

The Effectiveness of Google Sites-Assisted Learning Media on Vibration, Waves, and Sound Materials

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Abstract: This study aims to determine the effectiveness of learning media assisted by google sites on vibration, wave, and sound materials. This research is a Research and Development (R&D) research using the 4-D model which was carried out at SMP Negeri 3 Gorontalo for a limited test with a number of students as many as 20 people and a wide-scale test carried out at SMP Muhammadiyah Batudaa with a total of 40 students. Data collection techniques were obtained through observation, questionnaires and tests. Data analysis used descriptive qualitative analysis. The results showed that the google sites-assisted learning media developed had met the effective criteria of learning media. Judging from the results of the observation of student activities in the limited trial of 83% (Good) and the extended trial of 85% (Good), while the N-Gain value of student learning outcomes including pretest and posttest in the limited trial obtained a value of 0.60 (Medium) and extended trial of 0.62 (Medium). The conclusion obtained is that google sites learning media is effective for use in the learning process at school.

Keywords: Effectiveness; Google Sites; Learning Media.

Introduction

The development of science and technology is currently bringing rapid changes to aspects of human life and development. One of the educational institutions that participate in taking advantage of technological developments is the school. The use of technology in the current digital era makes the learning process more fun and not boring and is able to improve the quality and quality of teaching and learning. Teachers as educators are required to be able to keep pace with advances in technology and the student environment, the aim is to create an approach between the teacher and the world of students. Thus, the teacher can bring learning better so that learning material can be conveyed and well received to students. Science is needed to be able to keep up with the fast progress of science and technology, especially for the world of work

(Payu et al., 2023; Pubian et al., 2022; Buhungo et al., 2023; Hermanto et al., 2023; Ntobuo et al., 2023).

The teacher is the only source of learning for students, but now there are many things that students can use to obtain useful information, such as the environment, parents, professionals, books, the internet, and so on. One of the most influential sources of information today is internet trends. Therefore, the internet is very likely to be a source of learning and learning media that runs on the web. Today's teachers must be more open to the existence of modern technology that can be used as a means or media that can help the learning process in quality classrooms (Fitra et al., 2021; Ninghardjanti et al., 2021; Wahyudi et al., 2022; Setiawan et al., 2023; Saputra et al., 2021).

Website media on the internet is very suitable to be used as an alternative choice of distance learning. The media website has lots of sites or features that can be

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used in online teaching and learning activities, namely by utilizing websites based on google sites. Google sites is a website that can be utilized in the learning process (Khasanah et al., 2021; Thomas et al., 2022; Jusriati et al., 2021; Ramadannisa et al., 2021). Google sites are Google products that can be used as a website creation tool. Google sites have the advantage, namely the simplicity of accessing the desired information quickly, because you can add attachments and other Google information such as google docs, sheets, from, calendar, awesome tables, videos from YouTube and others. In addition, the google sites network is also easy for beginners to use because it can be accessed for free online and does not use any programming language. The use of google sites is also not limited by space and time and can be used on various devices (Putri et al., 2021; Amali et al., 2023; Taufik & Doyan, 2022; Murtadlo et al., 2023).

Based on the results of observations at SMP Negeri 3 Gorontalo, regarding the science learning process at school, learning is carried out offline. Learning also still uses teacher-centered learning methods, for example lecture or demonstration methods. The science learning process is also not running effectively because the media used is not attractive enough to trigger boredom with the learning process. For this reason, the need for innovation by science teachers so that there is also student-centered learning, both in terms of understanding concepts, learning media and subject matter that can be open to science and technology. The science learning process which tends to seem procedural, monotonous, and less open will cause student boredom so that it has an impact on the low

science learning outcomes themselves (Abdjul et al., 2022; Montu et al., 2020; Parong et al., 2021; Sutiani, 2021; An & Thomas, 2021).

This study uses development research to determine the effectiveness of google sites-assisted learning media. The criteria for a good learning device are about validity, practicality and effectiveness (Zainudin & Wijayanti, 2021; Lukum et al., 2022; Reskiyati et al., 2023). Based on the background of the problems described above, the authors are interested in conducting research on "The Effectiveness of Google Sites Assisted Learning Media on Vibration, Waves and Sound Material". The benefits of this research are expected so that learning becomes effective and the media is attractive to increase students' interest in education.

Method

This research is a type of development research (Research and Development) using the 4D development model design with 4 stages, namely: define, design, development, and disseminate which are used in producing effective learning media. This research was conducted at SMP Negeri 3 Gorontalo for a limited test with a total of 20 students/respondents and a large-scale test was carried out at SMP Muhammadiyah Batudaa with a total of 40 students/respondents in the 2021/2022 academic year. The data analysis technique used in this research is descriptive qualitative analysis, namely by describing the effectiveness of learning media.

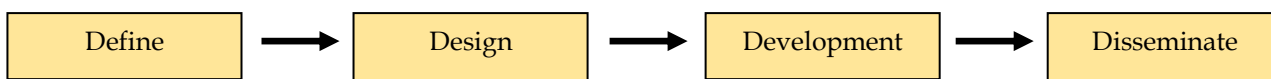


Figure 1. Flowchart of research

The effectiveness of learning media is measured using observation sheets of learning activities and learning achievement tests. Student activities while participating in the learning process can be analyzed using the equation (1).

$$\% \text{ Student Activity} : \frac{\Sigma \text{Gain Score}}{\Sigma \text{Maximum Score}} \times 100 \quad (1)$$

The criteria for student activity presentation can be presented in the Table 1 (Arikunto, 2010). Analysis of the data obtained from the pretest and posttest is to find the value of the N-Gain. To obtain the N-Gain value from the pretest and posttest using the equation (2).

