

Research Article

Android-Based Learning Multimedia E-Module Flip-Book Design

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Abstract.

In fact, the teaching materials are still using teaching books, so in the learning media courses will be developed based on digital art teaching materials at Universitas Muhammadiyah Tapanuli Selatan. In the development of the teaching materials contain teaching materials tailored to the curriculum that applies with the tools and materials contained in the environment. Research objectives to know the expert opinion on the feasibility test and influence of the development of digital art-based teaching materials. Research and Development (R&D) method of ADDIE model (Analyze, Design, Development, Implementation, and Evaluation). For the average result of expert validator assessments on this study covers aspects of feasibility standards based on BSNP by 3.27, then the validity criteria is quite good {quite valid and need revision}. The result of student learning creativity Assessment was obtained at 3.18, hence the creativity category is creative.

Keywords: Flip-Book design; multimedia; Android-based; ADDIE

1. Introduction

The development of technology and information is increasingly fast, which marks a new era, namely the era of the industrial revolution 4.0. The era of the industrial revolution 4.0 penetrated various fields including the field of education, especially science education. Science education has a role in producing innovative human resources who have superior competencies both in soft and hard skills.

The development of education, especially for learning Physics in the era of the current industrial revolution 4.0, is inseparable from the many applications regarding physics learning such as teacher rooms, quippers, and genius clinics that make it easier for teachers or students to learn physics concepts. The media presented in these applications are very interesting, both visually and audiovisually.

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UMTS Physics Education which has the vision to produce graduates who are superior, skilled, and professional to face the era of globalization, especially the era of the industrial revolution 4.0, should prepare graduates who can compete in the current era. The era of the industrial revolution 4.0 expects teachers to be facilitators of science, teachers as motivators who can see the abilities of students, and teachers as makers of learning media that are efficient under the school environment.

Multimedia learning is one of the courses taught in the physics education department. Multimedia learning is learning that focuses on being able to make learning media visually and audiovisually, where the making of learning media must be in accordance with the development of technology and information in the era of the industrial revolution 4.0. In fact, multimedia learning when taught in the physics education department did not develop following the era of the industrial revolution 4.0. The lecture module presented is still dominated by the making of learning media with concept maps, mind maps and still based on powerpoint. Meanwhile, the current education climate is based on android and web. Therefore it is necessary to develop a learning module that presents multimedia learning courses with concepts that are more up to date and in accordance with the industrial revolution 4.0. The use of this technology has been carried out in several studies and has proven results. Technology-based learning can improve students' understanding of character and analysis [1], make teachers and students easily understand the material [2] and are more interested and enthusiastic in following lessons and are more effective in time because they are packaged in print and online [3]

2. Methods

Research in the form of design flip-book that will be implemented in learning media courses at the Universitas Muhammadiyah Tapanuli Selatan (UM Tapsel). Research and Development (R&D) method of ADDIE model (Analyze, Design, Development, Implementation, Evaluation) [14].

The data collection technique of the study is a research instrument to assess the developed materials products. The instruments used to collect the data in this development are as follows: The team of expert validation rubric sheets. This poll is used to obtain assessment data from expert validators on products developed that are digital art based teaching materials that will be implemented in the Learning Media course. Instruments to measure learning results are used tests that have been validated and have been modified. The data on this study consist of qualitative data and quantitative

data, so that data analysis is done by processing each of the data to determine the rate of percentage of answer score from each sample.

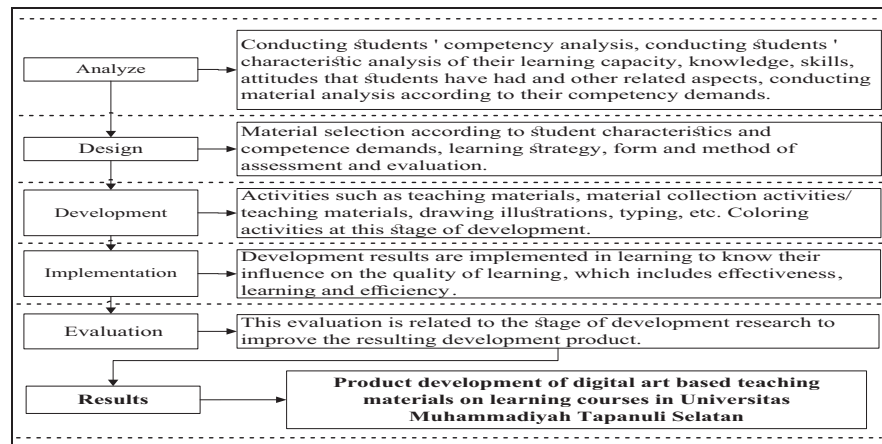


Figure 1: Flow Diagram of teaching materials development.

