



Using Canva to Create Visual Materials in Mathematics Education

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Abstract

The research aims to create innovative learning e-modules in circle equation material. This module is designed using the Canva application which provides an attractive and interactive display. After development, the module has been tested to ensure its quality. The trial was carried out in two stages. The first stage involved 2 expert validators in their fields. The second phase involved 30 students from SMAN 3 Sidoarjo. The module development process followed the ADDIE model, namely Analysis, Design, Development, Implementation, and Evaluation. The trial results show that this module is suitable for use as an effective teaching material to help students in the learning process. This results show that can helping students to find the circle equation material themselves, associating the material with issues that are currently being discussed in students' lives so that it attracts their interest, equipped with interesting pictures and an aesthetic appearance, and providing flexibility and convenience for teachers to make further revisions and developments according to learning needs and developments.

Keywords: Canva, ADDIE, E-modules.

Abstrak

Penelitian ini bertujuan untuk menciptakan inovasi e-modul pembelajaran pada materi persamaan lingkaran. Modul ini dirancang menggunakan aplikasi Canva yang memberikan tampilan menarik dan interaktif. Setelah pengembangan, modul tersebut telah diuji untuk memastikan kualitasnya. Uji coba dilakukan dalam dua tahap. Tahap pertama melibatkan 2 validator ahli di bidangnya. Tahap kedua melibatkan 30 siswa dari SMAN 3 Sidoarjo. Proses pengembangan modul mengikuti model ADDIE yaitu Analysis, Design, Development, Implementation, dan Evaluation. Hasil uji coba menunjukkan bahwa modul ini layak digunakan sebagai bahan ajar yang efektif untuk membantu siswa dalam proses pembelajaran. Hasil ini menunjukkan bahwa dapat membantu siswa untuk menemukan sendiri materi persamaan lingkaran, mengaitkan materi dengan permasalahan yang sedang hangat dibicarakan dalam kehidupan siswa sehingga menarik minatnya, dilengkapi dengan gambar-gambar yang menarik dan tampilan yang estetik, serta memberikan keleluasaan dan kemudahan bagi guru untuk melakukan revisi dan pengembangan lebih lanjut sesuai dengan kebutuhan dan perkembangan pembelajaran.

Kata kunci: Canva, ADDIE, E-modules.

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Introduction

Demands and needs in the digital era have fundamentally changed the way we learn and access information. In education, technology has made it possible for wider access to educational resources, both in the form of e-books, learning videos, and online learning platforms. In addition, technology has also changed the teaching paradigm, with more interactive and inclusive learning methods (Safitri, 2017). In the digitalization era, education has also transformed through the adoption of information and communication technology (ICT). For example, the use of computers, the internet, and mobile devices have made it possible for students and educators to communicate and collaborate online (Hamzah, et al, 2020). Distance learning (online) is also becoming increasingly popular, especially during the COVID-19 pandemic, where schools and tertiary institutions have had to switch to online learning to

maintain the continuity of education.

Through education that is integrated with technology, it is expected to create competent individuals according to their fields. This is due to the ability of technology to provide access to a variety of educational resources, facilitate collaboration between individuals, and expand the range of learning. In addition, education related to technology also trains digital skills and information literacy, which are important in this digital era (Fitriani, et al. 2020). The use of technology in teaching materials can also facilitate the delivery of the material being taught and make it more interesting. In a study conducted by Ningtyas et al. (2020), the use of technology in learning mathematics provides benefits as a reference for delivering material by teachers. This means that technology can assist teachers in conveying material effectively and efficiently to students.

In addition, the use of technology in learning is also related to students' digital literacy skills. According to research by Murray et al (2020), the current learning process is very much related to technology and has an impact on students' digital literacy skills. Digital literacy is the ability to use, understand and participate effectively in digital environments. By utilizing technology in learning, students can develop the digital literacy skills needed in this digital era. The Canva app is a solution for integrating technology and learning. This application can provide an interesting and interactive learning experience. In developing e-modules, Canva can be an effective learning medium because it provides interesting features such as motion animation, video and audio displays, and images. This makes the presentation of the material richer and more interesting for students, so they don't feel bored during the learning process.

Using Canva can also make it easier for teachers to deliver material and make students more active (Mudinillah & Rizaldi, 2021). With interactive features, this application can increase student involvement in the learning process. Teachers and lecturers are expected to be able to take advantage of this rapidly developing technology to organize data and improve learning media to provide a variety of practice activities for students. In improving student learning outcomes, innovation in learning media is considered important. Implementing the right strategy and using good learning media, is expected to improve student learning outcomes. In this case, the use of the Canva application as an interesting and interactive learning medium can be one of the efforts to achieve this goal

Research conducted by Li et al (2018) stated that Canva is a graphic design tool that allows its users to easily design various types of creative designs online, including the creation of electronic modules with moving animation features. This makes the module more interesting and interactive. Another study by Islami et al. (2022) found that using Canva as an alternative for designing electronic modules as learning media can provide flexibility in learning because the material can be modified with videos, images, audio, and animations, which help students understand learning. Canva is the right choice when it comes to creating more interactive modules because of the features it offers. In a study by Rahmatullah et al. (2020), Canva is also identified as a graphic design tool that makes it easy to create electronic modules featuring moving animations and adding video links.

