FLIPBOOK MODULE AS A PRODUCT FOR DEVELOPMENT OF ANIMAL NETWORK MATERIAL MATERIALS FOR STUDENTS XI CLASS SCHOOL

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ABSTRACT

This research is research and development (R & D). the method used is 4D consisting of 4 stages Define, Design, Develop, and Disseminate or adapted into a 4-P model, namely Defining, Designing, Developing, and Spreading. The results of the validation by the validator were 77.5% in the material aspects and 79.3% in the teaching material aspects, and 74.4% in the language aspects. In accordance with the module eligibility criteria that the Flipbook-based module is appropriate to use. The results of ANACOVA analysis showed the effect of Flipbook module teaching materials on student learning outcomes by 22.3%. Based on the results of these studies it can be concluded that the Flipbook module can be said to be worthy of being used as a learning material to improve student learning outcomes.

Keywords: Research development, Flipbook based modules, Learning outcomes

1. INTRODUCTION

The 2013 Curriculum implementation is a curriculum that emphasizes student-centered learning to actively learn. Implementation of learning, the teacher acts as a facilitator of students in gaining knowledge. The implementation of this learning process is that there are additional hours of study so that the teacher has the flexibility of time to develop the learning process oriented towards active students learning. The efforts of the teacher in fulfilling his role as a student facilitator can be carried out by providing teaching materials, the provision of teaching materials is not only in the form of textbooks, the provision of teaching materials aims to help students gain an understanding of the material.

There are various types of teaching materials that can be chosen according to learning needs. Teaching materials are learning tools or tools that contain learning material, methods, boundaries, and ways of evaluating which are designed systematically and interestingly in order to achieve the expected goals, namely achieving competence or sub-

competence in all its complexity. One of them is teaching materials with forms modules. Modules are learning materials that are designed systematically based on a particular curriculum and are packaged in the form of the smallest learning units and allow them to be studied independently in a certain time unit. The independent learning process is in accordance with the characteristics of the 2013 curriculum, which is student-centered learning.

In accordance with interviews conducted with biology teachers, animal tissue material is usually carried out by practicum. Practicum can provide a real picture and can improve the skills of students. But, in doing practicum, it must be equipped with adequate facilities. Not all high school schools have adequate facilities for practicum. One way to overcome this problem is to make a module teaching material in which there are many images accompanied by video.

The development of Flipbook-based module teaching materials is supported by previous research conducted by Destiyana (2016) on "Development of Flipbook-Based Science Modules The Theme of Environmental Pollution as an Independent Learning Source for Class VII SMP / MTS Students". The results of the study indicate that the development of Flipbook-based module teaching materials is suitable to be used as learning material and is effective in improving the learning outcomes of class X students in Environmental Pollution material.

2. RESEARCH METHODS

The approach used in this study is quantitative and qualitative approaches. Quantitative data in the form of assessment scores from expert teams. Qualitative data in the form of advice and input from the expert team. The research design used was Research and Development (R & D) with the Thiagarajan 4D development model, et al. Consisting of define, design, development without dissemination.

The research procedure begins with the stages of defining, designing, and developing. The defining stage is done to find out the needs in the learning process and products that are developed through front end analysis, student analysis, task analysis, analysis concept and formulating objectives. The design phase that is carried out is compiling the test, selecting the media, choosing the format and preparing the initial design of the product. The development stage is a process to produce a product that is feasible to use through validation by a team of experts.

The product can be used as a reference for independent student learning resources prepared based on 2013 curriculum-based rules. The resulting products are in the form of flipbooks that can be used such as reading printed books as usual. The products produced are equipped with questions to assess completeness in each sub-section. This is created using the help of Professional 3DFlip 3D software, CorelDraw X7, and Macromedia Flash 8, Form modules in the form of soft files. The parts in this module include Cover, preface, introduction, content standards include core competencies (KI), basic competencies (KD) , and learning objectives, instructions for use, material and practice questions, assessment methods, glossaries, answer keys, bibliography.

