DEVELOPMENT OF WEB-BASED LEARNING MEDIA ON CLASS X VIRUS MATERIAL

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ABSTRAK

Berdasarkan hasil pra-survei yang telah dilakukan di SMA Negeri 1 Kotagajah, ditemukan masalah yaitu penggunaan media pembelajaran yang kurang pada saat kegiatan pembelajaran pada materi biologi termasuk materi virus. Dalam kegiatan belajar mengajar, media pembelajaran yang digunakan hanya sebatas Lembar Kerja Peserta Didik (LKPD) dan Power Point. Hal ini mengakibatkan beberapa siswa mengalami kesulitan dalam memahami informasi dan kehilangan minat terhadap mata pelajaran biologi. Peneliti kemudian mengembangkan platform pembelajaran berdasarkan konten viral yang tersedia untuk siswa kelas X melalui internet. Lima tahapan model ADDIE adalah analisis, desain, pengembangan, implementasi, dan evaluasi. Hasil persentase sebesar 80%, 87%, 94%, dan 85% diperoleh dari validator ahli materi, ahli media, guru, dan siswa. Siswa menyatakan bahwa penggunaan materi pembelajaran berbasis web tentang virus "sangat layak".

Kata Kunci: Media Pembelajaran, Web, Virus.

ABSTRACT

Based on the results of the pre-survey that has been carried out at SMA Negeri 1 Kotagajah, a problem was found, namely the use of learning media that is lacking during teaching and learning activities on biological material including virus material. In teaching and learning activities, the educational media used are limited to Student Worksheets (LKPD) and Power Point. This resulted in some students having difficulty understanding the information and losing interest in biology. Scientists then developed a learning platform based on viral content available to Class X students via the Internet. The five stages of the ADDIE model are analysis, design, development, implementation, and evaluation. Percentage results of 80%, 87%, 94% and 85% were obtained from material expert, media expert, teacher and student validators. Students indicated that the use of web-based learning materials about viruses was "very feasible".

Keyword: Learning Media, Web, Virus.

INTRODUCTION

Learning (Education) needs to be continuously adjusted to keep up with the changing times. The changing times from era 4.0 to 5.0 have had a significant impact on the world of education. Educational institutions need to be prepared to face new challenges that arise due to this shift in time. Since 2020, there have been major changes in learning methods. From what used to be done manually in the classroom, it has now shifted to a more automated digital realm [1]. Therefore, the world of education has begun to implement a 21st century learning model that focuses on the evolution of technology [2]. The 21st century has changed many aspects of life, becoming an age where information can be easily accessed and disseminated anytime and anywhere [3]. The development of technology has an impact on the way people learn, including how it is used.

The utilization of web-based media is one of the latest developments in digital education. Web utilization as learning media is a method to present learning materials by utilizing the internet, including in the form of writing, simulations, and other interactive content [4]. It creates a new learning experience for students, enriching the learning process in a more diverse, dynamic, and creative way, potentially improving their academic achievement [5]. It is expected that through this learning platform, students will be able to take an active role and interact, which will help improve their learning achievement.

Based on the results of preliminary research and distributing questionnaires through Google Form between classes used in pedagogy. namely using Power point, LKPD. In line with the results of questionnaires that researchers have distributed to students, namely students are less satisfied with the learning media used during teaching and learning activities, especially in biology subjects, some students reveal that in biology subjects the material is difficult to understand, one of which is on virus material and the use of media that is less interesting. According to interviews conducted with class X students, they are allowed to bring cell phones, the cell phones are used to access the internet when looking for references to the material

being studied. With cell phones students can search for material references in any form such as learning videos, the desired articles.

Because of the problems mentioned, it is necessary to create incentives to change learning methods to make them simpler, more active (interactive) and more attractive (interesting). It is also important for students to have new experiences through the use of technology [6]. Using google sites as a teaching tool can help solve problems in the classroom. Google sites is a product from Google that functions to create websites that can be used personally or for group purposes [7].

In web learning media google sites uses features including 1) home, 2) instructions for use, 3) virus material, 4) quiz, 5) biography. Therefore, it is important to use interactive and easy-to-use media when teaching biology virus material, in order to support the learning process for students. Because learning on virus material tends to be verbal and abstract. With the support of learning media, virus material should be presented in a simple and practical way, making it more accurate, easier to

understand and more practical in everyday life [8]. Google sites can make it easier for students to learn by presenting the material in an interesting way, so that they are more motivated and enthusiastic in the learning process.

