DEVELOPMENT OF WEBSITE-BASED LEARNING MEDIA USING GOOGLE SITES IN INFORMATICS SUBJECTS OF GRADE X SMA NEGERI 1 ALALAK

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Abstract. The development of website-based learning media for Informatics subjects at SMA Negeri 1 Alalak reveals several issues based on observations. The learning activities still rely heavily on lecture methods and physical teaching materials or textbooks, leading to lengthy instructional time, a lack of visual examples and images, which makes it difficult for students to understand the material, and results in boring lessons. The aim of using website-based learning media is to facilitate easier access to information and clarify computational thinking material, making the learning process more engaging and effective. This research uses the Research and Development (R&D) method with the ADDIE model, which includes: Analyze, Design, Development, Implementation, and Evaluation. In the Analyze phase, the learning goals are reviewed to ensure alignment with core and basic competencies. The Design phase involves the initial design of the media. In the Development phase, validity testing of the media and material is conducted. The Implementation phase includes small-scale and large-scale trials. Finally, the Evaluation phase assesses the developed learning system to gauge the results of the implementation, specifically through evaluating student learning outcomes. The research findings indicate that the learning media is considered "Feasible" for use in Informatics subjects with computational thinking material, as the material validation received a score of 4.2 (category "Feasible"), media expert assessment reached a score of 4.3 (category "Very Feasible"), and small-scale and large-scale trials each received scores of 4.3 and 4.35, respectively, both in the "Very Feasible" category. The evaluation results show an average learning outcome of 92.9. Therefore, it can be concluded that the learning media is both feasible and effective for use in teaching

Keyword: *Development of Media, Website, Google Sites, Informatic*

1. Introduction

Education is a process of students in developing talents, potential and skills in establishing life, therefore education should be designed to provide understanding and improve student learning achievement. One of the goals of education is to create a generation of intelligent and skilled Indonesians. Development and technology not only provide convenience and positive impacts for humans. Teachers play an important role in the world of education because they hold the key to the education and learning process in schools. Informatics is a branch of science that studies, designs, and develops computing systems, and the basis for the design is computing related to mathematical modeling and the use of computers to solve scientific problems. (Mushtofa, 2021).

Based on the results of the researcher's observations, the Informatics subject teacher at SMA Negeri 1 Alalak, obtained information that the school had implemented the 2023 new academic year independent curriculum with an additional subject called Informatics, based on the results of the researcher's research and discussion. The researcher found that there were several problems that emerged at the school. Learning activities there also still use the lecture method without being supported by more concrete media in explaining the material about computational thinking. Learning activities also get material explanations with physical media or textbooks so that it takes a long time. The lack of visual examples and images makes it difficult for students to understand the material because it has little

impact on students' memory and is boring and watching so that student learning outcomes tend not to be in accordance with expectations. To help students improve their learning outcomes, one of them is a media. Seeing these problems, it is necessary to develop digital media that has various features that can help teachers explain the material efficiently. One of the digital media developed is website-based media using Google Sites. This learning media has advantages, such as being easy to access from any device connected to the internet and features that support distance learning. Although Google Sites requires an internet connection, this problem can be overcome because the internet network is now wider and does not require a large quota. In addition, many schools have provided Wi-Fi and allowed the use of smartphones to support the learning process.

The use of website-based learning media aims to make it easier for students to access materials and make the learning process more interesting and easier to understand. Thus, this learning media is very important for the teaching and learning process, and if not implemented, the student learning process can be affected. Based on this background, it is important to research the development of website-based learning media in informatics subjects for class X of SMA Negeri 1 Alalak.

2. Methods

The type of research used in this study is development research, commonly known as Research and Development (R&D). Research and Development (R&D) research method is a method used to produce certain products and test the effectiveness of these products (Sugiyono, 2011). In the development research used is the ADDIE development model. The ADDIE model development is a generic learning planning model that provides an organized process in the development of learning materials that can be used for traditional learning (face-to-face in class) or online. From this understanding is the process used to develop products and validate products that will be developed in this study is a website-based learning media using Google Sites in informatics subjects. development models are the ADDIE model, the model consists of five stages of development (*Analysis, Design, Develop, Implement, dan Evaluation*).

