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Static Electricity Material E-Module Based on a Scientific Approach Using Kvisoft Flipbook Maker Software

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Abstract
The availability of adequate teaching materials can make it easier for students to study independently and overcome problems that often occur in classroom learning. This research aims to determine students' perceptions of Electronic Modules based on a Scientific Approach using Kvisoft Flipbook Maker Software on Static Electricity Material for the Basic Physics 1 course which has been developed. The research design used is Research and Development (R & D). This research is only limited to the research and development stage. This research was conducted at the Physics Education Study Program, FKIP, Jambi University in March 2018. This research data was obtained by distributing questionnaires to the 2015 Physics Education students of the PGMIPAU class. The research results show that the Electronic Module based on a scientific approach that has been developed has met the feasibility criteria very well in terms of 3 aspects, namely the module appearance aspect, the module presentation aspect, and the module benefits aspect with an average score of 5.68 respectively; 4.87 and 13.45. The average score for all student perception indicators is 49.95 in the very good category.

Keywords: Electronic Module; Kvisoft Flipbook Maker; Scientific Approach

INTRODUCTION

The implementation of learning cannot be separated from the existence and use of teaching materials. Based on the results of initial observations carried out in the Physics Education Study Program at Jambi University, it is known that students' mastery of concepts in the Basic Physics 1 subject, especially Static Electricity, is still relatively low. This is because students often have difficulty understanding the abstract and complex concept of Static Electricity, as well as solving problems with mathematical equations. Critical thinking skills are abilities that are very necessary so that students are able to face changing circumstances or challenges in the learning process (Fachrurazi, 2011).

Apart from that, learning still uses books or conventional printed teaching materials. Teaching materials are all forms of materials used to assist teachers/instructors in carrying out teaching and learning activities. Each material is linked to a social and technological context so that students see integration between the universe (Yuliati, 2013). Learning resources are references to objects and materials used for learning activities (Majid 2005). One important learning resource is textbooks in the form of mandatory material books and companion books as well as student worksheets (Arafah et al., 2012). Much of the material presented in printed teaching materials is abstract and complicated so students are reluctant to read it, let alone study it. Lack of media availability also makes lecturers use

print media more often than electronic media. In addition, with the number of students continuing to increase in recent years, this system is very ineffective (Lesmana, 2018).

One alternative to overcome this problem is to develop teaching materials that can help students understand Static Electricity material. The teaching materials developed in this research are in the form of Electronic Modules. Electronic modules are a form of presentation of independent learning materials which are systematically arranged into the smallest learning units to achieve certain learning objectives which are presented in electronic format which includes animation, audio, navigation which makes users more interactive with the program (Sugianto, 2013). An electronic module or e-module is an ICT-based module, its advantages compared to printed modules are that its interactive nature makes it easier to navigate, allows displaying/loading images, audio, video and animation and is equipped with formative tests/quizzes that enable immediate automatic feedback (Suarsana, 2013).

One of the aims of preparing modules is to provide teaching materials that are in accordance with the demands of the curriculum by taking into account the needs of students, namely teaching materials that suit the characteristics of students and the setting or background of their social environment (Hasanah, 2012). Multimedia technology has promised great potential in changing the way a person learns, obtains information, adapts information and so on (Sugianto et al., 2017). The application used to develop this electronic module is Kvisoft flipbook maker software. Using Flipbooks can also improve understanding and increase achievement of learning outcomes (Nazeri, 2013). Kvisoft flipbook maker software is software that can change the appearance of a PDF file to make it more attractive, like a book. This software can be downloaded for free via the internet. Using the Kvisoft flipbook maker software can make the module display more varied, because not only text, images, video and audio as well as animations and simulations can also be inserted in this software so that learning will be more interesting.

