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Google Site as a Learning Media in the 21st Century on the Protista Concept

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Abstract

The development research was carried out using the 4D development model adapted from Thiagarajan. This research and development aims to create and develop learning media that can support the learning process. The website-based learning media for the Protista concept for tenth grade Biology High School is carried out because of the importance of technology-based media innovation in 21st-century learning. The learning media developed is a website using google site equipped with a combination of text, images, animation, audio, video, and a simply designed navigation bar. The research and development of this website-based learning media uses a 4D development model (Define, Design, Develop, and Disseminate), but this research is focused on the responses of students in using the google sites learning media. The results of student responses to the learning media website "DIEYA PROTISTA" are classified as very good with an average response score of 4.50. This response shows that the learning media that was developed theoretically and procedurally has been suitable for use in teaching Protists in tenth grade.

Abstrak

Penelitian pengembangan yang dilakukan menggunakan model pengembangan 4D yang diadaptasi dari Thiagarajan. Penelitian dan pengembangan ini bertujuan untuk membuat dan mengembangkan media pembelajaran yang dapat mendukung proses pembelajaran. Media pembelajaran berbasis *website* pada konsep Protista untuk SMA Kelas X Biologi ini dilakukan karena pentingnya inovasi media pembelajaran berbasis teknologi di pembelajaran abad 21. Media pembelajaran yang dikembangkan ialah *google sites* dilengkapi dengan penggabungan teks, gambar, animasi, audio, video dan menu navigasi yang didesain sederhana. Penelitian dan pengembangan media pembelajaran berbasis *website* ini menggunakan model pengembangan 4D (*Define*, *Design*, *Develop*, dan *Disseminate*), namun penelitian ini difokuskan pada respon peserta didik dalam menggunakan media pembelajaran *google sites*. Hasil respon peserta didik terhadap media pembelajaran *website* "DIEYA PROTISTA" tergolong sangat baik dengan rerata skor respon 4,50. Respon ini menunjukkan media pembelajaran yang dikembangakan secara teoritis dan prosedural telah layak digunakan pada pembelajaran Protista di kelas X.

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A. Introduction

Along with changing times, the learning system has changed both on a large and small scale. These changes spur us to act better based on the results of previous evaluations. The 2013 curriculum directs students to be close to natural, social, artistic and cultural phenomena (contextual). Students are expected to be able to relate the material studied and solve the problems they face. According to Andira et al. (2021), contextual learning spurs students to think critically in understanding the material and implementing the material learned in everyday life. One component of education that can direct students to think critically and act contextually is learning media. Riefani et al. (2020) explaining that use of contextual learning resources and learning media can increase students' attention to knowledge, and improve students' ability to solve problems. Teaching media is an important component in achieving learning objectives and supporting the achievement of student learning outcomes.

Learning media is understood as everything that can convey and distribute messages from sources that have been planned in order to create an effective and efficient learning environment (Munadi, 2008). The importance of choosing learning media that can be used in two directions between teachers and students is a decision that needs to be considered. The selection of learning media can be adjusted to the learning style of each student. This is done in order to generate an interactive, innovative atmosphere, and attract the attention of students in the learning process (Abi, 2020).

Interactive learning media is a trend in the world of education. This is considered because the Covid-19 pandemic that is endemic in Indonesia has changed the online learning process, so teachers must innovate in creating interactive learning media. Similar research proves that this interactive learning media is effective in improving the learning outcomes of students who are tested through objective tests. The percentage result of the effectiveness of using interactive learning media is 85% which is seen from the change in value after using interactive learning media (Saputra & Effendi, 2021).

Educators in 21st century learning are required to focus learning on students so that they can build a society that has knowledge and skills in the management of Information and Communication Technology (ICT), critical thinking and problem solving skills, effective communication skills and collaborative collaboration. These five characteristics are built through the role and integration of ICT in the learning process (Wijaya et al., 2016).

This ICT integration can be implemented in website-based learning media through the Google sites feature. The existence of simple google sites without using a programming language is an advantage that educators and students can use in the learning process. In addition, the Google Sites feature provides easy-to-use design templates, layouts, and navigation menus for free, with a capacity of up to 100 Mb. The fulfillment of these advantages directly makes learning centered on students and directs students to learn independently (Mardin & Nane, 2020).

