aspects, didaktif aspects, aspects of the construct and technical aspects.
2. The practicalities of assessment results are assessed by teachers and learners obtained module categorized as very practical. The assessment is based four aspects, namely ease of use of the module, time, easy to interpret, and choose equivalent.
3. The results of the effectiveness test module from the aspect of acquired knowledge that the modules developed very effective criteria. Where the results komtensi learners in the areas of knowledge, attitudes, and skills of learners who use PBL-based module is better than the competence of learners without using PBL-based modules.

REFERENCES

[1] Abdillah, F. (2013). Using the Module as Improving Learning Outcomes in Subjects ICTs to Content Microsoft Word Class V SDN Sarikarya. Journal of Electronic Information Engineering Education, 1 (1).
[2] Amelia, SER, and Suranto, AW (2016). Learning Development Standards Module Apply The Skills Basic Competence Communication Class XSMK
[3] Muhammadiyah 1 WATES. Journal of Educational Administration-S1, 5 (2), 106-116.
[4] Permendikbud No. 103. 2014. Learning in Primary and Secondary education.
[5] Plomp, T and Nieveen, N. 2013. Reserch Education Design: An Introduction. Enshede: SLO. Netherlands Institute for Curriculum Develompment.
[6] Rohli, M. 2014. Science Lesson Integrated Software Development Oriented Science Literacy in Exclusive Pebelajaran Model. Journal of Education. Vol 2. No. 2.
[7] Wibowo, PH, Indrowati, M., and Sugiharto, B. (2013). Effect of Using the Module Results Highlights Bentos on against Environmental Pollution Science Process Skills Class X SMA Negeri 1 Mojolaban in academic year 2011/2012. Journal of Biological Education, 5 (1), 70-80.