RESEARD METHOD

The method used in research and development is R&D. ADDIE is a model used in making web-based educational media and describes the steps of analysis, design, development, implementation, and evaluation [9].

The purpose of this study (research) is to develop a new type of online material and learn how it works. Educational media was developed that was based on the Google website and focused on class X Virus content.

The research was conducted from October to December 2023. The data collection technique used in the study was in the form of direct interviews and then distributing questionnaires. Questionnaires are used to obtain results from material expert validators, media experts and practicality data from products that have been developed in the form of teacher responses and student responses

to web-based learning media on Virus material.

Data analysis in this study involved the use of qualitative and quantitative methods for. Descriptive data analysis was conducted by surveying biology teachers of SMA N 1 Kotagajah and students of class X 6, which related to learning media problems. Not only that, researchers also obtained input or suggestions from validators Mrs. Asih Fitriana Dewi, M.Pd. and Mr. Nasrul Hakim, M.Pd. teaching as Tadris Biology at IAIN metro and both are material and media specialists. Quantitative descriptive analysis was made from a Likert scale with five answers validated by experts, media experts, teachers and students. There was a different scale for each answer. Likert scale is used to collect data with the aim of understanding or measuring the feasibility of a learning media [10].

$$P = (\sum x)/n \times X\ 100\%$$

Description:

P = Percentage of Validity

$\sum x$ = Number of points (Score)obtained in each criterion

n = Maximum number of points (Score)

Table 1. Percentage Score Categories

No	Value scale	Score	Presentage	Validity Level
1.	5	84-100	84-100%	Very Feasible
2.	4	68-84	68-84%	Feasible
3.	3	52-68	52-68%	Feasible Enough
4.	2	36-52	36-52%	Less Feasible
5.	1	20-36	20-36%	Very Less Feasible

RESULT AND DISCUSSION

The product resulting from this development research is web-based learning media on virus material. The following is a picture of the web learning media that has been developed:

Figure 1. Initial Display of Web Learning Media Virus Material

Validation Results

Validation is a stage of assessing and determining the feasibility of a product carried out by experts. The research contains two contents in it, namely media and material.

1. Material Expert Validation Results

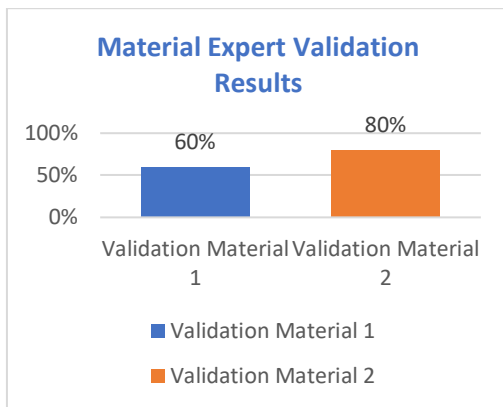The results of material expert validation and can be seen in the following graphic image:

Figure 2. Graph of material validation results

2. Media Validation Results

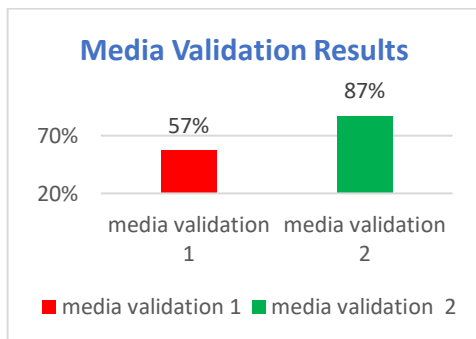The results of media expert validation can be seen in the following graphic image:

Figure 3. Graph of Media Expert Validation Results

3. Teacher and Student Trial Results

After completing the development of web-based learning media products, the next step involves the validation process by material experts and media products. This validation was carried out through a small group trial consisting of 11 students of class X SMA Negeri 1 Kotagajah. As shown in the following graph:
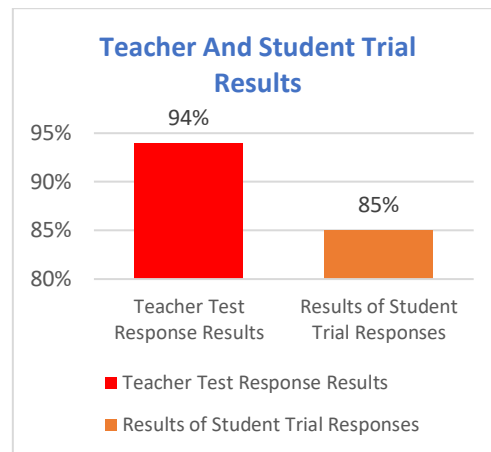

