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Development of Interactive Learning Media Using Android-based Google Sites to Increase Students' Interest in Learning

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ABSTRACT

In this study, researchers found a problem: there is still a lack of student interest in learning mathematics due to the media provided, which is less innovative and interactive, so students feel bored. Therefore, this research aims to (1) develop interactive learning media using Google Sites based on Android to increase student learning interest in Flat Buildings material grade VII SMP / MTs, (2) test the feasibility of the media, and (3) increase student learning interest. The research method used is Research and Development (R&D) with the 4-D development model (Define, Design, Development, Disseminate). The instruments used were expert validation, student response, learning interest, and pretest-posttest questionnaires. The results of this study obtained an average value from media experts of 92% with a very feasible category, while material experts obtained an average of 84% with a feasible category. The results of the N-Gain test obtained an average value of 82%, and the results of the student interest questionnaire of 76.62%. These results show that Android-based Google Sites learning media effectively increases student interest in learning. It can be concluded that interactive learning media using Android-based Google Sites is feasible and effective in increasing student interest in learning.

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1. INTRODUCTION

The use of science and technology (IPTEK) is developing rapidly in this modern era. According to We Are Social, internet users in Indonesia in January 2023 reached 213 million people, equivalent to 77% of the total population of 276.4 million at the beginning of this year [1]. This reflects how much Indonesian people use the internet, with no exception in Education. Technology is needed to help the learning and teaching process. Similarly, in Indonesia, technological development is being accelerated very fast. The role of teachers is significant in the rapid development of science and technology and requires

them to be more creative and innovative in creating the learning process [2], [3], [4], [5], [6].

To prepare and improve the quality of Human Resources (HR) in order to be able to face the rapid development of the times, it is necessary to learn that focuses on developing students' abilities to be more skilled and creative to support their knowledge search process [7]. As technology develops, learning methods are increasingly adjusted to existing developments. A teacher can adapt quickly regarding the use of learning media. However, educators still lack the knowledge to utilise the technology facilities provided. So the teaching and learning process still uses a lot of old methods or conventions that feel ancient [8], [9], [10], [11], [12].

According to the description of the research by Waseso et al. [13], in the era of the Industrial Revolution 4.0, many learning media can be used by a teacher in the teaching process, one of which is interactive media. Many teachers still have not maximised media for the teaching and learning process, especially non-print interactive media. Utilising it helps teachers ease their work in distributing learning materials quickly and practically. According to Safitri et al. [14, one of the students' lack of interest in learning mathematics is that the learning media provided is not exciting, and students cannot understand the material. Therefore, engaging and interactive learning media is essential to students' interest in learning.

On the other hand, teachers still use a lot of old learning media, one of which is printed textbook media, which seems boring to students [15], [16], [17]. Even though almost every school already has adequate internet access. There is nothing wrong with teachers using non-print media, such as learning media on the Google Sites website.

There are a lot of non-print interactive media that can be used and utilised by teachers [18], [19], [20], [21]. One of them is the interactive media website, namely Google Sites. The Google Sites website is still rarely used by teachers, especially in mathematics subjects when carrying out learning variations. Many teachers still use WhatsApp groups to provide learning materials to students, and students have difficulty saving the material files given by teachers [7]. Teachers are expected to have interactive learning media that is easily accessible and does not make it difficult for students in the learning process. In addition, teachers lack time to create and develop media for the many tasks given by schools outside of teaching hours [22]. With this problem, teachers have other tasks outside of school teaching hours besides lacking the ability to create learning media, especially mathematics subjects. So that teachers only use learning media in schools.

Google Sites learning media is one of the options to be developed in this study because Google Sites is accessible anytime and anywhere. Teachers can create tutoring, create content as needed, and enter material in Word, Excel, PowerPoint, and others. In addition, it can be connected to YouTube video shows, quizzes, and other applications that have been neatly arranged on Google Sites.

