Development of Web-Based Learning Media on The Reproductive System Material in Biology Subjects at MA Darul Imad

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Abstract. Based on the results of the analysis of teacher and student needs at MA Darul Imad, there are difficulties in learning caused by the less-than-optimal use of learning media used because learning more often uses LKS and textbooks which make students feel bored during learning. Various existing learning media, web-based media provide opportunities to increase enthusiasm for learning in biology subjects. Web- based learning media is very easy to use and access because only a link is needed to use it. For this reason, research was conducted on the development of web-based biology learning media on the reproductive system material at MA Darul Imad. The purpose of this study was to determine the feasibility and response of teachers and students regarding the web-based learning media that I developed. The type of research conducted is research and development, the resulting product is a web- based biology learning media on the reproductive system material at MA Darul Imad. The development model used is the ADDIE model with stages, namely: Analysis, Design, Development, Implementation, Evaluation. The test subjects in this study were 24 students of MA Darul Imad Class X C. The data collection instrument used a validation questionnaire from experts, teacher and student responses. The data analysis technique uses several criteria that will indicate the level of feasibility and response from teachers and students. The learning media product produced in the research and development in the form of web-based learning media on biology subjects can be accessed via the link: mediapembelajaran.muhammadyusuf.online. This type of development research uses the ADDIE model as a stage in each process. The results of the learning media that have been developed get a score of 80.9% so that it is categorized as feasible from the validators and gets a score of 89.6% so that the response from teachers and students is categorized as very satisfied.
Keywords: development, biology learning media, web

1. Introduction

Learning media are materials and tools that can be used to convey messages or information. According to Kristanto (2016) media is an important factor in improving the quality of learning. This is due to the development of technology in the field of education which demands efficiency and effectiveness in learning. To achieve an optimal level of efficiency and effectiveness, one of the efforts that needs to be made is to reduce or even eliminate the dominance of the verbalistic lesson delivery system by using learning media.

Teachers are expected to be able to use learning media that can make students understand the main topic, as well as the material studied in learning activities directly in the classroom. With the development of learning media, it will make it easier for teachers to teach and students to understand the material faster, Pratiwi (2020). Because biology is one of the subjects that contains many concepts that must be understood by students, learning media is very necessary for teachers and students.

Based on the results of the analysis of the needs of teachers and students at MA Darul Imad, there are difficulties in learning caused by the less-than-optimal use of learning media. Because learning more often uses LKS and textbooks which make students feel bored during learning. Information was obtained that the learning activities carried out were rarely using learning media. And learning activities are still focused on the material in the LKS and textbooks.

This condition is caused by several things, including the lack of availability of learning media and the limited time for teachers to find and create learning media. The lack of use of learning media can have an impact on the lack of student activity in learning, especially in biology subjects. A similar thing was found by Harini, at al (2015) who stated that students who are less active in learning, and have difficulty responding to learning materials which have an impact on not achieving the specified KKM, so that students are more active in learning, there must be variations and one of them is using learning media.

One of the media that can be used in the world of education is by using the web. The web is one of the innovations in the world of information technology whose contribution and impact are very large on changes in learning resources, with the web learning activities are no longer just listening to explanations of material and descriptions of material from teachers, but students can also enjoy other activities such as listening, seeing, reading, observing, asking, collecting data, associating and communicating. According to Ramadhan (2023) the learning that is carried out can be less effective and students are less enthusiastic in learning if learning media is not used. By creating different learning activities, students will not get bored easily because the learning is clearer and easier to understand.

Reproductive system material is often considered trivial because the discussion is considered taboo to describe. And the media for this material is very rarely found in schools, even in laboratories at the college level is not yet available. In the media of statues or mannequins, the organs of the body always cover and eliminate the reproductive organs. Therefore, I developed this media to be an addition and choice for biology subject media.