Method

This study uses research and development methods to produce products and test the effectiveness of these products (Atika & MZ, 2016). This method can be interpreted as a scientific approach to investigating, designing, producing, and testing the quality of the products produced (Sugiyono, 2012). This development research aims to create learning media products based on mathematics modules as alternative teaching material for students with a focus on the circle equation material at SMAN 3 Sidoarjo.

In this study, researchers used the ADDIE model which has been modified into five stages, namely analysis, design, development, implementation, and evaluation. The product development process is

carried out through procedural steps that will provide instructions on how these procedural steps are carried out from the initial stage to the product that can be used. The first stage in this development model is the analysis stage, where the researcher validates the performance gap. The purpose of validating the performance gap is to obtain a basic objective statement that will be used to identify problems, find causes, and find solutions to these problems (Sugiyono, 2012).

In developing this model, the first step is analysis. At this stage, the researcher verifies the existing performance gaps. Performance gap validation aims to compile a statement of basic objectives that will be used to identify and position gaps in implementation or related problems, as well as find root causes and find solutions. After the analysis phase, this development model continues to the design stage. At the design stage, researchers will design teaching materials based on the analysis that has been done, taking into account the concept conceptually. In addition, researchers will also develop appropriate assessment instruments. This design includes selecting relevant material based on the results of the analysis, designing the appearance of the e-module using the Canva application, as well as developing teaching materials using references related to the circle equation material.

After conducting the analysis and designing the design, the researcher proceeded to the product development stage, namely the e-module. This development stage involves the necessary preparations to support the development process. In this stage, researchers can use relevant examples or previous research regarding modules or teaching materials as a reference in making e-modules. After the e-module has been developed, the next stage is validation. The validation results are then analyzed to evaluate the level of validity of the teaching materials that have been developed.

Result and Discussion

This research produced a mathematics e-module assisted by the Canva application, with a focus on circular equations. The e-module development process follows the ADDIE procedure which consists of 5 stages, namely Analysis, Design, Development, Implementation, and Evaluation. Through these stages, researchers can evaluate the effectiveness and usefulness of the e-modules that have been developed.

In the research analysis, the researcher found several research findings, namely the inability to produce accurate solutions, and feature limitations: for example, there is no ability to calculate the intersection points of a circle with other lines. Lack of flexibility: the problem that arises in students is not being able to handle different types of problems or different scenarios. Lack of support or updates. To overcome the problems that have occurred so far, researchers have developed E-modules as alternative teaching materials that can help students. These e-modules allow students to learn math more engagingly and interactively, by integrating technology and leveraging the Canva app. Canva makes it easy to design attractive and non-monotonous module displays and allows flexible access without being limited by space and time.

After the analysis phase, the next step in e-module development is the design stage. At this stage, the researcher carried out four important steps, namely component content design, material design, media design, and instrument design. In designing the component content, the e-module is designed with a structure consisting of an introduction, table of contents, material, practice questions, and closing. Each of these components is designed to provide students with a systematic and thorough understanding. In designing the material, researchers use various reference sources such as high school textbooks, and high school e-modules with ISBNs. This aims to ensure that the material presented in the e-module is verified and of good quality.

Furthermore, in designing media designs, researchers utilize the Canva application to design attractive and informative visual displays in e-modules. Canva provides flexibility in selecting layouts, fonts, images, and other design elements to increase the appeal and readability of your e-modules. Finally, in designing the instrument, the researcher designed a material and media expert validation

sheet, as well as a student response questionnaire. This aims to ensure that the developed e-module is valid in terms of content and media, as well as getting relevant responses from students as the main users. With careful design steps, this mathematics e-module is expected to provide an effective, interesting, and well-understood learning experience for students.

After the analysis stage, the next focus in development is on making mathematics learning e-modules. This e-module was developed to facilitate students in learning and increase their understanding, especially in the graph material of exponential and logarithmic functions. After the researcher has finished designing the e-module, the next step is to give it to the validator team which consists of material experts and media experts.