According to researchers, some drawbacks must be fixed from using Google Sites for mathematics learning media, namely still using link access. The material was created

on Google Sites, and the output produced is a link that will be shared with students later. According to the researcher, links are less practical, making it difficult for students to open them and quickly lose the material data created. Many studies use access to these links, so researchers want to create material on Google Sites and convert it into an Android-based mobile application. With the creation of the mobile application, it is hoped that students will not have difficulty accessing the mathematics learning materials shared by downloading them first. Therefore, the researcher wants to research the development of learning media for the Android-based Google Sites website to make it more accessible to students in mathematics subjects.

2. METHOD

This research is included in the type of research and development. Through this research and development, researchers strive to develop effective and viable products for learning. The product developed in this study is an interactive learning media using Android-based Google Sites on the plane figure material. This research was conducted to make it easier for students to learn mathematics while growing or increasing their interest in learning.

The development steps implemented are based on the context and issues described in this study, using the 4-D Model approach developed by Thiagarajan [23]. This 4-D Model consists of four phases: Define, Design, Development, and Disseminate. This model was chosen to create interactive learning materials on Android-based Google Sites. After development, the product will be assessed for feasibility and tested to evaluate its impact on students' interest in learning the Build Flat material.

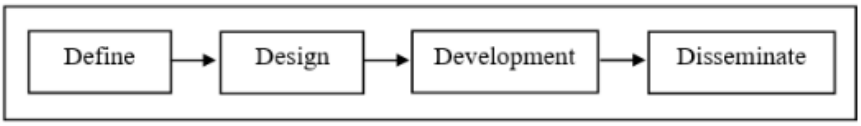

Figure 1. 4-D Research Stages

After development, the product will be assessed for feasibility and tested to evaluate its impact on students' interest in learning the plane figure material. This research was carried out at SMP Negeri 1 Pabuaran Cirebon. The research time is carried out in the middle of the even semester of the 2023/2024 school year. This study's data sources used for direct data collection were media experts, material experts, SMP Negeri 1 Pabuaran mathematics teachers, and SMP Negeri 1 Pabuaran students. The subjects in this study are expert validators, mathematics teachers, and grade VII students of SMP Negeri 1 Pabuaran. The researcher only conducted one class VII with a total of 30 people. The object of this study is interactive learning media using Android-based Google Sites to increase students' interest in learning the plane figure material. The data collection techniques in this study are questionnaire sheets and question sheets. The research instruments used are expert validation questionnaires, student response questionnaires, learning interest questionnaires, and pretest-posttest question sheets.

3. RESULTS AND DISCUSSION

3.1. Results

Define Stage

The first step in conducting this research was interviewing a mathematics teacher at SMP Negeri 1 Pabuaran. This interview aims to discover the problems related to teaching materials and learning media in the mathematics learning process at the school. An interview was conducted on Wednesday, January 10, 2024, with Mr. Apendi Mukdor, S.Pd. Regarding the materials, teaching materials, and learning media used during the lesson. So far, the mathematics learning process at the school has only or still uses print media, such as package books and Student Worksheets. To develop products that support the achievement of these goals, the goals that have been formulated need to be further analysed, as well as success indicators, to see an increase in students' learning interests following the goals to be achieved. In developing teaching material products, the first step is to prepare subject matter based on recommendations from mathematics teachers at SMP Negeri 1 Pabuaran. This subject matter is prepared by referring to the Learning Outcomes (CP) and Learning Objectives Flow (ATP) set in the Plane figure material in the grade VII even semester. The following are CP and ATP materials for building flat class VII.

By finding problems at the observation site, the researcher seeks to update teaching materials and learning media by developing interactive media using Android-based Google Sites. The goal is to increase students' interest in learning about Grade VII Junior High School/MTs building materials.

