

The Effectiveness of Using Interactive Learning Media Based on the Google Sites Website on Dynamic Electricity Material

Yusnidah^{1*}, M Iman Hidayat², Dodi Maulana³

¹ Politeknik Adiguna Maritim Indonesia Medan, Indonesia

^{2,3} Lembaga Riset dan Pengembangan Sumatera Utara

* asdayusnidah@gmail.com

Abstract

The purpose of this study to provide an overview of the understanding of physics concepts in dynamic electricity material for XII IPA students of Darul Ulum IT High School Padang Sidempuan, North Sumatra Province before and after using the google site in the learning process. Sampling was carried out by purposive sampling, the instrument used was a concept understanding test, observation and student response questionnaires. Quantitative analysis techniques are used to measure the level of understanding of students. The results showed that there were differences in understanding the physics concept of dynamic electricity before the application of the google site with an average value of 40.5 and after the application of the google site with an average value of 51. So it can be concluded that the hypothesis is accepted in achieving increased understanding of dynamic electricity material physics concepts in class XII Darul Ulum IT High School.

Keywords: *google site, learning, physics concepts*

Introduction

Education is a human need that must be met. Education is not only obtained in a classroom but can also be obtained from the surrounding environment. According to Inanna (2021), one aspect that can be done to prepare a strong human resources character is through education. In the life of the nation and state, every citizen has the right to education as stated in the 1945 Constitution article 31 paragraph 1. Therefore, the progress or failure of a country is determined by human resources in the country, while human resources are determined by the quality of education organized by the country. In education, there is an activity called learning. This learning activity determines the success of an educational implementation. The implementation of learning activities must be carried out by adjusting the conditions of a class. So that teachers are required to create comfortable and interesting learning activities. With the conditions of teaching and learning activities, it can be ascertained that students do not get bored quickly. One factor that plays an important role in learning is the existence of learning media that supports. Exposto (2022) define learning media is a tool in delivering material or messengers to students who are expected to better understand the content of learning material. The use of learning media affects the interest in learning students. In delivering a learning material, an interesting learning media is needed because learning media can be a stimulus for students in the learning process. To achieve

the learning objectives to be achieved, a teacher must use the right learning media to be used in delivering a learning material.

Along with the development of today's sophisticated era, of course, almost all fields have applied such sophisticated technology. One of them is the application of technology in learning media which is referred to as interactive learning media. Interactive learning media is a digital-based learning media that is useful for facilitating the learning process by presenting learning materials in the form of text, animation, audio, and video. According to Tambunan & Siagian (2022) interactive learning media can be understood as a software composed of combining various multimedia elements such as text, images, animation, video, and audio that are presented interactively for teaching purposes. Web-based learning media is one of the interactive learning media innovations that are utilized in the digital era like today. According to Astuti, et al (2020), Web-Based Learning is an online learning media or a website that has educational goals, and many institutions develop instructional material of science as a media for a source of integrated science learning material. By the web learning media, it can make it easier for teachers to explain learning material through a combination of face-to-face and online learning. The use of web-based learning media that is so easily accessible to both teachers and students can increase student achievement. This is show Web-Based Learning is an online learning media or a website that has educational goals, and many institutions develop instructional material of science as a media for a source of integrated science learning material explained that teachers need media that can be used to explain learning.

In physics learning, there are many natural phenomena and symptoms that make it difficult for students to understand and understand if only explained without being given examples. This makes physics inadequate if studied only by reading, imagining and or memorizing. Physics should be studied contextually involving students to be able to explore to form competence by exploring potential and truth scientifically. (Prameswari & Wahyudi, 2019). One of the physical materials is dynamic electricity where this material requires media as a tool to understand it and reduce the cost of buying it. Not only that, but many factors cause learning is still less interesting so that the expected learning outcomes have not been achieved, such as the need for teacher experience in integrating information technology in making teaching materials, the use of teaching materials that are still and only focused on the use of teaching materials in the form of printed books and limited to providing learning videos that are separate from printed book teaching materials so as to display less learning systematic and interesting for students and student learning outcomes in learning are still low. Then, there has been no use of web-based teaching materials so far, even though in schools there are computer laboratories and at home students are each able to have a computer, laptop or other device personally and there is an internet connection that can support the learning process in the network. So, the media that is widely used in creating a website is Google Sites. According to Salsabila and Alsam (2022) that Google Sites can be accessed anywhere and anytime in a simple and practical manner that can be used to present various kinds of information and learning materials so that students will not be left behind. Simple and easy-to-use features to create a learning website cause Google Sites is often used by teachers to create media interactive learning. The state of the art in this research is in the form of innovation in the development of web-based teaching materials Google Sites on dynamic electrical physics material.