Based on the description above, electronic module development was carried out using Kvisoft Flipbook Maker Software in other materials, namely Static Electricity material in the Basic Physics 1 course, and considering that research has never been carried out regarding the development of electronic modules using Kvisoft Flipbook Maker Software for Static Electricity material in Basic Physics 1 course at Jambi University. Therefore, researchers conducted development research with the title "Development of Electronic Modules Based on a Scientific Approach Using Kvisoft Flipbook Maker Software on Static Electricity Material for Basic Physics I Course"

RESEARCH METHODS

This research uses research and development methods. The development procedure uses the steps in the ADDIE development model developed by Branch, namely analyzing, designing, developing, implementing and evaluating. This research was conducted to produce certain products and test the effectiveness of these products (Sugiyono 2006). In this research, researchers conducted research and development of teaching materials in the form of Electronic Modules based on a Scientific Approach in Static Electricity material for the Basic Physics 1 course.

The test subjects in this development research were students of the Physics Education study program class of 2015 with a total of 20 students at Jambi University who has contracted the Basic Physics 1 course. The data collection method was carried out using a questionnaire instrument. The questionnaires used were student perception questionnaires and questionnaires filled out by media experts and material experts. The data analysis techniques used are quantitative and qualitative data analysis. Qualitative data analysis was carried out based on reviewing the validation questionnaire results sheet to determine the validity of the content of the electronic module being developed which was reviewed in terms of material and media aspects. Quantitative data analysis was carried out with the aim of determining the level of validity, reliability of the instrument and student perceptions of the Static Electricity electronic module that has been developed. The level of instrument reliability was obtained from the results of the instrument reliability test using the Cronbach alpha test.

RESULTS AND DISCUSSION

The results of this research are teaching materials in the form of electronic-based modules scientific approach to Static Electricity material in the Basic Physics I course using Kvisoft Flipbook Maker software and student perceptions or responses to the use of the electronic module obtained through a questionnaire given to students. This research uses the ADDIE development model, namely: analyze, design, development, implementation and evaluation. In this research, the stages used were only up to the development stage.

1. Analysis Stage

The analysis stage was carried out with initial observations to collect data related to the problems faced by Physics Education students at Jambi University. Based on the results of initial observations, it was found that students' mastery of concepts in the Basic Physics 1 subject, especially Static Electricity material, was still relatively low. This is because the use of teaching materials is not optimal to help students understand the concept of Static Electricity. Apart from that, Static Electricity is abstract and complex material, so it is difficult for students to learn it.

2. Design Stage

The Design Stage is carried out to arrange matters related to research, starting from formulating the objectives to be achieved in the electronic module developed, analyzing learning materials and compiling concept maps, as well as designing teaching materials (electronic modules), choosing appropriate and attractive designs and layouts according to student characteristics. The initial design of the electronic module that has been developed can be seen in Figure 1 below.

Figure 1. Design of the electronic module developed.

3. Development Stage

The Development Stage is the stage of realizing a product design or manufacturing a product that was previously designed at the design stage. This static electricity electronic module was developed using Kvisoft Flipbook Maker software. In developing this electronic module, videos and animations regarding Static Electricity material obtained from various sources were also used. The use of videos and animations in learning is very helpful, because they can show phenomena/events that are abstract or difficult to see directly so that they can be easily observed and studied. After the module has been developed, the next stage is to validate the module with the specified expert team. At this development stage, validation is carried out by two validators, namely validation from material experts and media experts.

Product trial results data

At the trial stage, it was carried out in two classes, namely Physics PGMIPAU 2015 and Physics Regular B 2015. The results of the trial were 16 students in the Regular B class to determine the reliability of the student perception questionnaire, while the trial was carried out on 20 students in the Physics PGMIPAU class to determine student perceptions. of the electronic modules being developed.

The reliability test is carried out by calculating the correlation coefficient from the alpha equation. From the calculations, the correlation coefficient is $r11 = 0.667$. These results indicate that the questionnaire used has high reliability so it can be used reliable and can be used to retrieve the desired data, namely data on student perceptions of the electronic module being developed.