Based on the explanation above, the development of website-based interactive learning media using google sites needs to be done to support the learning process and provide alternative teaching media in delivering a material.

B. Method

The development research of this website-based learning media uses a 4D development model there is Define, Design, Develop, and Disseminate which was adapted from Thiagarajan et al. (1974), but in this study the focus is on the response to the use of google sites as a teaching medium in the development stage.

The learning product of this website is named "DIEYA PROTISTA" making it easier for students to distinguish the address of this learning website. Website products can be accessed via the following link: https://bit.ly/2Y8C6um. The selection of the concept of material presented in this learning media is based on the results of the analysis of the needs of students, where the concept of Protista has a percentage level of 70.2% higher than the percentage of choosing the concept of Bacteria (68.1%) and the concept of Virus (63.8%). Descriptively, the concept of Protista is quite difficult to understand because of the large scope of material that must be studied.

The results of student responses were seen from the response questionnaires filled out by students from tenth grade of SMA Negeri 7 Banjarmasin. Calculation of student response scores using the Putra (2016) formula:

$$\underline{x} = \frac{\Sigma x}{n}$$

Explanation:
$\underline{x}$ = average score
Σx = total score obtained

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The students' response criteria were measured using a modified category from Widoyoko (2014):

Table 1 Student Response Criteria

Score	Criteria
$\underline{x} > 4.20$	Very good to use without revision
$3.40 < \underline{x} \leq 4.20$	Good to use with minor revisions
$2.59 < \underline{x} \leq 3.40$	Good enough to use with major revisions
$1.79 < \underline{x} \leq 2.59$	Not good enough to use
$\underline{x} < 1.79$	Not good to use

C. Result and Discussion

The results of the response test of 12 students who have taken the Protista material show the reactions or responses of students to the developed learning media products. The results of the recapitulation of student responses sequentially are in Table 2.

The results of the students' responses to the website-based learning media of the Protista concept were classified as very good with an average response score of 4.50. This shows that the protist concept website for tenth grade students gets a very positive response. The results of student responses were also conveyed by Mardin & Nane (2020) who identified positive responses, teacher enthusiasm, and independence in the use of google sites-based learning media. A similar study was conducted by Sadikin et al. (2020) regarding the high student response (88%) on the attractiveness aspect of website learning media in Biology subjects. This is also in line with Riefani & Utami (2017) that the content of teaching materials in biology learning requires the active role of students scientifically based on the facts and experiences of students.

The advantages of the "DIEYA PROTISTA" website for high school on tenth grade are described as follows: first, the learning media website produced is colorful and equipped with navigation menus that direct students to other pages of the website. According to Muhson (2010) learning media must pay attention to presentation, both related to color, navigation, and others that are tailored to user needs. The simple design comes from dynamic templates prepared by google sites. The text on this site follows the format requirements (default) available on google sites. The format in the learning media developed is derived from the elaboration of general standards and is based on ICT. Rusman (2009) said that the format can be adjusted as long as every user can learn it, obtain available information, and motivate students to be proactive in the learning process.

Table 2 Results of Response Test Data

No.	Assessment Aspect	Average Value
1.	Reading the website doesn't waste time while studying	4,44
2.	This website is intended for high school students	4,33
3.	This website is so much fun	4,44
4.	Website can be used independently	4,56
5.	The website provides valuable experience in the learning process	4,78
6.	Learning with a website is more interesting than activities in class	4,00
7.	Website contains many useful things	4,56
8.	Students enjoy using the website compared to other learning resources	4,33
9.	Learning with websites makes learning interesting	4,67
10.	Students like to use website learning resources like this one	4,67
11.	Website learning resources are better than textbook learning resources	4,78
12.	Students can read the website continuously	4,67
13.	Reading websites with lots of pictures doesn't take away the meaning of the material	4,56
14.	Learning to use the website can improve learning abilities	4,44
15.	The material learned on the website is not easily forgotten	4,11
16.	Learning resources from the website provide a learning experience	4,67
	Total Score	**72,01**
	Mean	**4,50**

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Second, the website products developed are easy to use anytime, anywhere, and by anyone. According to Rusman (2009) learning media is an independent learning resource, used by anyone, anywhere and anytime, and motivates students to be proactive in the learning process. This is in line with Tawil & Liliasari (2014) and Utami & Riefani (2017) which state that students can learn optimally and independently by providing an intellectual, emotional, physical, and scientific experience in the learning process.

