Development of Interactive E-Modules Assisted with Canva and Professional Flip PDF on Opportunity Materials

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Article Info	Abstract
	The purpose of this study is to evaluate the viability and usefulness of creating interactive e-modules on opportunity material for class X senior high school with help from Canva and Flip PDF Professional. The five steps of the ADDIE development model analysis, design, development, implementation, and evaluation are part of the Research and Development (R&D) research methodology. The research results show that the e-module product developed is included in the "very valid" and "very practical" categories. Validation was carried out by four validators, with percentage validity results: material expert (83%), lecturer media expert 1 (95%), lecturer media expert 2 (95%), and practitioner expert (90%), resulting in an average validity of 90 .75%. The implementation of a trial limited to 10 students showed a practicality level of 87.05%. Evaluation is carried out based on validator suggestions, resulting in improvements to media and material aspects. Because of this, the interactive e-module that was created is legitimate and useful for use in mathematics education, allowing students to learn on their own and participating more actively in the process. **Keywords**: interactive e-modules, Canva, flip pdf professional, opportunity

1. Introduction

Education is an effort to explore the potential that exists in individuals and then develop it according to their abilities such as spiritual, and emotional intelligence, knowledge, and skills (Mega, 2023). To realize high-quality education, the government always updates the education curriculum (Mega, 2023). Mathematics is a field of science that can improve students' intellectual abilities and skills in the thinking process, making it easier for students to solve everyday problems (Erbaisah & Rezeki in Widyasari, 2021:1). With mathematics as a subject at school, students can have the attitudes and habits to think logically, systematically, diligently, critically and responsibly (Suripah & Rhamadani in Widyasari, 2023:1). Based on the statement above, it emphasizes the importance of education in unlocking and developing individual potential, which includes spiritual and emotional intelligence, knowledge and skills. This highlights the government's role in continuously updating the curriculum to ensure high-quality education. In particular, mathematics is described as an important subject for improving

students' intellectual abilities and thinking processes, thereby equipping them to tackle everyday problems more effectively. Furthermore, learning mathematics at school fosters students' habits of logical, systematic, diligent, critical and responsible thinking.

Based on the results of observations made by researchers at State High School 1 Gurah in classes that did not understand the material presented by educators, especially the material on opportunities for class X, even semester. In addition to traditional textbooks and worksheets, educators have employed e-module teaching materials which are exclusively available in PDF format to supplement mathematics instruction. However, teachers are unable to use the software that is now available to construct e-modules that have a more attractive appearance and include student activities outside of the classroom because of their limitations in comprehending information and communication technology. The teachers at State Senior High School 1 Gurah also have not optimized the learning media they use. This can influence the quality of student learning outcomes, namely motivation for students and creativity of teachers/educators. According to Supardi (2015) the learning media factor is the main factor that influences student learning outcomes.

Based on the explanation of this problem, efforts will be made to overcome it, namely, the need for innovation to make mathematics learning more enjoyable. The right learning media for this problem because technological advances are currently very rapid. To be able to stimulate students' thinking processes from concrete thinking processes to abstract thinking, you can use learning media. The choice of learning media must also be filtered, and aligned with the goals you want to achieve. Therefore, so that mathematics learning attracts more attention and interest from students, researchers are interested in developing learning media as teaching materials for electronic-based mathematics learning. Interactive e-modules are one type of learning tool that can improve students' attention spans and spark a positive learning environment while helping them learn mathematics. There are various software that can be used to develop interactive e-modules for mathematics learning. This software has its advantages by adapting the characteristics of the software to the material provided. One alternative to increase students' understanding of learning material is by using modules (Devita & Samijo, 2019).

The module used in this research is an electronic module or commonly called an e-module. With this e-module, it can help students understand the material in learning, especially opportunity material. This e-Module was created with the help of several software, namely professional Canva and Flip PDF software. Canva is an online assisted application that allows you to create attractive designs with templates, features and categories. Meanwhile, Flip Pdf Professional is a software that can be used to convert PDF publications to digital flipping page publications by changing the commonly used PDF display to be more attractive, such as an e-book display that can be flipped back and forth when reading it. By using this software to create e-modules as learning media, it can make it easier for teachers to design and explain learning materials, including mathematics learning.