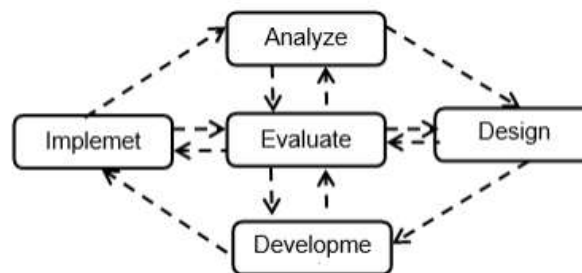The following are the steps for ADDIE development research::

Figure 3.1 ADDIE Development Model (*Tegeh and Kirna, 2013*)

This research was conducted at SMA Negeri 1 Alalak accredited A located at Jl. Brigjend H. Hasan Basri Trans Kalimantan KM.11 RT.02 Handil Bakti Village, Alalak District, postal code 70582. The time of the research and trial was carried out during face-to-face learning in the 2024/2025 academic year. The subjects of this research trial After conducting validation from media experts and material experts. Then the product will be tested immediately. The trials carried out were limited trials of 5 people and large-scale trials (field trials) The test subjects were class X4 students at SMA Negeri 1 Alalak.

In this study, qualitative data is the result of an assessment questionnaire in the form of descriptions, suggestions, and input from material experts and media experts. Qualitative data in the form of the value of each assessment criteria which is described as Very Eligible (SL), Eligible (L), Quite Eligible (CL), Less Eligible (KL), Very Uneligible (STL). Quantitative data in the form of assessment scores, SL = 5, L = 4, CL = 3, KL = 2, SKL = 1. Quantitative data obtained from the questionnaire then into qualitative data with a scale of 5 (Likert scale) which is described as follows: The data collection technique used is by distributing a Likert scale questionnaire with 5 answer options. The scoring used in the validation assessment can be seen in Table 1.

Table 1 Validation Sheet Assessment Scores

Qualitative Data	Scores
Very Eligible (SL)	5
Eligible (L)	4
Quite Eligible (CL)	3
Less Eligible (KL)	2
Very Uneligible (STL)	1

Table 2. Conversion of Quantitative Data to Qualitative Data with a scale of 5

Quantitative data	Formula	Average score	Qualitative Data
5	$X > \bar{X}i + 1,8\ Sbi$	> 4,2	Very Eligible (SL)
4	$\bar{X}i + 0,6\ Sbi < X \le \bar{X}i + 1,8\ Sbi$	>3,4-4,2	Eligible (L)
3	$\bar{X}i - 0,6\ Sbi < X \le \bar{X}i + 1,8\ Sbi$	>2,6-3,4	Quite Eligible (C)
2	$\bar{X}i - 0,6\ Sbi < X \le \bar{X}i - 1,8\ Sbi$	>1,8-2,6	Less Eligible (KL)
1	$X \le \bar{X}i - 1,8\ Sbi$	≤1,8	Very Uneligible (STL)

(Eko Putro Widoyoko:2009)

In this study, the value of product feasibility was determined by media experts, material experts and respondents. If the overall final result is at least "3.4 < X ≤ 4.2" with the category "Feasible" then the product of the development is worthy of being used as a learning medium.

3. Results and Discussion

This research produces a product in the form of website-based learning media using Google Sites in informatics subjects for class X at SMA Negeri 1 Alalak. This learning media with computational thinking material was developed using Google Sites.

A. Home Page View (Cover)

The home page display of the media developed in this research and development is:

Figure 1 Home Page

B. Main Menu Page View

The initial page display of the Main Menu developed in this research and development contains the menu for objectives, instructions, materials, games, evaluations, and developers as in the following example:

Figure 2 Main Menu Page

C.   Learning Objectives Page Display

The initial page display of the Learning Objectives contains an explanation of the learning objectives and there are home, back, next, and menu buttons.
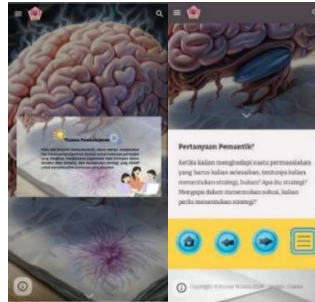

Figure 3 Learning Objectives Page View

D.   Instructions Page View

The initial page display of the instructions page contains steps for using the buttons on the learning media.