Products that are deemed feasible by experts can be used for product testing. Product testing is done on a limited scale to determine student responses. The instruments in this study used expert validation questionnaire sheets, teacher response assessment sheets and student response sheets. Data analysis techniques in the form of qualitative and quantitative data. Qualitative data in the form of advice and input from experts. Quantitative data in the form of scores from expert teams, teacher ratings and student responses. The calculation of the assessment by the expert team and the assessment by the teacher uses the following

formula:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

Information

P = Percentage sought

$\sum x$ = The number of respondents answers

$\sum xi$ = Ideal amount

The eligibility criteria from the validation sheet are filled in, then matched with reference to Table 1.

Table 1. Criteria for level of validity

Percentage (%)	Validation Criteria
76-100	Very decent
56-75	Worthy
40-55	Less feasible
0-39	Not feasible

(Source: Arikunto, 2012)

Student questionnaire response calculation uses the following formula

$$P = \frac{n}{N} \times 100\%$$

Information:

P = Feasibility score.

N = Expected maximum score.

n = The maximum number of scores obtained

The results of the percentage of student responses are adjusted to the criteria in Table 2

Table 2. Criteria for percentage score assessment

Interval % S	Criteria
81,25% <skor≤100%	Very good
62,50%<skor≤81,25%	Well
43,75%<skor≤62,50%	Not good
25%<skor≤43,75%	Not nice

(Source: Arikunto, 2012)

3. RESULTS AND DISCUSSION

The development of Flipbook-based module teaching materials on animal tissue material was validated by material experts, media experts and linguists. The results of expert validation are shown in Tables 3, 4 and 5. The results of teacher evaluations and student responses are shown in Tables 6 and 7.

Table 3. Results of material validation

Assessment Criteria	Assessment Score								Score
	1	2	3	4	5	6	7	8	
Validator 1	5	5	4	4	4	4	5	4	35
Validator 2	3	3	3	3	3	3	3	3	24
Validator 3	4	4	5	4	4	5	4	4	34
Total Score									93
Maximum Score									120
Percentage									77,5%
Category									Very Decent

Tabulations from material expert questionnaires obtained a score of 77.5% with information worthy of being used for classroom learning activities.

Table 4. Result of media expert validation

Assessment Criteria	Assessment Score											Score
	1	2	3	4	5	6	7	8	9	10	11	
Validator 1	4	4	4	4	4	4	4	4	4	4	4	44
Validator 2	5	5	5	4	4	4	4	4	3	4	5	47
Validator 3	4	4	4	4	3	3	3	4	4	3	4	40
Total Score												131
Maximum Score												165
Percentage												79,3%
Category												Very Decent

Tabulations from the teaching materials expert questionnaire obtained a score of 79.3% with information worthy of being used for classroom learning activities.

Table 5. The results of the language expert's validation

Assessment Criteria	Assessment Score						Score
	1	2	3	4	5	6	
Validator 1	4	4	4	4	4	4	24
Validator 2	4	4	4	4	4	4	24
Validator 3	4	3	3	3	3	3	19
Maximum Score							90
Percentage							74,4%
Total Score							67
Category							Worthy

Tabulations from linguists obtained a score of 74.4% with information worthy of use for learning activities in class.

Table 6. Teacher assessment results

Assessment Criteria	Assessment Score													Score
	1	2	3	4	5	6	7	8	9	10	11	12	13	
Teacher 1	4	4	4	5	5	5	4	5	5	5	5	4	5	60
Teacher 2	4	3	4	4	4	4	4	4	4	4	4	5	4	52
Total Score														112
Maximum Score														130
Percentage														86,1%
Category														Very Decent

Tabulation from practitioner experts (teacher response) scores 86% with information that is very feasible to use for classroom learning activities.

