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DEVELOPMENT OF GOOGLE SITE-BASED MATHEMATICS LEARNING MEDIA WITH CORE MODEL FOR GRADE VIII STUDENTS

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Abstract

21st century learning strives for students to be able to actively construct concepts, develop their knowledge, and use ICT tools. Especially the transition from post-pandemic learning, students are required to be more independent in learning. So, we need learning media that can help overcome these problems. The purpose of this research is to develop and produce a website-based learning media with the google site combined with the CORE model in mathematics learning for junior high school students in good quality statistical material by meeting the validity and feasibility criteria. The selected development model is the ADDIE model (Analyze, Design, Develop, Implement, Evaluate). The instruments used include validation questionnaires, practicality questionnaires, and learning outcomes tests. Technical analysis of the data was carried out qualitatively to measure the data descriptively and quantitatively to calculate the scores of the results of the feasibility test of the learning media that the researchers had developed. The results of the research on the development of learning media are based on the material aspect of 77,5%, the media aspect of 81%, the practicality of the learning media from the responses of students to get a percentage of 85,2% with a very decent category.After trying the learning media, students were asked to do posttest and learning questionnaires, 78,6% of students had good learning achievements.Thus, the learning media of mathematics learning media using the google site with the CORE model that the researcher developed is very suitable for use in learning.

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INTRODUCTION

Technological advances in the era of globalization are growing rapidly. The existence of technological advances allows for innovation also in improving the quality of education. The presence of technology can be a solution to innovate in developing a learning media so that learning activities can attract students' interest in learning(Saputra, VH & Febriyanto, 2019)Learning media is a means for students so that the information that the teacher wants to convey in learning activities can be conveyed. Good learning media are learning media that can facilitate and clarify information that is difficult for students to understand.

However, the current spread of Covid-19 still needs to be watched out for, so the president urges people to keep their distance and wear masks. This will have an impact on education. Less time in school makes it possible to learn more independently. Independent learning can be done by utilizing technology, information and communication (Martorejo, 2020). In the learning process, the use of online media serves as a tool to understand the subject matter. One alternative media that supports the learning process in an effort to increase students' learning motivation is the use of website-based learning media. Website-based learning media is one of the alternative media in the distance learning process that is effective and efficient. By adjusting the learning materials in schools in order to determine the thinking ability of students in understanding the material independently.(Amellya & Khasanah, 2021).

21st century learners must use ICT tools, one of the lessons that can be used is website-based interactive multimedia learning. The effectiveness of interactive multimedia learning based on this website is used as an alternative media that can support the mathematics learning process and help students understand the abstract nature of mathematics. By utilizing internet technology, it is easier for students to access online and independent learning(Santoso et al., 2020).

The Connecting, Organizing, Reflecting, Extending (CORE) learning model developed byMiller & Calfee (2004)has several characteristics or advantages that can be applied to overcome the problems previously mentioned. The model consists of four learning stages, namely the Connection stage, the Organization stage, the Reflecting stage, and the Extension stage (Extending). In this model, students are treated as subjects who have the ability to actively seek, process, construct, and use knowledge.

The effectiveness of learning by using learning media based on the google site is able to increase the metacognition of students so that the desires, interests, motivation, and learning stimuli of students(Pujilestari, 2020). students can further develop their potential(Amellya & Khasanah, 2021).

METHOD

This research is classified as research and development. (Han et al., 2019), by adapting the ADDIE development model consisting of the Analyze, Design, Develop, Implement, and Evaluate stages developed by Dick, W & Carey (1996).The research procedure was carried out following the stages of the ADDIE framework, namely:

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Analysis Stage

In the preliminary analysis, the researcher conducts a literature study by finding, collecting, and understanding reference sources related to development research. In the needs analysis, the researcher examines learning activities, student characteristics, and student needs. The researcher interviews mathematics teachers and students to understand their learning requirements, discovering that web-based mathematics learning media has not been utilized, and students rely solely on modules or direct media provided by the teacher. In the analysis of program characteristics, the research and development of media involve creating products for smartphones (Android or iOS) with simple, flexible, practical, and systematic program characteristics. In the situation analysis, during interviews, it is revealed that teachers distribute material in Word/PDF form via WhatsApp groups or print modules, and then students are encouraged to read the material and practice questions, which results in a monotonous learning process.

Design Stage

Researchers design media concepts and arrange components that will be applied to the media, such as statistical material in the form of images, videos, and website display designs. They prepare practice questions and quizzes, and create several Google Forms for student attendance and responses to develop learning media that can meet student needs according to the initial analysis. Additionally, they prepare the necessary research instruments, such as questionnaires for material experts, media experts, and student response instruments, which aim to test the feasibility of the learning media to ensure they meet valid, practical, and effective criteria.

Development Stage

This stage of development is the website display design and the media components that have been created are applied to the actual website. The display of website learning media can be viewed and accessed at the following link: https://sites.google.com/view/aberstik/home.