Several relevant studies and previous studies that have similarities in title, content, discussion and topics that I will examine. In Pratiwi (2019) the material was collected into one and typed using Microsoft Word which was collected from various citation sources, both books, journals, and other references. The material will be posted on the blog web page via the admin panel page. In the Januarisman (2016) the researcher used two research methods, namely Borg & Gall and the Alessi & Trollip development method. The product in the form of web-based learning media in science subjects uses WordPress CMS (Content Management System) software. Meanwhile, other research results from Pratiwi (2019) related to the development of web-based media contain materials and videos that are processed into html form which will then be processed with the VSCODE application. From the research above, each media has differences in both the method of creation, media design applications and content on the web media that I created and the completeness of the features in it, even the material is also different, but my research uses online media, namely web-based. Seeing the problems above, teachers are expected to be able to use learning media during the learning process in class so that they can attract students' attention and be useful in the learning process in class. Based on the background that I have explained above, research on the development of web-based learning media on the reproductive system material in biology subjects is important to be carried out as an alternative to overcome the lack of availability of learning media in schools.

2. Method

The research design used is to produce a specific product and test the effectiveness of the product, namely research and development (R&D). This research design uses the ADDIE research and development method which consists of five stages. In fact, there are many other development training models.

The researcher processes the development of this web-based learning media to create educational products and learning media with the ADDIE development model which has five stages, including analysis, design, development, implementation, and evaluation. The five connected and sequential components of the ADDIE development model require the process to be sequential and the initial stage or analysis to the fifth stage, namely evaluation. Compared to other design approaches, the five stages of development are quite easy. This development design model is basic and well-structured, so it is easy to understand and use (Winaryati 2021).

3. Results and Discussion

The presentation of product trial data consists of expert validation results, each of whom is competent and understands the data that is an expert in the field. The validation results of two media

experts, validation results from two material experts, and validation results from two language experts. As well as the results of the trial response data from the assessment questionnaire by teachers and students. The presentation of the questionnaire results from each validator of media, material, and language experts is presented in the table below.

Table 4.1 Validation Data Results

No	Validation Aspect	Results	Category
1	Media Validator 1 Muhammad Hidayat, M.Kom Validator 2 Fujianor Maulana, S.Pd, M.Si	 83% 75%	 worthy worthy
2	Material Validator 1 Nana Citrawati Lestari, S.Si, M.Pd Validator 2 Dr. Siti Ramdiah, M.Pd	 82% 60%	 worthy quite decent
3	Language Validator 1 Dr. Haswinda Haspriyanti, S.Pd, M.Pd Validator 2 Johan Arifin, M.Pd.	 94% 87%	 very worthy very worthy
Amount		481	
Average		80,1%	
Category		worthy	

The presentation of response data from teachers and 24 students is presented in the table below.

Table 4.2 Response Data Results

	Name	Results	Category
1.	Mahrita Aryani, S.Pd	94%	very worthy
2.	Erniatul Mardiah	100%	very worthy
3.	Jamhuri Ilmi	100%	very worthy
4.	Rafi Ramadani	100%	very worthy
5.	Nor Syifa	100%	very worthy
6.	Selmi Mawarni	100%	very worthy
7.	Nanda Alika	100%	very worthy
8.	Sari Jamilah	96%	very worthy
9.	Zahratun Nida	90%	very worthy
10.	Muhammad Ridha	96%	very worthy
11.	Muhammad Fajriansyah	96%	very worthy
12.	Misbah	92%	very worthy
13.	Mukharamah	94%	very worthy
14.	Maulana	94%	very worthy
15.	Muhammad Zainal Abidin	88%	very worthy
16.	Ovina Zahwa	92%	very worthy
17.	Muhammad Agil	86%	very worthy
18.	Mersa Nadia	96%	very worthy
19.	Rizqa Amalia	78%	worthy
20.	Rizqa Dewi	88%	very worthy
21.	Aulia Rahma	92%	very worthy
22.	Husna Maulida	92%	very worthy
23.	Amira	86%	very worthy

24.	Novi Amelia	90%	very worthy
25.	Almira Kurniati	90%	very worthy
	Amount		2.242
	Average		89,6%
	Category		very worthy

The assessment of the developed learning media consists of several assessment steps, namely media expert validation consisting of 3 assessment aspects, namely presentation, appearance, and compatibility aspects carried out by two lecturers, getting results of 83% from validator 1 and 75% from validator 2. Validation of material experts consisting of 4 assessment aspects, namely material, presentation, language, and contextual aspects carried out by two lecturers, getting results of 82% from validator 1 and 60% from validator 2. Language validation consisting of 2 aspects, namely content and language carried out by two lecturers, getting results of 87% from validator 1 and 94% from validator 2. Feasibility is obtained by adding up all the results of the validation questionnaire from media, material and language experts. The total results of the questionnaire from the six validators amounted to 481. The average feasibility result was 80.1%, so the web-based learning media that I developed is included in the feasible category. As in the Januarisman (2016) that web-based learning media must have characteristics such as interactivity, independence, ease of access, and the availability of enrichment in the use of technology so that learning media contains many diverse and useful features.