Next, collecting student perception data is the final step in this development research. The process of collecting student perception data uses a questionnaire developed to look at student perceptions in 3 aspects, including: appearance, presentation of material, and benefits. Based on the questionnaire that was filled out by students, the following analysis results were obtained:

Table 1. Results of Analysis of Student Perceptions

No	Indicator	Score	Category
1	Text clarity	3,5	Very good
2	Clarity of images, animations, videos and simulations	10,3	Very good
3	Attractive images, animations, videos and simulations	3,25	Good
	Average Score	5,68	Very good
4	Presentation of material	6,45	Good
5	Sentence clarity	6,2	Good
6	Suitability of examples to the material	3,4	Good
7	Suitability of images, animations, videos and simulations	3,4	Good
	Average Score	4,87	Good
8	Ease of learning	6,6	Very good
9	Interest in using the module	3,35	Good
10	Improved learning outcomes	3,5	Very good
	Average Score	13,45	Very good
	Overall indicators	49,95	Very good

Based on the table above, it can be concluded that the scientific approach-based electronic module that has been developed is categorized as very good. The average score for the module display aspect is 5.68 in the good category, for the material presentation aspect it is 4.87 in the good category, while for the module usefulness aspect it is 13.45 in the very good category, so that the overall indicators given are based on perception students is 49.97 which is categorized as very good.

This research aims to produce an electronic module as a learning medium for the Basic Physics 1 course on Static Electricity material and test its feasibility. The steps for developing this electronic module are based on the ADDIE development model. namely analyze (analysis), design (design), develop (develop), implement (implementation) and evaluate (evaluation). The product produced in this development is a scientifically based electronic module using Kvisoft flipbook maker software.

Whether an electronic module is suitable or not can be determined by validating experts, both material experts and media experts and after that it is tested on 2015 Regular Physics students. One way to improve people with quality education is to improve the quality of education (Umam & Zaini, 2013) .Validation of material experts and media experts was carried out by 2 (two) Jambi University Physics Education lecturers. The results of phase I material and media validation show that the electronic module developed is not very good and there are still many shortcomings. The results of stage II material and

media validation show that the electronic module developed is categorized as good. However, the validator suggested that this electronic module could be tested with slight revisions. The results of phase III validation show that the electronic module is categorized as very good. The validator also concluded that the electronic module was suitable for use without any revisions and was ready to be tested.

The electronic module trial was carried out on 16 people consisting of Regular Physics B students class of 2015 who had contracted the Basic Physics course 1. The results of this trial will be used to determine the reliability of the student perception questionnaire. The reliability of the student perception questionnaire is 0.667 which is categorized as high. After the student perception questionnaire was declared reliable, the author conducted a trial on 20 PGMIPAU 2015 Physics Education students who had contracted the Basic Physics 1 course. This trial aimed to collect data on the feasibility of the electronic module. The perception trial or feasibility trial of the electronic module received a positive response from students, this was shown by the results of the perception questionnaire data analysis.

As for the appearance aspect of the module, an average score was obtained of 5.68 in the very good category, from the material presentation aspect, an average score was obtained of 4.89 in the good category and for the usefulness aspect of the module the average score was 13.45 in the very category. Good. It can be concluded that the electronic module that the author has created meets excellent media and teaching material standards. Apart from meeting the standards, it turns out that 86% of students stated that they were interested in the electronic module that had been developed. Then 83% of students also stated that by using this electronic module their enthusiasm for learning increased.

CONCLUSION

Based on the results of the development and trials that have been carried out, it can be concluded that the results of the development in the form of an Electronic Module Based on a Scientific Approach in Static Electricity Material for Basic Physics 1 Course are valid and suitable for use, after going through three validation stages by a team of material and media experts. The results of the analysis of student perception data obtained data covering 3 aspects, namely the module appearance aspect of 5.68 in the very good category, for the module presentation aspect it was 4.87 in the good category, while for the module benefits aspect it was 13.45 in the very good category. The average score for all student perception indicators is 49.95 in the very good category and suitable for use in learning.

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