

Research Article

Implementation of E-Module Development Based on Canva Application on Data Presentation Material to Improve Mathematics Learning Outcomes of Mtsn Kota Kupang Students

Fitri Ramadani Akbar*, Siprianus Suban Garak, and Imelda Hendriani Eku Rimo

Department of Mathematics Education, Nusa Cendana University, Kupang, East Nusa Tenggara, Indonesia, 85111

*Corresponding Author: fitriakbar479@gmail.com | Phone: +6282147055264

ABSTRACT

Education in the current era, especially in the field of Education in terms of teaching applied at school. The improvement of 21st century learning to improve learning outcomes, the ability to analyze, think critically, creatively and problem solving skills. This is seen with many teaching problems in the classroom, with the presence of *e-module* digitized learning can be an effective learning innovation. The purpose of this research is to support the progress of the learning process in advancing learning activities and student learning outcomes in mathematics learning. The target to be obtained is to produce a *Canva-based* digital *e-module* product. This *module* discusses data presentation material. The use of this *Canva* application helps to design learning as a support for students' independent learning resources that are easily accessible. The research method used is research and development (R&D). The focus in developing digital history teaching materials uses the ADDIE development model, namely: analysis, design, development, implementation, and evaluation using non-test methods in the form of questionnaires. The feasibility test was conducted by media experts, material experts, and students. The results showed sig. 0.02, which means that there is an effect of *e-modules* to improve student learning outcomes in mathematics learning.

Keywords: Digital E-module, Mathematics, Learning Outcomes, ADDIE

1. INTRODUCTION

In the era of globalization, the development of science and technology is increasingly advanced, bringing changes to human life (Sopamena, 2018). In the current era of globalization, its influence on the world of education is inevitable. Global demands require the world of education to always adapt technological developments to efforts in improving the quality of education, especially adjustments to the use of information and communication technology for the world of education, especially in the learning process. One of the educational problems that occur in the era of globalization is the lack of student learning outcomes.

Educational problems are an important challenge for the government in an effort to improve the quality of the education system. For teachers, this challenge also means the need for technology integration in the learning process, so that teaching and learning activities become more qualified, meaningful, and fun. One of the educational problems is related to the teaching materials used in Indonesia which includes various challenges that affect the quality of learning. Teachers often face challenges in designing interesting and effective teaching materials. Lack of creativity and innovation in the preparation of teaching materials can hinder the learning process. Many teachers often have difficulties in designing interesting and effective teaching materials. Lack of creativity and innovation in the preparation of teaching materials can hinder the learning process. Often, teachers still rely on textbooks as the only source of learning, without utilizing other sources, such as the internet or additional modules. To overcome this problem, it is important for teachers to innovate in the development of teaching materials and utilize various alternative learning resources, including digital media and interactive modules.

Electronic Modules or E-modules are innovations from conventional modules that integrate information technology, making them more interesting and interactive. With e-modules, students can learn independently using electronic media according to the topics studied. In e-modules, there are materials and practice questions designed to facilitate student understanding (Herawati & Muhtadi, 2018). Learning becomes more effective with the use of e-modules, especially for students who have difficulty in the learning process. In addition, e-modules also support students in learning independently and allow them to measure their own level of understanding, with the help of innovative applications such as *Canva*.

An application called *Canva* is one of the applications that carries a visual theme and can also be audio visual. *Canva* is a graphic design application that bridges users to practically use, design many types of creative materials online. This application can improve learning outcomes because there are visuals and audio so that it does not bore the reader. Improving learning outcomes has a range of significant benefits, including improving students' quality of life by opening up more opportunities in further education and careers, refining important skills such as critical thinking and communication, and increasing students' motivation and engagement in the learning process. In addition, good learning outcomes contribute to the social progress of society, empower individuals to make better decisions, and encourage the development of student creativity. Thus, improved learning outcomes not only positively impact individuals, but also contribute greatly to educational and social progress. Improving learning outcomes is important because it demonstrates that learning is taking place effectively, promotes student motivation and engagement, and helps develop important skills such as critical thinking and analysis. In addition, good learning outcomes provide many opportunities for students to continue their education to higher levels or get better jobs, which in turn contribute to improving the quality of life of individuals and society. Therefore, based on the above background, researchers will examine the problem with development research (*research & development*) entitled "Implementation of *E-module* Development Based on *Canva* Application on Data Presentation Material to Improve Mathematics Learning Outcomes of Mtsn Kota Kupang Students".