Table 7. Readability test

No.	Name	Statement													Score
		1	2	3	4	5	6	7	8	9	10	11	12	13	
1	students-1	3	4	4	3	4	3	3	4	4	3	4	3	4	46
2	students-2	5	5	4	4	5	4	5	5	4	4	4	5	5	59
3	students-3	4	4	4	4	5	4	5	4	4	4	3	4	3	52
4	students-4	4	5	4	4	4	4	3	4	4	3	4	4	4	51
5	students-5	4	4	4	3	3	4	4	4	3	4	3	3	4	47
		Total Score													204
		Maximum Score													325
		Percentage													78,4%

Flipbook-based module teaching materials that have been developed by researchers have also been tested individually. The subjects of this individual test are students of class XI MIA 4 Blitar 4 Public High School totaling 5 students. Based on the readability questionnaire the Flipbook-based module scores 78.4%.

Based on the results of expert validation, teacher assessment and student responses, Flipbook-based module teaching materials on animal tissue material are worthy of being used as learning materials. The assessment by material experts, teaching materials experts and linguists was 77.5%, 79.3% and 74.4% respectively. The average score of expert evaluations is 77 %% with very decent information. Assessment by the teacher obtained a score of 86.1% with very decent information. Students' responses in limited scale trials get a score of 78.4% with very good information. So that overall Flipbook-based module teaching materials in animal network material are used for classroom learning activities.

Product improvements are made to improve the products produced based on the shortcomings and weaknesses of the products produced. To

improve the population of Flipbook module teaching materials, animal tissue material is added with a manual for the use of Flipbook module teaching materials. The user guide to the use of teaching materials is made in three books, namely the user guide for students, teachers, and yourself.

4. CONCLUSION

Based on the results of the study, it was shown that the Flipbook-based module teaching material on animal tissue material was suitable to be used as learning material in the classroom. The feasibility of teaching materials is obtained from the expert's score with an average score of 77%. Based on the teacher's response a score of 86.1% was obtained. While student responses obtained through a small group test on a limited scale get a score of 78.4%.

5. SUGGESTION

Suggestions that can be given are that it is better at the development stage to do a re-validation test to get better results and are advised to develop until the disseminate stage.

REFRENCES

Arikunto. 2012. Basics of Educational Evaluation Edition 2. Jakarta: PT. Earth Literacy

Arsyat A. 2004. Learning Media. Jakarta: Rineka Cipta

Ministry of National Education. 2008. Module Writing. Ministry of National Education: Directorate of Education Personnel of the Directorate General of Quality Improvement of Educators and Education Personnel.

Wisdom. 2018. Development of Interactive Modules Based on Kvisoft Flipbook Maker Historical Class X High School Subjects Using the 4D Development Model. Thesis published. Jember. University of Jember.

Ministry of Education and Culture 2008. Development of Module Characteristics. Jakarta: Ministry of Education and Culture.

Kurniawan AD, Nurlalela L. 2013. Development of Student Books to Improve Learning Processes and Outcomes of Basic Competencies in Cornflake Cookies for Mentally Abused Students SMA-LB Negri

Gedangan Sidoarjo. Journal of the Faculty of Engineering Family Health Education Vol. 2, No.1, Hal. 6-17. Surabaya State University.

Prasetya TI. 2012. Increasing the Ability to Arrange Interactive Module Based Learning Outcome Instruments for Science Teachers of Magelang City Middle School. Journal of Educational Research and Evaluation of the Postgraduate Program Vol. 1, No. 2, p. 106-112 Semarang State University.

Prastowo, A. 2013. Development of Thematic Teaching Materials. Yogyajarta: Diva Press.

Prastowo, A. 2012. Kretaif's Guide to Making Innovative Learning Materials: Creating Interesting and Fun Learning Methods. Yogyakarta: Diva Press.

Rachmawati F, Urifa N, Wijayati A.2009. Biology for SMA / MA Class XI Science Program. BSE. Jakarta: Ministry of National Education.

Sugianto, et al. 2013. Virtual Module: Basic Digital Multimedia Flipbook Technique. Bandung FPTK. UPI.

Sugiyono. 2015. Research and Development Methods (R&D) Bandung:Alfabeta.