Figure 4 Instructions Page View

E.   Material Page View

The home page display of the Material developed in this research and development is that there are several computational thinking materials, searching materials, students can practice it directly to search for search engines, there is a video explanation of the searching game, and there is a number guessing game. Students can also practice it directly to guess the number so that students can solve problems
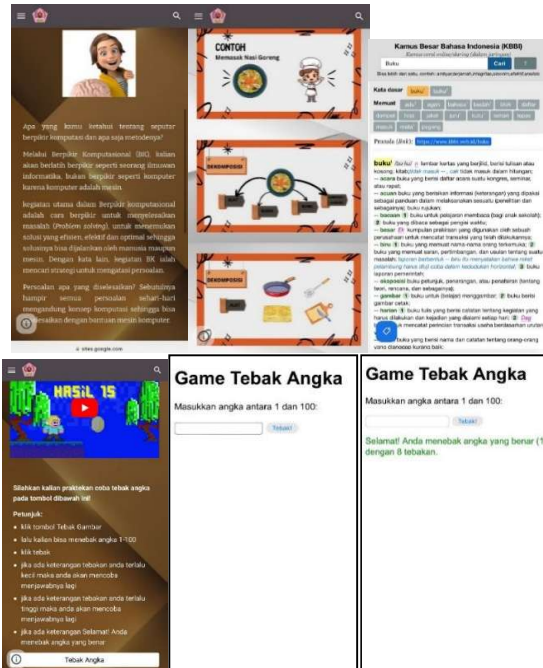
Figure 5 Material Page View

F. Learning Video Page View

The home page display of the Learning Video developed in this research and development is:

Figure 6 Learning Video Page View

G. Game Page View

Figure 7 Game Page View

H. Evaluation Page View

The initial page display of the Evaluation developed in this research and development is:
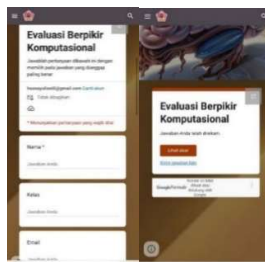
Figure 8 Evaluation Page View

I.   Developer Page View
      The initial page view of the developer page developed in this research and development is:

Figure 9 Developer Page View

B. Product Trial

In this study, the validation process of learning media was assessed by 2 media experts 1 and 2 material experts, each of whom is competent and understands about learning media related to media and material. The results of media validation can be seen in Table 3 and 4.

Table 3 Validation of Material Experts

Aspects Assessment	ΣIndicator	Validators 1		Validators 2		Average	Category
		ΣScore	Average	ΣScore	Average		
Contents	6	26	4,33	26	4,33	4,33	Very Worthy
Learning	7	29	4,14	28	4,00	4,07	Worthy
Average						4,2	Worthy

Based on the table above, the average score of the material validation carried out by subject teachers, for the average score on the content aspect reached a score of 4.33 with the category "Very Appropriate", and for the Learning aspect reached a score of 4.07 with the category "Appropriate". Overall, the average score from media experts is 4.2 with the category "Appropriate". The material experts indicated that the material created in the learning media was sufficient, so no further revisions were needed. So it is ready to be validated by media experts.

Table 4 Media Expert Validation

Aspects Assessment	Σindicator	Validators 1		Validators 2		Average	Category
		ΣScore	Average	ΣScore	Average		
Integration	3	11	3,67	13	4,33	4	Worthy
Balance	2	8	4	10	5	4,5	Very Worthy
Letter Form	4	12	3	20	5	4	Worthy
Color	3	11	3,67	15	5	4,3	Very Worthy
Language	2	8	4	10	5	4,5	Very Worthy
interactive	2	8	4	10	5	4,5	Very Worthy
Average						4,3	Very Worthy

Based on the table above, the average score of the validation of learning media carried out by one lecturer and one teacher as media experts, for the average score on the integration aspect reached a score of 4 with the category "Appropriate", the balance aspect reached a score of 4.5 with the category "Very Appropriate", Letter shape reached a score of 4 with the category "Appropriate", Color reached a score of 4.3 with the category "Very Appropriate", Language reached a score of 4.5 with the category "Very Appropriate", and the Interactive aspect reached a score of 4.5 with the category "Very Appropriate". Overall, the average assessment of the media expert validation was 4.3, the assessment results included the range X> 4.2 with the category "Very Appropriate". And the learning media is considered good enough with several suggestions from media experts so that the learning media is ready to use.