2. RESEARCH METHOD

The type of research is the development research method (*Research and Development*). The stages that will be developed teaching materials are *E-modules*. The test subjects in this study were seventh grade students of MTSN Kota Kupang. The research intends to develop 3D animation *e-modules*. Researchers consider using a procedural development model in this study because this model is descriptive and clearly shows the stages that must be passed to produce a product. It is important to distinguish between development procedures and development models: if the development model is procedural, then the development procedures can directly follow the stages in the model.

Basically, development research (R&D) aims to create products that are easier, more effective, and more efficient, based on the usefulness and benefits produced by the product. The model used in this research is the ADDIE model, which consists of the following steps: (1) analysis, (2) design, (3) development, which includes the first evaluation stage through expert review to revise the product, (4) implementation, where field tests are conducted, and (5) evaluation.

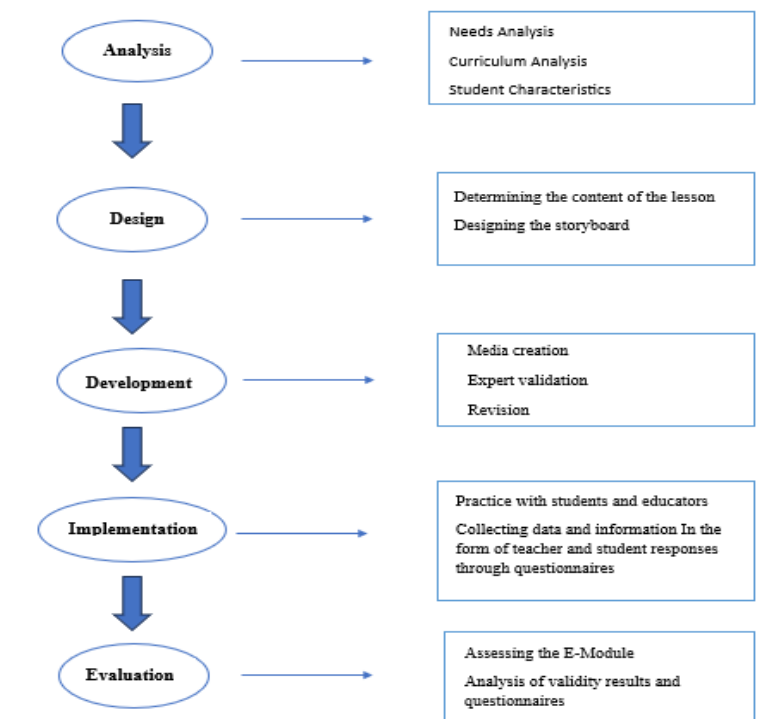


Figure 1 ADDIE Development Procedure

In this research, the type of data used consists of descriptive data, which includes two categories: (1) qualitative data and (2) quantitative data. Qualitative data is obtained through in-depth analysis, so it cannot be collected directly. Meanwhile, quantitative data was generated from various sources, including the calculation results of validation instruments, student questionnaires, and test results (post-test). On the other hand, qualitative data was collected through students' responses regarding the use and efficiency of the media, as well as suggestions and feedback from material and media experts.

3. RESULTS AND DISCUSSION

3.1 Result

This research is a type of product development research in the form of electronic modules or *e-modules* on data presentation material designed for class VII. The stages carried out by researchers in conducting the ADDIE development model. The ADDIE development stages are as follows:

1. Analysis

The first stage of the ADDIE model development begins with analysis. The initial step by researchers is to make direct observations to identify learning constraints at school. Researchers with direct interviews with students and teachers of mathematics subjects. From the results of the interview, information was obtained that in mathematics learning activities, especially data presentation material, already has online learning media. For teaching materials used using textbooks or textbooks that show limited variation in teaching materials that are presented digitally and innovatively.