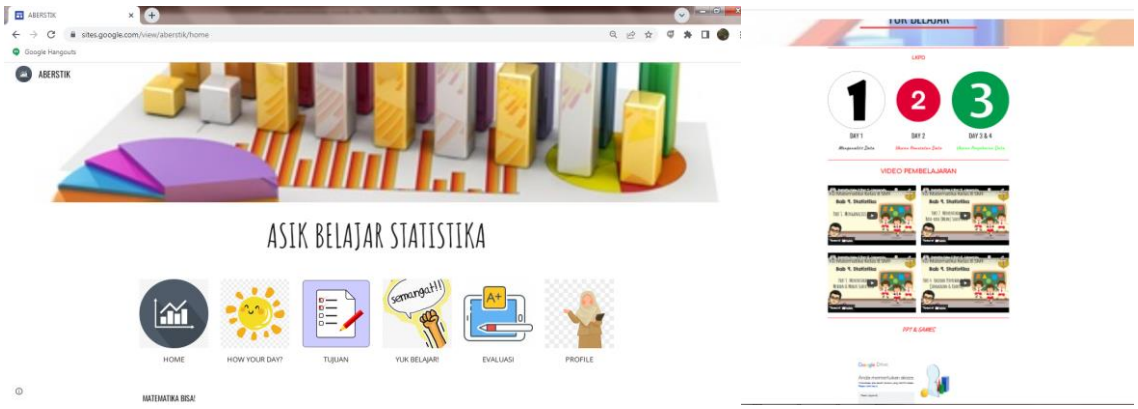

Figure 1. Google site display

Implementation Stage

Researchers tested the use of learning media in class VIII of one of the junior high schools in Cimahi City. In the questionnaire there are 12 statements in the form of a questionnaire with 5 answer choices, namely (1) not good, (2) not good, (3) quite good, (4) good, and (5) very good. Each of the choices has a score of 1, 2, 3, 4, and 5. This scoring aims to

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determine the feasibility of the developed learning media which is validated by media experts, material experts and student responses.(Rohaeti et al., 2019). The following is the formula for calculating the average score obtained, as follows.

$$K = \frac{F}{N \times I \times R}$$

K: Eligibility Percentage
F: Total number of respondents' answers
N: Highest score in the questionnaire
I: Number of questions in the questionnaire
R: Number of respondents

(Source: Palelupu and Cholik, 2014)

Table 1. Ideal Assessment Criteria for the Feasibility of Learning Media (Source: Palelupu and Cholik, 2014)

Eligibility Percentage Interval	Category
0% < 20%	Very unworthy
20% < 40%	Not feasible
40% < 60%	Not worth it
60% < 80%	Worthy
80% < 100%	Very worth it

Researchers conducted small group and large group trials. Online small group test using WhatsApp as a medium for distributing development products consisting of 3 students of class VIII who were randomly selected. Then for a large group trial through a WhatsApp group which was attended by 30 students of class VIII. At the end of the study, a learning evaluation was held to see learning outcomes and responses to the use of google site-based learning media with the CORE model.

Evaluate Stage

Researchers evaluate learning media by getting assessments in the form of questionnaires, input, and suggestions from students. The results of the assessment from material experts, media experts, and student responses will determine the feasibility of the learning media developed by researchers.

RESULTS AND DISCUSSION

The results of the study in the form of a validation questionnaire by material experts, media experts, and student responses to learning media were used to test the feasibility of the developed learning media, as follows.

Assessment of Learning Media Based on Material Aspects

Based on the assessment of the questionnaire instrument by material experts on learning media, namely the mathematics education lecturer at IKIP Siliwangi and the mathematics teacher at SMP PBTQ Ulul Azmi. The following are the results of the feasibility calculation by material experts which are presented in the following table:

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Table 2. Calculation of the Feasibility Questionnaire for Material Experts Based on Aspects of Material Assessment

No.	Assesment Aspect	Total Score	Eligibility Percentage	Category
1	Contents	$56/_{70}$	76%	Worthy
2	Learning Design	$38/_{50}$	80%	Worthy
3	Language and Communication	$31/_{40}$	77.5%	Worthy
Average percentage			77.8%	Worthy

In table 2. it can be seen that the results of the assessment of the two material experts based on the aspects of material assessment, namely learning design, material content, and language and communication, obtained an average percentage of 77.8%. The results of the assessment indicate that the learning media developed is included in the feasible category.

Assessment of Learning Media Based on Media Aspects

In developing a learning media, it is very necessary to pay attention to the elements or elements contained in the media. One of them is in terms of visualization, by changing an idea or message to be conveyed into something that can be understood, read, and attracts the attention of users.(Gultom, 2010). The elements that must be considered in developing a learning media are: 1) Integration, 2) Simplicity, 3) Balance, 4) Emphasis, 5) Texture, 6) Color, 7) Lines, 8) Shape.

The advantage of the website is that it can disseminate information via the internet which can be accessed by anyone, anywhere, and anytime. Of course, using the Google site can get the learning process optimally. It is concluded that learning media is a means to assist teachers in delivering subject matter to students.