Using Canva software and Flip Pdf Professional with Opportunity content, the researcher is attempting to produce an interactive e-module as a mathematics learning medium based on the backdrop of the topic as given in the problem above in order to make it more realistic. Thus, the development research carried out by this author is entitled "Development of Interactive E-

Modules Assisted by Canva and Flip Pdf Professional on Opportunity Material". The purpose of this research is to create interactive electronic modules and evaluate their efficacy and viability as a medium for teaching mathematics.

2. Methods

This Canva-based e-module creation study employed a sort of research known as research and development, or R&D research. The ADDIE development paradigm, created by Dick and Carry (1996), is used in this study and developmentThe five stages of the ADDIE development model are described in this research and development. These are the analysis stage, which consists of two stages: performance analysis and needs analysis; the design stage, in which the author designs the learning activities; the development stage, which creates learning media based on the design stage; the implementation stage, which involves implementing the learning materials for users; and the evaluation stage, which is the last revision stage in the research (Wulandari, 2022). In general, this research model can be seen in the following picture :
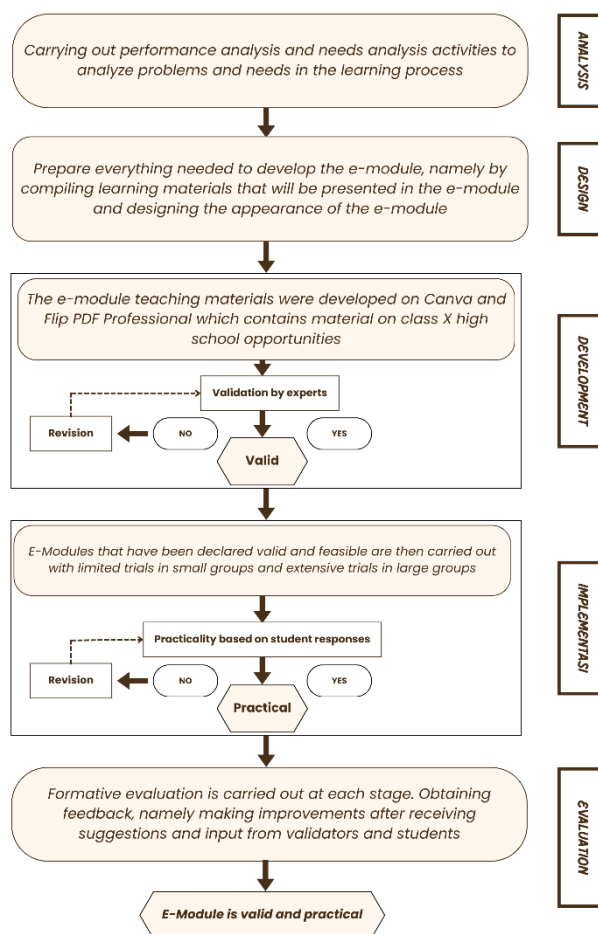
Figure 1

Stages of the ADDIE Development Model
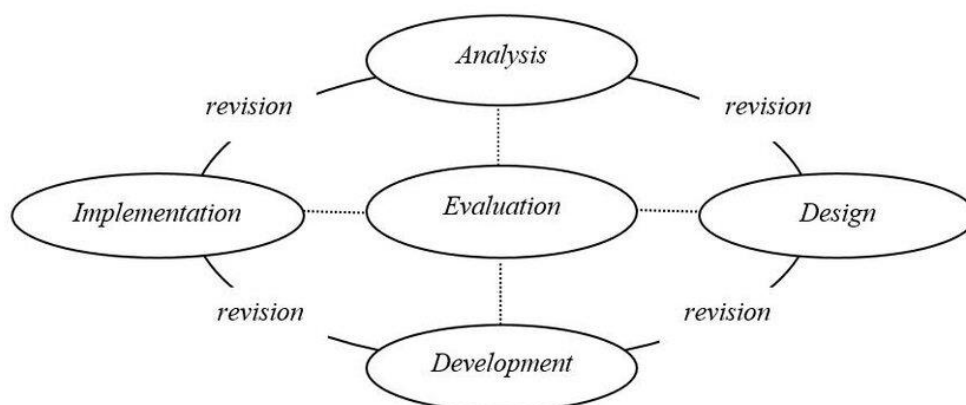
The development process used in this study is based on the ADDIE stages, which were modified from (Rayanto & Sugianti 2020) and (Puspasari & Suryaningsih, 2019). The phases of the development process that were completed are shown in brief in Figure 1 below:

Figure 2

Research Fl

Forty pupils from State High School 1 Gurah's class X served as the research subjects. The selected location is on Jl. Balongsari No.3, Gurah II, Gurah, Gurah District, Kediri Regency, East Java. By carrying out limited trials and extensive trials. The subjects of the limited trial in this research were 5 students each from classes X-3 and X-4, so there were 10 students. Meanwhile, the broad trial subjects consisted of 30 class X-2 students at SMAN 1 Gurah. E-module practicality instruments in the form of surveys and e-module validation instruments are the instruments utilized. To ascertain the e-module's validity in multiple dimensions, media expert validators, material experts, and practitioner experts complete the validation instrument sheet. Quantitative descriptive data analysis is the method used to describe the validity of the e-module learning media that are being built.

3. Result and Discussion

3.1. Findings from Research

This study's output is an electronic mathematics module created with the assistance of expert Canva and Flip PDF software. It includes information on chances for Class X high school

students and attempts to ascertain the module's viability and usefulness. This e-module's creation adheres to the multiple-stage procedures outlined in the ADDIE development paradigm. Mulyatiningsih (2016) states that the ADDIE development model has the following stages:

3.1.1. Analysis

The analysis stage is the first stage in developing mathematics e-modules by carrying out performance analysis and needs analysis. At this stage, it is necessary to identify products that suit students' needs, identify learning content or materials, and identify the learning environment and delivery strategies for learning. At this stage of performance analysis, is carried out using observation, interviews, and document data methods. The results of observations, interviews, and document data show that the application of teaching materials used by teachers is less interesting and is still considered difficult to understand. For further. During the requirements analysis phase, it was found that the teacher's choice of learning materials was less engaging and that many of the students found it difficult to stay interested in the topic.

The analysis's findings, which showed that the teacher had incorporated printed books and LKS teaching materials into the learning activities, were derived from the tasks completed. The use of teaching materials causes students to get bored with learning because the media used is not interesting. Teachers have not been able to make use of the software that is currently available to them in order to create e-module content that has a more appealing design. This is because of their limitations when it comes to communicating and using technology. Based on the analysis's findings, it is therefore known that educators and learners require electronic teaching resources, specifically in the form of electronic modules, or e-modules, that are more aesthetically pleasingly packaged, accessible, and capable of being used on a smartphone to support learning both in and outside of the classroom.

3.1.2. Design

At this stage what is done is to design the initial product being developed. This stage aims to prepare everything needed to develop the e-module. The e-module display design process includes: (1) preparing opportunity material in Microsoft Word; (2) setting the sequence of cover components to the end of the e-module; (3) selection and placement of layout, writing/letters, images, shapes or designs, elements, colors, and space to place the video; and buttons on the e-module; (4) and contains the contents of each component and material that has been arranged into the layout design.

Figure 3

Display of the Mathematics E-Module Page

3.1.3. Development
The development stage of the ADDIE model contains activities to realize the product design, namely by carrying out validation tests to carry out revisions and improvements according to suggestions from the validator. The electronic media module (e-module) that has been prepared will then be assessed by validators, namely media experts, material experts, and practitioner experts. The following is a table of media expert validation results:

Table 1

Results of the Validation by Media Experts

No	Validator	Percentage	Category
1	Lecturer Media Expert 1	95%	Valid and Feasible
2	Lecturer Media Expert 2	95%	Valid and Feasible

Media validation was carried out by lecturers at Nusantara University PGRI Kediri to determine the validity of this mathematics learning media. Validation carried out by media expert lecturer 1 obtained a percentage result of 95% in the valid and appropriate category, media expert lecturer 1 provided suggestions for adding source links and a bibliography of YouTube videos in the e-module. Then the media expert, lecturer 2, got a percentage of 95% in the valid and appropriate category. The media expert, lecturer 2, gave suggestions for the quiz, using Quizizz. Apart from looking at the results of media validation, to see product validity you can also look at the validation results from material experts.