Design Stage

In assembling the structure, the researcher chose a learning medium as a website using Google Sites for the plane figure material. This website serves as a learning resource for teachers and a learning tool for students. Researchers used Google's built-in device, which is Android-based Google Sites, to create this website. This website can also be integrated with other Google features, such as Google Forms, Google Docs, YouTube, and other links on the Google platform. The framework of interactive learning media using Android-based Google Sites has a display design of teaching materials, namely: (1) The opening part, in this part of the front cover of the media there is the title of the material, instructions for using the application, and the learning menu/subchapter, (2) The content section, in this section is filled with learning outcomes, learning objectives, learning materials along with practice questions and student evaluation questions, and (3) Closing part, in this section there is a researcher profile.

After that, prepare plane figure learning materials on Google Sites media following the Learning Outcomes, Flow of Learning Objectives, and Learning Objectives according to the applicable curriculum and accommodate the characteristics and needs of students. This learning module consists of 4 meetings, with Pretest-Posttest, which includes learning materials and four essay questions with varying difficulty levels. In addition, practice questions are also given for each subchapter of material relevant to the plane figure. The instrument used in this study is a questionnaire. The creation of this questionnaire uses a

Likert scale consisting of five answer options: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree).

Development Stage

The development process of this site uses materials that are widely available to everyone. The components applied in this manufacture have been adapted to various aspects of media making, such as practicality, ease of discovery, durability, etc. The creation of this media is adjusted to the class VII learning material, which discusses plane figures in mathematics subjects. The initial media design was then consulted by the researcher, the supervisor, and the validator team, consisting of 1 media expert validator and two material expert validators. Product revisions are carried out based on input from the validator team before the product is validated and tested.

The results of creating Android-based Google Sites learning media are as follows.