Table 1. The Criteria for Student Activity

Presentation Range (%)	Category
86 - 100	Very Good
76 - 85	Good
66 - 75	Enough
56 - 65	Not Enough
0 - 55	Very Less

$$< g > : \frac{\% \text{ Posttest Score} - \% \text{ Pretest Score}}{100 - \% \text{ Pretest Score}} \quad (2)$$

Information g is gain (increased ability), Pretest is average pretest score (%), and Posttest is average posttest score (%). The resulting standard gain value can be interpreted in the Table 2 (Abdjul et al., 2019).

Table 2. The Criteria of Gain Value

Grade $\langle g \rangle$	Criteria
$\langle g \rangle \leq 0.3$	Low
$0.3 < \langle g \rangle < 0.7$	Medium
$\langle g \rangle \geq 0.7$	High

Result and Discussion

Student activity data was obtained through student activity observation sheets.

Results of Student Activity Analysis

Based on the results of observations on limited trials, the percentage of student activity is shown in the Table 3.

Table 3. Percentage of Limited Trial Student Activity

Meetings	Student Activity Percentage (%)	Criteria
1	81	Good
2	83	Good
3	85	Good
Average	83	Good

Based on Table 3 it can be seen that the average percentage of student activity obtained results of 83%, these results are included in the "Good" criteria, so it can be concluded that google sites assisted learning media can already be used in widespread trials. The following are the results of the analysis of student activity in the expanded trial conducted for 3 meetings in 2 classes, shown in the Table 4.

Table 4. Student Activity Expanding Trial Percentage

Class	Meetings	Student Activity Percentage (%)	Average Percentage (%)	Criteria
A	1	83	85	Good
	2	84		
	3	88		
B	1	83	84.6	Good
	2	84		
	3	87		
Average (%)			85	Good

Based on Table 4, it can be seen that the average percentage of student activity obtained results of 85%, these results are included in the "Good" criteria. Based on these criteria, it can be concluded that the google sites assisted learning media developed are effective for use in the learning process.

Student activity is one of the determinants of the effectiveness of a learning media as measured using student activity sheets filled out by observers during the learning process. Based on the results of the analysis of the percentage of student activity, an average score was obtained in the limited test, namely (83%), while in the

extended trial, an average score was obtained (84%) in the "Good" category. Based on the acquisition of these percentages, the learning process uses learning media assisted by google sites which are developed effectively for use in learning. In line with research conducted by, that there was an increase in student learning activities after using google sites learning media, in terms of the results of increased student activity before (32.7%) and after (86.4%) using google sites learning media, namely 53.7%. This shows that goggle sites learning media is effective to use (Devya et al., 2022).

Results of Learning Outcomes Test Analysis

Analysis of test data on student learning outcomes using pretest and posttest learning outcomes assessment sheets individually. The test is structured based on question indicators that are adjusted to learning indicators. The level of the test given consists of cognitive levels C2-C5. In the limited trial, the Learning Outcomes Test was given to 20 students in 3 meetings. The following is the average N-Gain score on the pretest and posttest values in the limited trial shown in the Table 5.

Table 5. N-Gain Learning Outcomes on Limited Trials

Pretest (%)	Posttest (%)	N-Gain	Category
25.5	69.1	0.60	Medium

Based on Table 5, the limited trial showed that the score for the pretest obtained an average value of 25.5%, while the value for the posttest obtained an average value of 69.1%. In the limited trial the N-Gain value obtained was 0.60 which is included in the "Medium" category. In the expanded trial conducted in 2 classes with a total of 38 students. The learning outcomes of students in the expanded trial can be seen in Table 6.

Table 6. N-Gain Student Learning Outcomes in Widespread Trials

Class	Pretest (%)	Posttest (%)	N-Gain	Category
VIII A	26.1	71.4	0.62	Medium
VIII B	27	71.2	0.62	Medium

Based on Table 6 it shows that the expanded trial for VIII A obtained an average pretest value of 26.1%, while in the posttest it was 71.4%, the N-Gain value obtained was 0.62 in the "Medium" category. Then in VIII B for the pretest, an average value of 27% was obtained, while the average value for the posttest was 71.2%, the N-Gain value obtained was 0.62 which was in the "Medium" category. Google sites learning media can improve student learning outcomes by achieving learning outcomes using google sites learning media, namely (81.25% > 75%), with the results obtained it is proven that the effectiveness of google sites learning

media has been tested well for use (Devya et al., 2022). The learning outcomes of students using google sites are better than learning outcomes using the usual learning media (Japrizal et al., 2021). The achievement of indicators shows that the development of google sites-assisted learning media in science learning has met the effectiveness criteria.

Conclusion

Based on the research that has been done, it can be concluded that the effectiveness of google sites-assisted learning media on vibration, waves and sound material is appropriate for use in the learning process in terms of the influence and increase in the ability of student learning outcomes and student activities in learning using google sites-assisted learning media. Research using effective google sites for the learning process, educators and students can also be facilitated in their use.

Author Contributions

Tirtawaty Abdjul: Conceptualization, methodology, validation, writing—original draft preparation, writing—review and editing.

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Conflicts of Interest

The authors declare no conflict of interest.

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