3. Results and Discussion

3.1. Analyze

Research developed in the form of design flip-book for multimedia Learning at Universitas Muhammadiyah Tapanuli Selatan. Students are given knowledge of the types of media that can be used by students in making design flipbook for multimedia Learning. In the development, the teaching materials contain teaching material that is adapted to the curriculum that applies with the tools and materials contained in the environment.

The student consists of a study program of physics and chemistry. Each student is given the authority to determine the teaching materials based on the curriculum that exists at the SMP or SMA level. Students are then obliged to understand and look for materials related to the teaching materials they have chosen.

3.2. Design

The results of analysis of teaching materials that have been chosen by the research. The stages of designing this research are:

1. Determination of tools, tools used by research to design flipbook for multimedia Learning and choice of software such like Kvisoft flipbook maker

2. The selection of teaching materials, teaching materials are obtained by collecting various sources of literature and materials used today based on the curriculum that exists at the university.
3. Utilization of tool resources and materials contained in the environment.

3.3. Develop

The development section, we use assessment from validator expert that consisting of 3 physics headmasters at university state of medan and 3 lecturers from physics education UMTS. The expert Validator is then asked for his input and criticism through the poll given. This expert assessment is conducted to determine the feasibility of design flipbook for multimedia Learning can be seen in the following table:

TABLE 1: Flip-book design assessment by expert Validator.

No	Validator	Standard Rating				Total Amount
		Content Eligibility	Language Eligibility	Presentability	Grafapia Eligibility	
1	headmast	3.45	3.62	3.32	3.48	
2	Lecturer	2.57	3.03	3.41	3.21	
	Amount	6.02	6.65	6.73	6.69	
	Average	3.01	3.32	3.36	3.34	3.03
	Criteria	Good enough	Good enough	Good enough	Good enough	Good enough

The average value of due diligence based on the BSNP poll is: (1) The standard for content eligibility of 3.45 by the headmaster validator and 2.57 by the lecturer validator. (2) The standard language eligibility is 3.62 by the headmaster validator and 3.03 by the lecturer validator. (3) The standards of presentability of 3.32 by the headmaster validator and 3.41 by the lecturer validator. (4) The standard of graphic worthiness of 3.48 by the headmaster validator and 3.21 by the lecturer validator.

For the average result of all aspects of eligibility standards based on BSNP of 3.27 with a fairly good validity criteria {Quite valid and need revision}.

3.4. Implementation

Assessment of a digital art-based validator expert, we use assessment from validator expert that consisting of 3 physics headmasters at university state of medan and 3

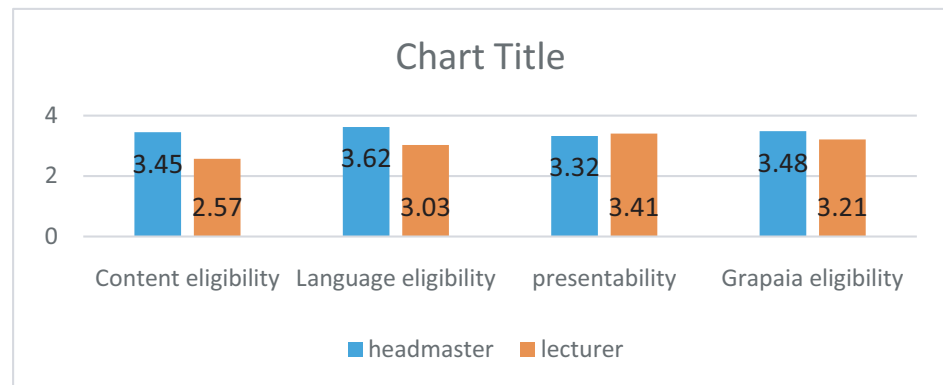


Figure 2: Assessment of design flipbook for multimedia Learning by expert Validator.

lecturers from physics education UMTS. The expert Validator is then asked for his input and criticism through the poll given

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3.5. Evaluation

The evaluation section, students at the UMTS Physics education are taught using a flip book which has been designed and improved according to the advice of the experts. Students are given a questionnaire to see the results of using the flipbook.

4. Conclusions

The results of the development design flipbook for multimedia Learning using ADDIE model (Analyze, Design, Development, Implementation, Evaluation). The average result of expert validator assessment on the aspect of eligibility standards based on BSNP is with a fairly good validity criteria.

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