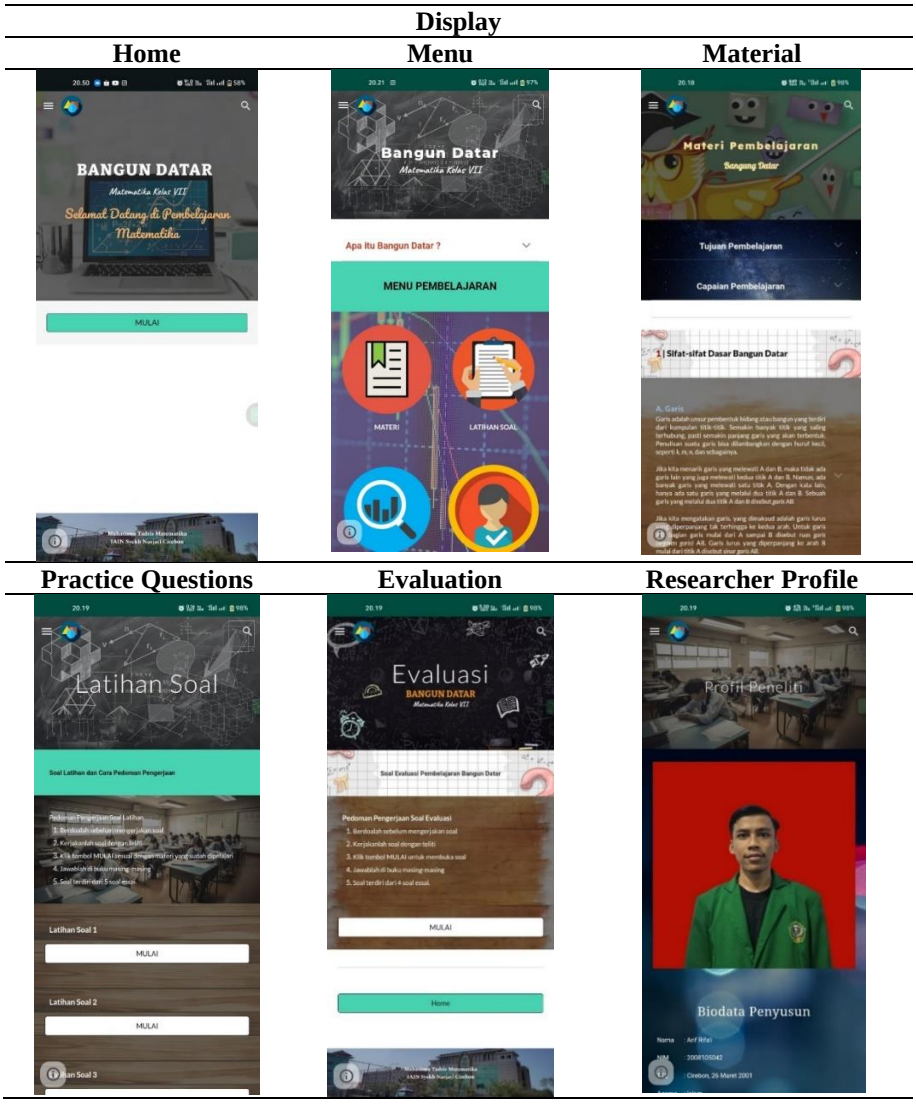

Figure 2. Android-based Google Sites Media View

Validation by media experts obtained an average percentage of 92%, a very feasible category, by getting suggestions that learning media should be given instructions for using the application and feedback on using media. If there is none, it does not need to be included in the media validation questionnaire statement.

Table 1. Media Expert Advice

No.	Types of Errors	Suggestion
1	No instructions for using the app	Addition of instructions for using the app
2	There is a statement item related to *feedback* for students	If there is no *feedback* from the student, there is no need to include it

From Table 1, suggested data or input from media experts is used as a guideline to improve the media that has been created. Media revisions are adjusted based on suggestions from media experts. Two material expert validators carried out validation by material experts. The results obtained by the validation test with the Aiken's V test by material experts are 0.84 or 84% with a very feasible category and do not need to be revised. The following are the results of validation by the two material experts.

Table 2. Material Expert Validation Results

No.	Expert		V
	I	II	
1	4	5	0,88
2	4	4	0,75
3	4	5	0,88
4	5	5	1,00
5	4	4	0,75
6	5	4	0,88
7	5	4	0,88
8	4	5	0,88
9	4	4	0,75
10	4	4	0,75
Mean	-	-	0,84

From Table 2, it can be concluded that the level of validity of the media that has been developed is validated by media experts and material experts. Based on the results of the validation that has been carried out, the validity or feasibility of Android-based Google Sites media is validated by media experts by obtaining a score of 0.92, while the validation of material experts obtained a score of 0. From these two results, an average score of 0.88 was obtained. So that the Android-based Google Sites media developed is declared valid/feasible for use in learning.

The media application trial was implemented at SMP Negeri 1 Pabuaran on grade VII B students in the mathematics subject of the Plane figure material. The implementation is carried out through face-to-face learning, with four meetings. Where the initial meeting introduced and explained the material that will use android-based learning media or mobile

phones and conduct a pretest; the second and third meetings of learning activities using android-based Google Sites media, and the fourth meeting carried out learning evaluation or post-test then provided a questionnaire of student responses and learning interests.

Table 3. Student Response Results

Respond (1 – 34)	Sum	Max Score.	Mean
Mean	2023	2550	79,33

Table 3 shows the results of students who fill out the media practicality questionnaire with an average statement, which is then presented in a percentage of 79.33%. After being interpreted, Android-based Google Sites media developed in the Plane figure material mathematics lesson gets an exciting or practical category.

After completing the development and trial stage of learning media products, the researcher conducted an effectiveness test to increase students' interest in learning. This effectiveness test is disseminated through pretest, post-test, and student learning interest questionnaires.

Tabel 4. Hasil Uji N-Gain

Respond (1-34)	S_{pre}	S_{post}	Score N-Gain
Mean	36,47	88,53	0,82

So, the N-Gain score gets an average of 0.82 or 82%, with the interpretation being in the high category or effective in increasing students' interest in learning.