Table 2

Results of the Validation by Material Experts

No	Validator	Percentage	Category
1	Material Expert	83%	Valid and Feasible

Material validation was carried out by Nusantara University PGRI Kediri lecturers to determine the validity of the material used in this mathematics learning media. Validation carried out by material expert lecturer 1 showed that every aspect observed was given a good assessment. With a percentage of 83%, it is categorized as valid and appropriate, so learning media can be used without revision. With a percentage of 83%, it is categorized as valid and appropriate, so the learning media can be used without revision. Apart from looking at the results of media and material validation, to see the validity of the product you can also look at the validation results from expert practitioners. The following table displays the expert practitioner validation results:

Table 3

Results of the Validation by Practitioner Experts

No	Validator	Percentage	Category
1	Expert Practitioner	90%	Valid and Feasible

This expert practitioner validation was carried out by teaching staff in mathematics subjects at SMA Negeri 1 Gurah. The purpose of expert practitioner validation is to determine whether the content in this e-module media is pertinent to the required competencies and whether the media is appropriate for facilitating the study of mathematics. In expert validation, practitioners received a percentage of 90% in the valid and appropriate category. In validation, expert practitioners provide suggestions for the quizzes in the e-module, not just using Google Forms but adding quizzes using Quizizz or Kahoot to make them more varied and interesting for students. Researchers received good comments, namely that the e-module created was by the learning objectives.

3.1.4. Implementation

In this implementation, field trials were carried out in students' teaching and learning activities on opportunity material using interactive e-module media assisted by Canva and professional PDF flip. During the activity, students were given e-modules as supporting teaching materials in learning, especially in mathematics subjects. With this e-module, students are able to understand the material provided and are more interested in the e-module because in the e-module there are interesting features such as image designs, learning videos and quizzes that can be done online via smartphone. With this media students can also learn independently. Students will receive a questionnaire on their responses to the interactive e-module learning material after the course is over, with assistance from Canva and Flip PDF Professional, in order to assess the usefulness of this learning tool. Based on a student response questionnaire conducted by 30 students, a percentage of 85% was obtained with the practicality level category being very practical.

3.1.5. Evaluation

At this stage we will go through all the stages above in the process of developing learning media for high schools, including formative evaluation and summative evaluation. (1) The formative evaluation stage is carried out with the aim of collecting data at each stage which is used as improvement, (2) The summative evaluation stage is a stage carried out at the end of the program which was developed to determine the responses of students. At this stage, what is done is to review the impact of learning in a critical way, measure the achievement of development goals, measure the achievement of targets, look for any information that can enable students to achieve good results. This research stage was completed in stages, with this development determining the formative evaluation stage, because this type of evaluation is related to the development research stage to improve the resulting development product through validity and practicality tests to see the effect of e-modules on student learning outcomes.

3.2. Discussion

Based on the research results, it is known that the professional mathematics e-module teaching material products assisted by Canva and Flip PDF on opportunity material for class, development stage, implementation stage, and evaluation stage. The development research's outputs fall into the "very valid" and "very practical" categories. The first stage is the analysis stage. The findings of the study, which showed that the teacher had included printed books and LKS teaching materials into learning activities, were derived from the analysis activities that were conducted. Teachers haven't been able to use the software that is already available to them

to create e-modules that look more attractive and to present multimedia features like buttons, quizzes, animation, audio, video, and links. This is because teachers haven't been able to fully grasp information and communication technology.. Based on the analysis's findings, it is therefore known that educators and learners require electronic teaching resources, specifically in the form of electronic modules, or e-modules, that are more aesthetically pleasingly packaged, accessible, and capable of being used on a smartphone to support learning both in and outside of the classroom.

The next step is the e-module design stage, which involves gathering the learning materials that will be included in the e-module and creating its look, following the analysis results. This stage aims to prepare everything needed to develop the e-module. The e-module display design process includes: (1) preparing opportunity material in Microsoft Word; (2) setting the sequence of cover components to the end of the e-module; (3) selection and placement of layout, writing/letters, images, shapes or designs, elements, colors, and space to place the video; and buttons on the e-module; (4) and contains the contents of each component and material that has been arranged into the layout design. The page display of the e-module being developed contains several components in accordance with the contents of the module in general, but there are additional supporting activities, namely motivation in each learning activity in the e-module being developed.