Figure 3. Graph of Teacher and Learner Trial Response Results

The purpose of this research is to create a new or superior product. The model used in making web-based learning media is ADDIE, which includes the steps of analysis, design, development, implementation, and evaluation [11]. This research produces a web-based learning media about viruses in biology lessons. ADDIE

model development research has five stages, namely:

The analysis stage is composed of three stages, namely performance analysis, needs analysis and then curriculum examination. The Needs Analysis and Performance Analysis will be distributed to teachers, while the Lecture Analysis and Performance Analysis will be distributed to students. The performance analysis looks at the educational media used by teachers. The goal of this analysis is to identify problems and find solutions by developing new media for education. The media required for student learning is identified through the application of needs analysis. The content and media used become the basis of the analysis. while curriculum analysis is used to determine the curriculum of the institution (school) that is the place of research (study). This is in accordance with Alfebriyesi's statement which states that these three aspects or steps are interrelated because they are all used to identify problems in the process related to the media used and their requirements [12]. The design stage is the process of designing the entire media. In this stage, researchers take various design steps such as designing

data, navigation, main menu, material sub menu, task menu, and evaluation menu. After that, the researcher makes a flow to facilitate the making of the website by making a programming outline (GBPM), storyboard, and flowchart [13].

The developed learning media then entered a series of assessments (validation) to assess the suitability of the developed media on the Internet. Both material experts and media experts are responsible for the validation. Mrs. Asih Fitriana Dewi, M.Pd, as the material validator and Mr. Nasrul Hakim, M.Pd, IAIN Metro Media validator.

Material expert validation was carried out twice to provide recommendations for improvements to the learning material about the material virus on the web. The results of the first validation by the expert obtained a validity percentage of 60% and were classified in the "feasible" category. However, the media in this category must be modified to adjust to improvements, which have been validated by experts and checked by various factors. The results of the second test by the material expert showed the quality of giving 80% and

was classified as "feasible". However, the material expert validator only provided a few suggestions for improvements to the developed product.

Media expert validation was conducted twice. The results of the first validation by media experts gave a confidence level of 57% and were placed in the "not feasible" category carried out in the inspection area which reflected recommendations for improvement from media experts. After the second validation, a reliability score of 87% was obtained which fell into the "very feasible" category. While in the second stage of validation, the media expert validator only gave a few suggestions for improvement.

The product design that has been made and confirmed to be suitable for the implementation stage can now be tested through the validation of material experts and media experts. At SMA N 1 Kotagajah, the product was tested with a biology teacher and a small group of 10 students who had received information on the topic of viruses. This is in accordance with Setyosari's opinion which states that small group trials only use 6 to 12 subjects [14]. Evaluation and measurement of the suitability of web-based learning media products on virus material is carried out through revisions based on suggestions for improvement from validation by material and media experts using a validation questionnaire. Then, the evaluation is carried out based on the improvement input from the responses of teachers and students when testing the product at the implementation stage.

In web-based learning media for virus material in the form of a google site, this has several advantages, namely: Material that can be anywhere at any time, this web-based media can also be accessed via cellphone so that it does not require students to use a leptop, then in this web-based learning media on Virus material there are learning videos and interactive quizzes in the form of quizzes where the quiz is to measure the level of student understanding. This is in line with Rijjal's statement that using web-based learning media can provide a different learning atmosphere in the classroom [15].

CONCLUSION

The model used in making web-based learning media is ADDIE. The first five phases include design analysis, development, implementation and evaluation. The results of validation and product test reactions from teachers and students of SMA Negeri 1 Kotagajah show that the use of online materials for virus learning is "very feasible". This is based on the results of teacher and small group responses consisting of eleven Class X students, as well as product validation results. From all the results of the percentage of material expert validators, media experts, teacher and student feedback which amounted to 80%, 87%, 94% and 85% respectively, it shows that the web-based learning media is "very feasible."

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