Disseminate Stage

The researcher carries out this stage through limited dissemination due to the researcher's limitations. The researcher distributed the final product as a link to download the finished media application to grade VII students of SMP Negeri 1 Pabuaran through the Whatsapp Group of his class.

3.2. Discussion

This research aims to produce a product in interactive learning media using Google Sites that can be accessed through Android devices. The purpose of this study is for researchers to find out how students respond to the media, product feasibility, and increase students' interest in learning. This learning media will be compiled based on Learning Outcomes and Learning Objectives relevant to the independent curriculum. The language used in the media is adjusted to Indonesian. In addition, the images and videos included in the media are carefully selected to match the material presented to increase student involvement and students' interest in learning in the learning process. In addition, the media is developed using the research and development method as the 4-D development model. The stages of the 4D model consist of 4 stages, namely: (1) Define; (2) Design; (3) Development; (4) Disseminate. This is in line with the research methods and models

carried out by Khasanah and Amalia [24]. The research applied the Research and Development (R&D) method with a 4-D development model, which includes: (1) Define, (2) Design, (3) Development, and (4) Disseminate.

Learning using Android-based Google Sites media is carried out in one of the VII grades of SMP Negeri 1 Pabuaran. Learning was carried out face-to-face for four meetings. Learning is carried out interactively using Android-based Google Sites media. The initial meeting introduced and explained the material for Android-based learning media or mobile phones, and a pretest was conducted. The second and third meetings of learning activities using Android-based Google sites media, and the fourth meeting carried out a learning evaluation or post-test and then provided a questionnaire of student responses and learning interests.

The level of media validity that has been developed is carried out by validation by media experts and material experts. Based on the results of the validation that has been carried out, the validity or feasibility of Android-based Google Sites media is validated by media experts by obtaining a score of 0.92, while the validation of material experts obtained a score of 0.84. These two results obtained an average score of 0.88 with a valid category.

According to Fitria et al. [24], a media is declared valid if the results meet the standards, namely if the test results are the same as the standards that have been determined. Based on this theory, the media assessment uses introduction, use, and utilisation aspects. Meanwhile, the material assessment contains aspects of learning and material content. Media validation has been carried out with predetermined criteria and declared valid or feasible by the validator according to the theory presented. Thus, interactive learning media using Android-based Google Sites is declared valid or suitable for learning.

After completing the development and trial stage of learning media products, the researcher conducted an effectiveness test to increase students' interest in learning. This effectiveness test is carried out by disseminating pretest, post-test, and student learning interest questionnaires. At the level of media effectiveness, results were obtained through pretest, post-test, and student learning interest questionnaires. The acquisition of pretest and post-test data obtained from the results of the N-Gain score obtained an average of 0.82 or 82%, with the interpretation in the high or effective category. Meanwhile, the results of the analysis of student learning interests conducted by the researcher in the form of a questionnaire obtained an average score of 76.62% with the effective category. There has been an increase in students' interest in using interactive learning media on Android-based Google Sites. From these two results, an average score of 79.31% was obtained. Therefore, these results show that interactive learning media using Android-based Google Sites effectively increases students' interest in learning. This aligns with research conducted by Ristiana [25] and Tahit et al. [26].

4. CONCLUSION

Based on the results of the research on the development of interactive learning media using Android-based Google Sites to increase students' interest in learning conducted at SMP Negeri 1 Pabuaran, the researcher can conclude that the results of the study obtained an average score of 92% from media experts with a very feasible category, while from material experts obtained an average of 84% with a feasible category. The results of the N-Gain test obtained an average score of 82% and the results of the student learning interest questionnaire of 76.62%, and the results show that Android-based Google Sites learning media effectively increases students' interest in learning. It can be concluded that interactive learning media using Android-based Google Sites is feasible and effective in increasing students' interest in learning. Researchers are further advised to conduct further research to find out the extent of the effectiveness of the products that have been developed, especially Google Sites media in mathematics learning.

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