The use of website-based learning media is also assessed for the burden of internet usage required. This is done in anticipation of using the internet, so that teachers and students can find out and prepare an adequate internet quota before accessing this website. The result of using the data transfer power load has a total internet speed of 56.72 mbps (megabits per second) with a conversion calculation of 1 Byte = 8 bits. The internet speed used to access website-based learning media which has a power transfer load of 56.72 mbps is 7.09 KBps (kilobytes per second). So the usage is less than 1 GB or 1,000,000 KBps. Students can access the website with only 1 GB internet quota. The burden of using this internet quota is a price consideration when making learning media which should not incur any funds other than, the burden of internet quota that can be purchased for 1 GB with price variations for each provider from the price range of 3000 IDR – 15,000 IDR, based on the market price in 2021.

Third, the website product developed contains complete material about protists, is systematic, written in a simple way, and is equipped with examples and facts that are close to the daily lives of students (contextual). According to Yahya (2010); Lepiyanto & Pratiwi (2015); Riefani et al. (2020); and Rahmi et al. (2020), concepts and materials in learning products must be supported by information and facts, contextual knowledge, effective in learning, according to the expected goals, so as to encourage the relationship between the knowledge possessed by students and develop students' abilities. The same thing was conveyed by Riefani (2019), the presentation of complete and contextual information on teaching materials is used to train thinking skills, develop imagination, show real situations, show differences and similarities, and streamline the data collection process.

Fourth, the website learning media contains interesting statements and questions aimed at raising students' higher-order thinking skills. In addition, this website is also supported by additional components related to the elaboration of the classification of protists. This is given so that students can expand their knowledge about body shape (morphology) and scientific language or the Latin name of the protist group. The website learning media is also equipped with meaningful and interesting activities through inquiry learning. According to Sofyan (2019), learning resources must contain meaningful and interesting learning activities as a reflection of the characteristics of High Order Thinking Skills according to the objectives of the 2013 curriculum.

Inquiry learning on the website is like activities in defining, finding data, and drawing conclusions on learning activities. Inquiry activities on the website are intended to liven up the learning atmosphere and in still students' scientific thinking skills. According to Dharmono et al. (2019), thinking skills are very important to be trained because this ability does not occur outwardly, but needs to be trained continuously so that it can become a good habit. The results of the Supanti & Hartutik report (2018) show that classroom action research using the inquiry method in the learning process has an increase in the percentage of both cycles from 77.35% to 90.06%, which means that the inquiry learning model can increase the independence of students in doing and discovering their knowledge independently.

Fifth, high-quality, colorful, clear, and real illustrations and pictures. Learning media is equipped with moving images, animations, audio, and video to bring students closer to the examples

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shown. According to Suswina (2011) and Riefani (2019), to present a topic or subject in teaching materials, examples, illustrations, and the use of original colored or real images are needed that can foster student interest, strengthen memory, provide motivation, and improve critical thinking skills of students.

Arsyad (2011) and Suparman (2012) explain that the use of images with original colors is an important visual element that gives the impression of separation or emphasis and heightens the level of realism of objects or situations, shows similarities and differences, creates certain emotional responses, and increases the attractiveness of lessons and students' attention learning outcomes. This is in line with research by Hamalik (1995), Monica & Laura (2011), and Prastowo (2014) which state that original and colored images can attract a person's attention compared to black and white images, provide real experiences, and can grow and motivate students to continue study.

D. Conclusion

The results of student responses to the learning media website "DIEYA PROTISTA" are classified as very good and show a very positive response with an average response score of 4.50. A very good response shows that the learning media that was developed theoretically and procedurally has been suitable for use in teaching Protists in Tenth grade.

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