Web-based learning media is said to be feasible for several reasons related to advantages in terms of accessibility, effectiveness, flexibility, and advantages in its features. Categorized as feasible because the media has been assessed and in the assessment process there are suggestions and inputs. So that the resulting media is evaluated and improved according to suggestions and inputs such as adding features. Improvements to grammar, punctuation, symbols, and words in the content of the material in the learning media. Updates to the references to the materials used, simplification of the material and a summary of the overall discussion that is made simple and full of pictures to be better than before.

The assessment of the response from biology subject teachers consisting of 4 aspects got a result of 94% and was included in the very satisfied category. The assessment of student responses consisted of 3 aspects, namely usefulness, ease, and satisfaction. Getting a total result of 89.5% from 24 students, so it is included in the very satisfied category.

Teacher and student responses were obtained by adding up all the questionnaire results from teachers and students. The total number of responses from teachers and students was 2,242. The average response from one teacher and 24 students was 89.6 so that the web-based learning media that I developed was included in the very satisfied category.

The satisfaction criteria obtained were also based on direct expressions from teachers and students that the learning media created was good to continue to be developed. The features on the media are also diverse which makes the media interesting to use. There was even a request to add other discussions of biology subjects. Satisfaction can be seen from several benefits of this learning media, including:

a. Students can access learning materials anytime and anywhere, as long as they have an internet connection.
b. Web-based learning media can be designed to be interactive, with features such as quizzes, videos, simulations, and discussion forums that can increase student engagement.
c. Materials can be adjusted to the needs of individual students, allowing for more personal and adaptive learning.
d. Students can learn independently and develop independent learning skills that are important for lifelong education.

In fact, web-based learning media that can support biology learning activities are still very limited.

Learning media used based on analysis results needs, teachers still often use textbooks, LKS, overhead projectors, whiteboards and LCDs. Teachers have not implemented web-based biology learning media in teaching and learning activities, even though biology subjects, especially at the high school/vocational high school level, contain a fairly broad scope of material.

Problems related to the limitations of learning media are certainly very much in contrast to the development of increasingly modern and sophisticated technology. The sophistication of technology should make it easier for teachers and students to access quality resources. Developing quality and digital-based learning media in learning is important in building an information-based education system. The urgency of this problem is not only found in a small number of schools but in almost all schools (Januarisman, 2016).

The media that has been developed has met the criteria for web learning media based on the presentation by Hartiwi (2024) web-based learning media used in this study is a learning tool or intermediary that uses a site (website) that can be accessed via the internet. This media presents a discussion of learning materials and audio, video, visuals. The media that I have developed contains many features that make it different from other web-based media.

The difference lies in the many features such as downloading materials, requesting materials, having learning videos, and a new appearance. In accordance with the explanation of Muthmainnah (2021) that in education technology can be used as a practice to facilitate the learning process and improvement through the creation, use, management of projects, technology, and appropriate resources. As a teacher we should be able to utilize technology to find and even create learning media. Education should aim to teach students in efforts to obtain knowledge, information, skills, and other attitudes that must be achieved by students. Education is also expected to provide motivation and encouragement to students to increase their interest in learning. Students are the main and first factor in education, they become the subject that is the center of education. The teacher's task is to create a permissive learning situation, it is hoped that the character of students will be more comfortable with learning in the classroom. Therefore, educational activities must be developed in order to achieve the ability, potential, and strength to learn Abidinsyah (2016). To achieve all that, there needs to be an innovation in learning, namely by using web-based learning media as in the results of my research above that the learning media received screen criteria by experts and received very satisfied responses from teachers and students.

4. Conclusion

The results of the research on the development of web-based learning media conducted at MA Darul Imad are as follows:

1. The development of web-based learning media in biology subjects at MA Darul Imad has been declared feasible.
2. The responses of teachers and students to the development of web-based learning media were declared very satisfied.

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