Researchers chose this data presentation material because this material can connect abstract numbers and information in a way that is easier to understand and applicable. Data presentation involves visualization through graphs, diagrams, tables, or infographics, which makes information clearer and more interesting to learn so that it fits the product to be developed.

2. Design

This design stage begins with the software used, researchers chose the *Canva* application to design this *e-module*. This stage aims to compile the details needed to create learning products that are effective, attractive and easy to use. This design stage is very interesting because of the use of text, image and video elements that are placed in an interesting and diverse way. Here is how the *e-module* looks like:



Figure 2 Cover of Data Presentation Math E-module

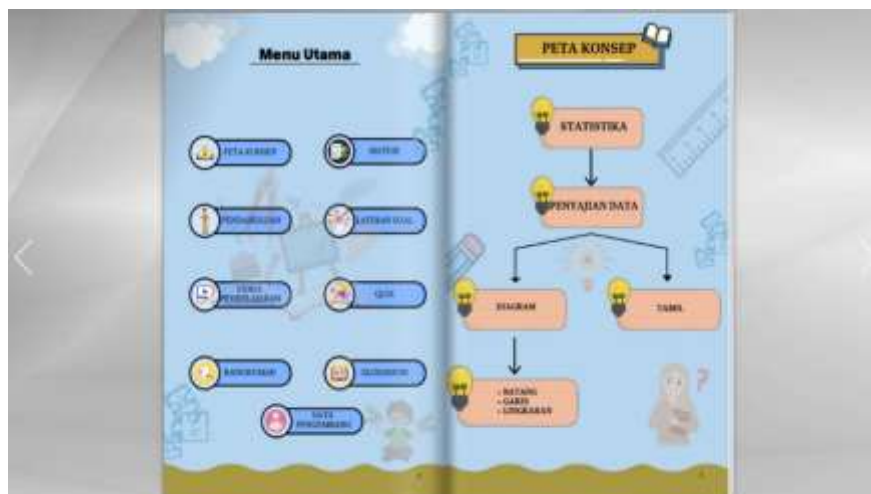


Figure 3 Main Menu and Concept Map of E-module



Figure 4 Data Presentation Material



Figure 5 LKPD E-module



Figure 6 Quiz in E-module

3. Development

After the application is developed, the next stage is carried out an assessment by media experts and material experts. This trial is conducted to ensure that the developed product meets quality standards and effectiveness in supporting learning objectives. Without expert trials, e-modules can be less effective or even confusing for students. The rating scale used in media expert validation is a Likert measurement scale with a score range of 1-5. Based on the results of the evaluation conducted by media experts, the scores are averaged and then categorized based on the level of feasibility. The following are aspects of the experts' assessment

Table 1 Media Expert Assessment

No	Assessment Aspect	Rating Scale
1	Language Feasibility	1 (Less Good) - 5 (Very Good)
2	Presentation Feasibility	1 (Less Good) - 5 (Very Good)
3	Feasibility of Teaching Material Effects	1 (Less Good) - 5 (Very Good)
4	Feasibility of Display	1 (Less Good) - 5 (Very Good)

Table 2 Material Expert Assessment

No	Assessment Aspect	Rating Scale
1	Suitability of material to the curriculum	1 (Less Good) - 5 (Very Good)
2	Relevance of the material to the context	1 (Less Good) - 5 (Very Good)
3	Depth and clarity of material	1 (Less Good) - 5 (Very Good)
4	Suitability of exercise questions	1 (Less Good) - 5 (Very Good)

Table 3 Likert Scale

Score	Answer Options Feasibility
5	Very good
4	Good
3	Good enough
2	Not good enough
1	Less good