Table 1. Validation Results

No	Aspect	Analysis	Material expert validator		Aspect	Analysis	Media expert validator	
			1	2			1	2
1	Content eligibility	$\sum Skor$	25	28	Module size	$\sum Skor$	13	14
		x_i	2,92	3,11		x_i	3,17	3,11
		mean	3,02			mean	3,14	
		Criteria	Valid			Criteria	Valid	
2	Coverage determination	$\sum Skor$	26	27	Leather Design	$\sum Skor$	17	19
		x_i	3,12	3,34		x_i	3,66	3,21
		mean	3,23			mean	3,44	
		Criteria	Valid			Criteria	Valid	
3	Language	$\sum Skor$	25	26	Content design	$\sum Skor$	37	40
		x_i	3,01	3,34		x_i	3,12	3,44
		mean	3,17			mean	3,28	
		Criteria	Valid			Criteria	Valid	

After the validation process was revised, the developed e-module was deemed fit to be tested on students of SMAN 3 Sidoarjo. This trial will be carried out by involving 30 students on a small scale. The purpose of this trial is to find out how students respond to the use of e-modules in learning materials for graphs of exponential and logarithmic functions. Student responses will be used as an indicator of the success and effectiveness of the e-module. The results of student responses can be found in the following table.

Table 2. The results of the student response questionnaire

Name	Sum		Information	Name	Sum		Information
	Skor	Mean			Skor	Mean	
SBJK 1	27	3,00	Interesting	SBJK 16	28	3,11	Interesting
SBJK 2	26	2,89	Interesting	SBJK 17	33	3,67	Very Interesting
SBJK 3	30	3,33	Interesting	SBJK 18	32	3,56	Very Interesting

SBJK 4	31	3,44	Interesting	SBJK 19	29	3,22	Interesting
SBJK 5	28	3,11	Interesting	SBJK 20	25	2,78	Interesting
SBJK 6	33	3,67	Very Interesting	SBJK 21	34	3,78	Very Interesting
SBJK 7	32	3,56	Very Interesting	SBJK 22	27	3,00	Interesting
SBJK 8	26	2,89	Interesting	SBJK 23	30	3,33	Interesting
SBJK 9	29	3,22	Interesting	SBJK 24	31	3,44	Interesting
SBJK 10	25	2,78	Interesting	SBJK 25	26	2,89	Interesting
SBJK 11	34	3,78	Very Interesting	SBJK 26	28	3,11	Interesting
SBJK 12	27	3,00	Interesting	SBJK 27	33	3,67	Very Interesting
SBJK 13	30	3,33	Interesting	SBJK 28	32	3,56	Very Interesting
SBJK 14	31	3,44	Interesting	SBJK 29	29	3,22	Interesting
SBJK 15	26	2,89	Interesting	SBJK 30	25	2,78	Interesting

Based on several evaluation stages, the results show that in the context of the teaching and learning process at SMAN 3 Sidoarjo, it is necessary to update teaching materials that can improve the learning process. Therefore, researchers have developed learning modules using the Canva application, especially on circle equation material. The developed module meets valid, practical, and effective criteria, so it is suitable for use in learning. However, in the development of this module, there are still some limitations, such as limitations in the test subjects used, so further testing is necessary to ensure the quality of the product being developed. The implication, from the results of this research, is that it is hoped that the implementation of the developed learning modules can be carried out on a wider scale.

As a follow-up to the results of this research, it is hoped that the developed learning modules can be implemented on a wider scale. The development of mathematics e-modules has a significant impact on helping students during the learning process. This finding is supported by previous research (Widiana & Jampel, 2016) which states that students become more active in thinking during learning, especially in the process of proving a concept through observation and analysis. Learning modules are an effective means of encouraging active involvement and a better understanding of mathematics. In line with the research results of Rohma and Sholihah (2021) that Canva-based audio visual media can be used as an alternative to support the learning process. Through Canva media, teachers can increase their creativity in compiling and developing learning media that suits students' needs. Apart from that, it can be seen that students have high enthusiasm for the learning process based on the results of students' practical assessments. Therefore, the implementation of this learning module is expected to

provide significant benefits for students in improving learning outcomes and understanding of mathematical concepts.

Conclusion

In conclusion, the development of e-module mathematics as teaching material has gone through a validation process by experts, including media experts and material experts, which resulted in validation with a good level and meet the criteria for use. In addition, the results of students' responses to the quality of e-modules as teaching materials carried out at SMAN 3 Sidoarjo received the interesting criteria. This shows that mathematics e-modules as teaching materials have high appeal and are suitable for use in the learning process. Suggestions that can be given in this research are research expansion by involving larger samples from various classes. This will provide more representative results and can be generalized to a larger population. Next, Comparison with Conventional Methods. In this case, data collection related to learning outcomes, interests, and student involvement can be carried out to find out the differences between the two approaches. Then evaluate over a longer period. Finally, teacher training for providing training to teachers or lecturers who will use the Canva application in learning.

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