The e-module that has been designed and developed in Canva is then saved in PDF format, then developed in a professional PDF flip, namely by inserting several learning video explanations, creating buttons for quizzes and instructions for using the e-module, linking several links, inserting the e-module logo, creating and setting up quiz pages, and setting up several buttons on professional PDF flip. The e-module that has been developed is then uploaded online in a professional PDF flip to get a link as the final result of the e-module development.

The initial product results of the electronic module (e-module) that have been prepared are then validated by validators, namely media experts, material experts and practitioner experts by providing assessments on the validation sheet. The results of this analysis can be used as a guide to correct or revise product deficiencies after going through a validation process by a validator. Then the data obtained from validation will be analyzed, according to what has been explained above in development. By obtaining validation carried out by the media expert, lecturer 1, he got a percentage result of 95% in the valid and appropriate category, for the media expert, lecturer 2, he got a percentage result of 95% in the valid and appropriate category, for the material expert, lecturer 1 showed that every aspect observed was given a good assessment. With a percentage of 83% in the valid and appropriate category, and finally expert practitioner validation received a percentage of 90% in the valid and appropriate category. So the average combined percentage obtained from the 4 validators is 90.75% with the criteria "very valid" and "very feasible". By looking at the level of validity of the e-module in terms of media, material and language aspects, it is determined that it can be adjusted to the instrument validity criteria as follows :

Table 3

Instrument Validity Level

No.	Mark	Information
1.	82% - 100%	Valid and suitable for use without revision
2.	63% - 81%	Valid and suitable for use with minor revisions
3.	44% - 62%	Valid and suitable for use with major revisions
4.	<44%	Invalid and not suitable for use

Source: (Arikunto, 2016)

The implementation stage comes next, following the e-module's validity test and certification as appropriate for educational usage. At this implementation stage, a limited trial was carried out on a small group consisting of 10 class X high school students. This e-module trial was implemented on students who own and use smartphones, and have a good internet connection so that e-module operations can run quickly and smoothly. By completing a student response questionnaire at the conclusion of the learning activity, students can provide feedback on the e-module they have used. An average percentage of 87.05% is attained, with the e-module's practicality level meeting the criteria "very practical". As a result, it can be concluded that the generated e-module has served as e-module teaching material. As stressed by (Syahrial, et al., 2019: 167), Teachers just need to take on the role of facilitators when it comes to e-modules, which are educational materials that allow pupils to study independently.

At the evaluation stage, improvements or revisions are made to the e-module based on suggestions given by the validator during the validation process. Suggestions and improvements were made to media and material aspects. In the media aspect, improvements were made to the back cover page by adding a blank page because it is behind the e-module cover, adding learning video resource links, and for quizzes, you can use Quizizz. In the material aspect, there is a suggestion to add a list of references. An interactive mathematics e-module with the help of professional Canva and Flip PDF on opportunity material for class

4. Conclusion

The research conducted at Gurah 1 State High School on the development of an interactive e-module with assistance from Canva and a professional flip PDF on opportunity material leads to the conclusion that the interactive e-module is valid. This conclusion is based on the findings of validation tests conducted by four validators: two media experts, one practitioner expert, and one material expert. The material expert obtained a percentage of 83% in the valid and appropriate category, lecturer media expert 1 obtained a percentage of 95% in the valid and appropriate category, lecturer media expert 2 also obtained a percentage of 95% in the valid and appropriate category and practitioner expert 1 obtained a percentage of 90%. with valid and feasible categories.

Thus, the professional Canva and Flip PDF interactive e-module media on opportunity material are valid and suitable for use. The average percentage of student responses to the questionnaire

designed to assess the practicality of the professional interactive e-module media Canva and Flip PDF on opportunity material was 85%, with the category of practicality level being extremely practical. So this media can be considered practical and can be used by teachers and students for learning activities. This is in line with research conducted by Ramadhani et al. (2023) with a practicality level of 84.3%

Overall, this E-Module has been successfully developed and is considered valid and practical to use as a learning medium. E-Modules can also be a substitute for the teacher's role in learning, the teacher can only be a facilitator and the teacher's role in learning is not too dominant, this is in accordance with the criteria in the independent curriculum. Learning using this interactive mathematics e-module can provide a learning atmosphere that is not monotonous. The interactive mathematics e-module with the help of Canva and flip pdf professional on opportunity material developed by this researcher has met the specified validity criteria.

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