Table 4 Media Expert Assessment

No	Question	Assessment	Description
1	Display of learning media	90	Very good
2	Letter text format	88,7	Very good
3	Use of color	88,5	Very good
4	Program display	86	Very good
5	Button/navigation	86	Very good
6	Instructions for using learning media	88	Very good
7	Ease of learning media programming	90	Very good
8	Button/navigation	88	Very good
9	Exercise question programming	88	Very good
10	Sound effect	90	Very good
Total		88,32	

Table 5 Material Expert Assessment

No	Question	Assessment	Description
1	Clarity of instructions for use	89,6	Very good
2	Button function	92,5	Very good
3	Title of learning media	90	Very good
4	Clarity of learning outcomes	88,5	Very good
5	Clarity of learning objectives	86	Very good
6	Relevance of material to learning objectives	88	Very good
7	Clarity of material	84	Very good
8	Suitability of exercise questions	88	Very good

9	The material presented is easy understood	88	Very good
10	Visuals presented add to understanding of the material	85	Very good
Total		87,96	

4. Implementation

The next step in the implementation stage is to conduct field trials with students to evaluate the feasibility of the product being designed. Product trials aim to identify aspects that have been considered good by students and assess whether there is an increase in student learning outcomes. Based on the results of student responses on all aspects of this e-module, the final number is obtained from the overall average of the following student criteria:

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.988	1	49.988	14.205	.002 ^b
	Residual	45.746	13	3.519		
	Total	95.733	14			

a. Dependent Variable: Hasil Belajar Canva
b. Predictors: (Constant), Hasil Belajar Ceramah

Figure 7 SPSS Anova Result

Based on the results of the ANOVA analysis, a significant difference of 0.02 was obtained, which indicates a significant difference between the 2 classes being compared. Thus, it can be concluded that there is an effect on learning outcomes using Canva-based e-modules in mathematics learning.

5. Evaluation (evalatution)

The evaluation results show that this product is of very good quality based on the assessment of the validation of media experts 88.32 and material experts 87.96. This shows that testing e-modules at MTSN Kota Kupang has a significant effect on math learning outcomes.

3.2 Discussion

E-modules, or electronic modules, are digitized versions of learning modules that can be accessed anytime and anywhere through electronic devices. Unlike printed modules that are usually in physical form, e-modules are presented in file format that can be accessed online. The existence of e-modules is increasingly in demand because of their smaller size compared to conventional books, as well as search features that make it easier for users to find words or information quickly (Febrina et al., 2020).

The digital format of this module has a number of advantages, including ease of carrying and minimal storage space requirements. E-modules can be stored on various devices, such as PCs, laptops, smartphones, tablets, or other specialized electronic devices designed to read digital books. Therefore, e-modules are very environmentally friendly and support the paperless concept. From a physical point of view, e-modules offer benefits in the form of a small size that is easily stored on data storage devices, such as flash drives or memory cards. The existence of e-modules also has an advantage in terms of durability; unlike ordinary books that can be damaged, this digital format can still be used as long as needed without any changes. E-modules function as adaptive and efficient learning media (Dale, 1946) revealed that the percentage of memory remembered by a person is influenced by the type of learning activity done by that person. E-modules provide opportunities for students to learn independently, study material outside of class hours, express their learning style, test their understanding, and increase the ability to interact directly with the environment and various sources of the teaching process is important. Students who have internet access at home can take advantage of this opportunity by downloading e-modules from available websites.

4. CONCLUSION

1. The *Canva* application-based *e-module* on data presentation material for class VII junior high school has been successfully developed through the ADDIE model, namely (1) analysis, (2) design, (3) development, (4) implementation, (5) evaluation.

2. The results showed the validity of the *e-module* with the use of *Canva* application on class VII data presentation material met the criteria of excellent according to the criteria of both validators, namely material expert validators and media experts. This *e-module* obtained an average overall score of 88.32 based on the assessment of media experts and 87.96 based on the assessment of material experts, which explains that this *e-module* is very feasible as a teaching medium.

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The researcher hopes that this study can provide benefits in the field of mathematics education as well as in the development of digital learning media. The researcher strongly hopes that the results of this study can serve as a useful reference for educators, researchers, and other relevant parties in improving the quality of learning.

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