Based on the assessment of the media expert's questionnaire instrument on learning media, with rRespondents for the assessment of this questionnaire instrument are filled inby a mathematics education lecturer at IKIP Siliwangi and a high school ICT teacher. The following are the results of the feasibility calculation by media experts which are presented in the following table:

Table 3. Calculation of the Feasibility Questionnaire Results of Material Experts Based on Assessment Aspects

No.	Assesment Aspect	Total Score	Eligibility Percentage	Category
1	Media Use	$60/_{70}$	85.7%	Very worth it
2	Functional Media	$40/_{50}$	81%	Very worth it
3	Visual Communication	$101/_{130}$	77.6%	Worthy
4	Language Usage and Words	$16/_{20}$	80%	Worthy
Average percentage			81%	Very woth it

From the table above, it can be seen that the results of the assessment of the two media experts based on aspects of media assessment, namely learning design, material content, and language and communication, obtained an average percentage of 81%. ResultsThe

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assessment shows that the learning media developed is included in the very feasible category.

Learning Media Readability Test Based on Student Response Aspects

Based on the assessment of the media expert's questionnaire instrument on learning media, with rrespondents assessing this questionnaire instrumentfilled by 30 students of class VIII SMP IT PBTQ Ulul Azmi randomly. The results of the student response questionnaire assessment are presented in the following table:

Table 4. Calculation of Questionnaire 3 Student Responses in Small Group Trials

No.	Assesment Aspect	Total Score	Eligibility Percentage	Category
1	Motivation to learn	$^{68}/_{75}$	90,6%	Very good
2	Media Effectiveness	$^{69}/_{75}$	92%	Very good
3	Language and communication	$^{26}/_{30}$	86,6%	Very good
Average percentage			89,7%	Very good

Table 5. Results of Questionnaire Calculation of 30 Student Responses in Large Group Trials

No.	Assesment Aspect	Total Score	Eligibility Percentage	Category
1	Motivation to learn	$^{605}/_{750}$	80,6%	Very good
2	Media Effectiveness	$^{598}/_{750}$	79,7%	Well
3	Language and Communication	$^{246}/_{300}$	82%	Very good
Average percentage			80,7%	Very good

Table 6. Results of the Overall Calculation of Student Response Questionnaires

No.	Trial Sample	Percentage Response	Category
1	Motivation to learn	89,7%	Very good
2	Media Effectiveness	80,7%	Very good
	Average Percentage	85,2%	Very good

From the table above, it can be seen that the results of the assessment of student responses based on the assessment aspects, namely learning motivation, media effectiveness, and language and communication, obtained an average percentage of 85.2%. The results of the assessment indicate that the learning media developed is included in the very good category.

Knowledge test of Student Response to the CORE model

Researchers want to know the learning response of students seen from the results of the learning assessment using the google site learning media with the CORE model. This response is related to the CORE stage which is able to construct in the learning achievement of students.

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Table 7. Results of the Response Questionnaire Assessment of the CORE Model of Learners

No.	Assessment Aspect	Rating Points	Amount	%
		Connect		
1.		1. In learning I can understand the problem given (favorable)	$^{123}/_{150}$	82%
2.		2. I feel connected in understanding new material with previous material (favorable)	$^{130}/_{150}$	86,6%
3.		3. I am confused about the purpose of learning and its benefits for life (unfavorable)	$^{112}/_{150}$	74,6%
		Organizing		
4.	CORE Model	4. After reading the material and practice questions, I think about a study plan and problem solving (favorable)	$^{130}/_{150}$	86%
5.		5. I like to find sources of information on websites in various forms such as modules, videos (favorable)	$^{128}/_{150}$	85,3%
6.		6. After having difficulty in helping a friend when asked to explain the material (unfavorable)	$^{102}/_{150}$	68%
		Reflecting		
7.		7. I dare to display the results and findings during the learning process (favorable)	$^{121}/_{150}$	80,6%
8.		8. I can not conclude the learning outcomes (unfavorable)	$^{125}/_{150}$	83,3%
9.		9. I no could explain steps solution Question (unfavorable)	$^{105}/_{150}$	70%
		Extension		
10.		10. I can prove the answer is correct or not (favorable)	$^{126}/_{150}$	84%
11.		11. I didn't double check the answer after finishing the one I made (unfavorable)	$^{107}/_{150}$	71,3%
12.		12. I try to make problems related to the material being taught (favorable)	$^{111}/_{150}$	74%

From the table above, it can be seen that the results of the assessment of students' responses to metacognition are based on aspects of the assessment, namely understanding the problem, making plans, implementing plans, and re-examining the solutions obtained, with an average percentage of 78,6%. The results of the assessment indicate that the learning media developed is included in the good category.

Based on the results of the feasibility assessment of learning media developed from material experts, media experts, and student responses, this media can improve the professionalism of teachers in managing the learning process and can be applied in distance and face-to-face learning. In addition, with the basic ability of students to improve the achievement of student learning outcomes through the learning media google site with the CORE model.

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CONCLUSION

The result of this development research is a website-based mathematics learning media using the google site with the CORE model on Statistics material for class VIII students. This study shows that the development of learning media using the google site with CORE is feasible to use in the learning process as an effective and efficient learning medium. Further research can conduct experiments to get more effective results and develop the CORE model for other topics.

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