Tekno-Pedagogi 5 (2) (2015)
ISSN: 2088-205X | E-ISSN: 2715-7415
Tekno-Pedagogi : Jurnal Teknologi Pendidikan
https://online-journal.unja.ac.id/pedagogi
DOI: 10.22437/teknopedagogi.v15i1.7512

Development of Basic Physics E-Module I Particle Dynamics Material Based on Kvisoft Flipbook Maker

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Info Article
Received: 11 Jun 2015
Revised: 11 Jul 2015
Accepted: 13 Aug 2015
OnlineVersion: 20 Sep 2015

Abstract
This type of research is (research and development) with the ADDIE development model which includes analysis, design, development, implementation and evaluation. The subjects of this research were 2016 PGMIPA-U Physics Education students at Jambi University. The research instruments used were media expert validation questionnaires, material expert validation questionnaires and student perception questionnaires. The qualitative data analysis technique is carried out using descriptive analysis, while quantitative data is carried out using descriptive statistical analysis. The results of the questionnaire trial showed that there were 16 valid statements and one invalid statement. The reliability value obtained was 0.898 in the very high category. Furthermore, the results of student perception research obtained data covering 3 aspects, namely the object aspect 19.49 in the good category, for the sensory aspect it was 19.21 in the good category, while for the attention aspect it was 13.7 in the very good category. The average score for all student perception indicators is 52.61 in the very good category. Based on the results obtained in the research, it can be concluded that the development of the Basic Physics I e-module on particle dynamics based on Kvisoft flipbook maker is very suitable for use as a teaching material in the Basic Physics I particle dynamics course at Jambi University.

Keywords:Dynamics Material; E-modul; Kvisoft Flipbook Maker

INTRODUCTION

Education is an individual learning process to achieve higher knowledge and understanding about certain and specific objects (Basilius, 2015). The teaching and learning process will be maximized if adequate facilities and infrastructure are provided to assist student learning activities. One component that influences learning activities is the use of learning resources and teaching materials. Learning resources are everything around the learning activity environment that can be functionally used to optimize learning outcomes (Ministry of National Education, 2008).

To achieve learning goals, quality teaching materials are needed. Teaching materials or materials are everything that students want to learn and master, whether in the form of knowledge, skills or attitudes through learning activities. Learning materials are something presented by lecturers to be processed and understood by students in order to achieve the learning objectives that have been set (Ibrahim in Sumantri, 2015). As an added value, the teaching materials used should be teaching materials that are able to bring students the ability to understand the concepts being studied so as to

make learning more meaningful.

The Physics Education study program at Jambi University has several mandatory courses, one of which is Basic Physics I. Based on the Semester Learning Plan (RPS), there are three topics discussed in particle dynamics, namely Newton's laws of motion, several special forces and the application of Newton's laws. The teaching materials currently used in the Basic Physics I course are printed books. As explained by Belawati (2003) in Supriyo (2015), the weaknesses of printed books are that they are difficult to provide guidance to readers who have difficulty understanding certain parts of the printed book, and difficult to provide feedback for questions asked that have many possible answers or questions that require Complex and in-depth answers tend to be used as memorization.

To overcome this problem, it is necessary to innovate learning by developing teaching materials that are easier for students to understand and have an attractive appearance. One form of innovation that can be developed is module development.

Gunawan in Sugianto, et al (2013) stated that "electronic modules are a form of presentation of independent learning materials which are arranged systematically into the smallest learning units to achieve certain learning objectives which are presented in electronic format which includes animations, videos and simulations" . Material manufacturing

This teaching in the form of electronic modules uses Kvisoft flipbook maker software. The reason why researchers chose this software is because this software has the advantage that the resulting teaching materials can be inserted with images, videos, animations and simulations. Therefore, in this research the researcher wants to produce an e-module for Basic Physics I material on particle dynamics based on kvisoft flipbook maker and find out students' perceptions of the e-module for Basic Physics I material on particle dynamics based on kvisoft flipbook maker.

RESEARCH METHODS

The research carried out is research and development (R&D). Research and development is a research method used to produce certain products, and test the effectiveness of these products (Sugiyono, 2012). The learning system design model used in research and development of teaching materials in the form of electronic modules on particle dynamics in Basic Physics I learning is the ADDIE development model. The trial subjects for this development research were students who had contracted the Basic Physics I course. In this case the researchers chose physics education students in the 2016 PGMIPA-U class with a total of 18 students. The data analysis techniques used are qualitative and quantitative. Qualitative data displays suggestions and comments from validators while quantitative data displays the percentage and category of product eligibility.