Table 5 Small Scale Trials and Large Scale Trials

Penilaian	Average	Category
Small Scale Trial	4,3	Very Worthy
Large Scale Trial	4,3	Very Worthy

Based on the table above, the small-scale and large-scale trials each scored 4.3 and 4.35, both in the "Very Eligible" category. At this stage, no improvements were made, because according to student comments and suggestions, no errors were found in the website-based learning media.

4. Evaluation

After implementing Website-based learning media using Google Sites on informatics subjects, computational thinking material for class X4 of SMA Negeri 1 Alalak, from the results of the evaluation that has been carried out with multiple choice questions, an average score of 92.9 was obtained. Overall, student learning outcomes are better, helping students understand the concept of computational thinking more clearly and interestingly. With the aids, students can more easily remember and apply the material. It can be concluded that learning media is feasible and effective for use in learning.

5. Discussion

Based on the results of the research that has been conducted, the media developed is a website-based learning media using Google Sites for computational thinking material in informatics subjects for class X of SMA Negeri 1 Alalak. The development of this media follows the ADDIE model, which consists of the Analyze, Design, Development, Implementation, and Evaluation stages. At the Analyze stage, an analysis of learning objectives is carried out to ensure compliance with competencies. The Design stage includes media design, while the Development stage involves testing the validity of the media and materials. The Implementation stage includes small and large scale tests, and the Evaluation stage focuses on evaluating learning outcomes. Therefore, the purpose of using website-based learning media using Google Sites is appropriate for use in the learning process and makes it easier for students to access computational thinking materials and make learning activities more interesting and easier to understand. This media can be accessed through various devices such as Android, iOS, laptops, tablets, and cellphones, allowing students to learn from home or anywhere. This is also in line with research by Aldi Divandi Putra (2022) who stated that Google sites is a platform or application from Google that allows the creation of sites without requiring programming skills. Google sites are designed to be easy to operate by inexperienced people, easy to access information and can add files. The process of creating learning media is carried out in stages to produce learning media that is suitable for use. Media assessment consists of 4 stages of assessment, namely media expert validation, material expert validation, small-scale trials, and large-scale trials. The assessment results showed a score of 4.2 with the category "Feasible" from the material validation assessment and the media expert assessment reached a score of 4.3 with the category "Very Feasible," and small-scale and large-scale trials each scored 4.3 and 4.35, both with the category "Very Feasible". This media has proven effective in improving student learning outcomes with an average score of 92.9 helping students understand computational thinking material better and more interestingly, as well as improving their understanding and skills.

6. Conclusion and Suggestions

The conclusion of the research results from the development of website-based learning media using Google Sites on informatics subjects for class X of SMA Negeri 1 Alalak is to produce the development of website-based learning media using Google Sites on informatics subjects for class X of SMA Negeri 1 Alalak with computational thinking material using the ADDIE model. This product development was carried out with the help of Google Sites software. Produce a website created with Google Sites. Website-based learning media on informatics subjects in this research and development is feasible to use, with a score of 4.2 with the category "Eligible," from the assessment of material validation and media expert assessment reaching a score of 4.3 with the category "Very Eligible," and small-scale and large-scale trials each scored 4.3 and 4.35, both with the category "Very Eligible". From the results of the distribution that has been carried out, an average evaluation of learning outcomes of 92.9 was obtained. It can be concluded that learning media is feasible and effective for use in learning. The suggestions that can be put forward in the research and development of website-based learning media using Google sites on informatics subjects for class X of SMA Negeri 1 Alalak The researcher suggests that the next development research increase its level by adding new features to the media, including moving animations and more interesting games. In future research and development of learning media, field trials need to be expanded further.

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