RESULTS AND DISCUSSION

1. Phase I Media Expert Validation

Based on the results of stage I media validation, the validator provides suggestions for improvements to the design of the Basic Physics I e-module on particle dynamics, namely: (1) Complete the interactive questions contained in the Basic Physics I e-module on particle dynamics; (2) Add animation, simulation and video references; (3) The color of the title for each learning activity is adjusted; (4) Study the material concept of particle dynamics.

2. Media Expert Validation Phase II

Based on this stage II validation, the validator has checked "Yes" for each question and there are no suggestions/comments, so results are obtained which show that this product is suitable for testing with the criteria of agreeing.

3. Final Product Result

Revisions are made at each stage of development. This aims to minimize the weaknesses of the learning media in the form of the Basic Physics I e-module on particle dynamics. This revision stage is

carried out based on suggestions given by the validator. The revisions carried out concern the display design of the Basic Physics I e-module on particle dynamics and the material in the Basic Physics I e-module on particle dynamics. The following is the final design of the Basic Physics I e-module regarding particle dynamics after revision.

Table 1. The final design suggestion

No	Visual	Description
1.	Cover	The cover displays the title of the Basic Physics I module, Particle Dynamics, a cover image representing the contents of the electronics module, Jambi University, the Jambi University logo, and the author's name.
2.	Foreword	The foreword section displays the title and description/explanation regarding the introduction to this electronic module.
3.	List of contents	This section of the table of contents contains information that can make it easier for users to search for activities and use electronic modules.
4.	Introduction	This introductory section contains competency standards, basic competencies, module descriptions, time, prerequisites, instructions for using the module, final objectives, and competency mastery checks which can make it easier for users to use electronic modules.
5.	Learning Activities	The learning activities section displays the objectives, description/explanation of the material as well as derivative formulas, example questions, summaries as well as assignments and tests.
6.	Evaluation	The evaluation section displays cognitive, psychomotor and affective tests.
7.	Closing	The closing section contains a closing description and bibliography.

E-Basic Physics Module I particle dynamics material produced is in .exe format which can be run on other computers. The Basic Physics I E-Module material on particle dynamics contains material, animations, videos, summaries, example questions, assignments and formative tests as well as an interactive quiz at the end of the lesson. The material discussed in the Basic Physics I e-module, particle dynamics, is particle dynamics. Example questions in this material are presented with complete solutions. The assignments and formative tests in the Basic Physics I e-module, particle dynamics material, contain 2 questions each for each learning activity, while the interactive quiz in this electronic module contains 10 combined questions from the first learning activity to the third learning activity with answer corrections. Automatically at the end the answer is included with the value obtained.

The advantages of the Basic Physics I e-module material on particle dynamics include the language used is easy to understand, can be used for distance learning, students can see the scores obtained from the final test taken directly, the electronic module based on Kvisoft Flipbook Maker can be directly used without having to have an application, the animations and simulations contained in the module are examples of what happens in everyday life so they are easy to understand. Meanwhile, the weaknesses contained in the Basic Physics I e-module regarding particle dynamics include that it is not approach-based and cannot be accessed via smartphone.

Whether the Basic Physics I e-module regarding particle dynamics is suitable or not can be determined by validating experts, both media experts and material experts and testing it on 2016 PGMIPA-U Physics Education students at Jambi University. Based on validation results stage II regarding both media and material, it can be concluded that the Basic Physics I e-module on

particle dynamics can be used and is ready to be tested to determine the student's perception of the Basic Physics I e-module on particle dynamics. To find out students' perceptions of the e-module being developed, a valid and reliable questionnaire was used so that before it was tested to find out students' perceptions, a trial was carried out to determine its validity and reliability as explained in the evaluation stage.

CONCLUSION

Based on the results discussed above, it was found that the Basic Physics I e-module on particle dynamics material has been declared suitable for use. The results of the validity test analysis obtained were that only one statement was invalid and 16 statements were declared valid, the reliability value was 0.898 in the very high category. Meanwhile, according to respondents' perceptions from the questionnaire that was distributed to 2016 PGMIPA-U Physics Education students, the score obtained for the object aspect was 19.49 in the good category, for the sensory aspect it was 19.21 in the good category, while for the attention aspect it was 13. 7 in the very good category, so that the overall indicator is 52.61 in the very good category. Thus, it can be concluded that there is a positive response from students towards the e-module that has been developed. Thus, the Basic Physics I e-module on particle dynamics is declared suitable for use.

ACKNOWLEDGMENTS

Fellow researchers, words of thanks cannot be enough to express how valuable your hard work and dedication in this research is. Your contributions not only increase our understanding, but also open the door to new, profound knowledge.

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