Several previous studies have shown how the use of Google Sites in physics learning such as research conducted by Mukti, et al (2020) which concluded that web-based Physics learning media using Google Sites is flexible because it can be accessed via smartphones, laptops, and tablets. In addition, research conducted by Ismawati, et al (2021) concluded Learning media using Google Sites aims to help students learn physics independently, especially in learning physics. Another research conducted by Ramadannisa & Hartina (2021) concluded that Google Sites can explain the material, can understand concepts that are still abstract and with the addition of experiment videos related to the material, students can do experiments at home independently and anywhere. Another study conducted by Wulandari et al (2022) concluded that interactive multimedia in the form of google sites is suitable for use in physics learning.

Based on this explanation, researchers conducted a research that aimed to find out whether the use of Google Sites learning media is effective in improving student learning outcomes on dynamic electrical physics material. Previous research has shown that Google Site is useful for learning physics. Therefore, the research gap in this study is to prove the usefulness of Google Sites in learning physics, especially dynamic electricity.

Method

This research was carried out at Darul Ulum IT High School, which was carried out in the second semester of the 2022/2023 academic year. According to Sugiyono (2012), true experimental research is an observation that is carried out and gives special action to the subject of exploration with the design applied in this research using Pre-test and Post-test. Observations were made to determine the effectiveness of the application of Google Sites learning media whose results can be used as a reference in improving the quality of student learning on dynamic electrical physics material at Darul Ulum IT High School. Before getting treatment with the learning pattern to be used, each student of grade XII is given a pretest to see the initial thoughts of the students. After getting treatment using the Google Site website consisting of material and videos, at the end of learning students are given a posttest to see the quality of student results after learning through Google Sites. Data accumulation techniques by applying the most commonly used means for quantitative measurable data processing are used to determine the improvement of student learning outcomes obtained through posttest and pretest. After knowing the effectiveness of the learning model related to the quality of learning outcomes, it can be seen the effectiveness of the learning media.

Results

This research involved students of Darul Ulum IT High School, especially grade XII students of the science program. Observations were made to determine the results of using interactive learning media based on the Google Sites website on dynamic electricity material. Observations are made in class directly to the students. This media can be used using the internet network and also requires learning devices in the form of mobile phones, laptops and other devices. The media used is in the form of a Google Sites website where the website has home features, objectives, materials, videos, simulations and evaluations. In the destination feature contains the learning objectives of dynamic electricity material, in the material feature there is dynamic electricity material in the form of writing, in the video

feature there is a video explaining dynamic electricity material, in the simulation feature there is an online simulation to find out directly dynamic electricity material and finally is an evaluation feature that contains a post test to find out students' abilities after learning using interactive learning media based on the Google Sites website. Here is the initial view of the Google Sites website that researchers will test on students:

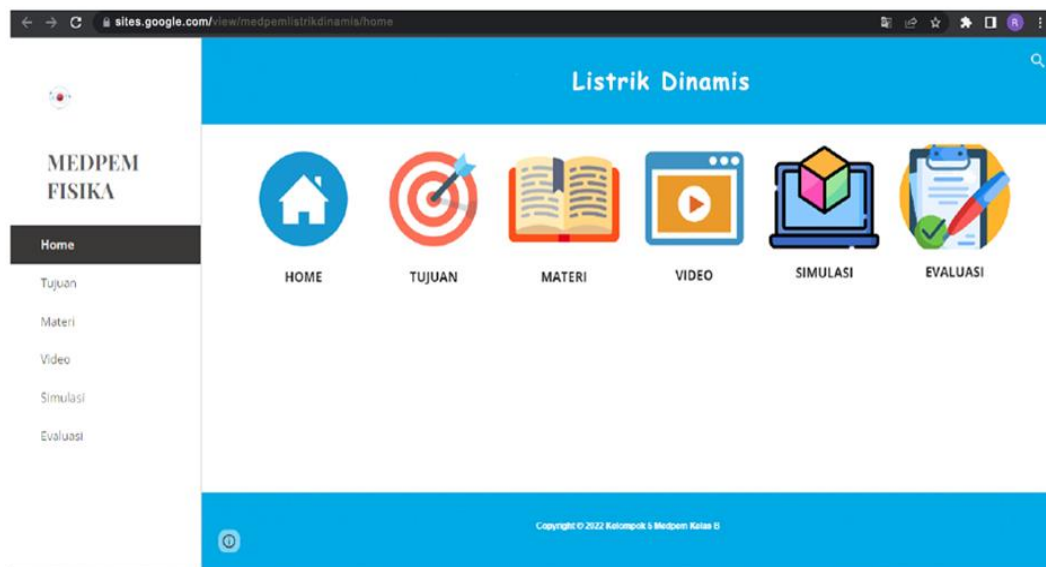


Figure 1. Google Sites Main View

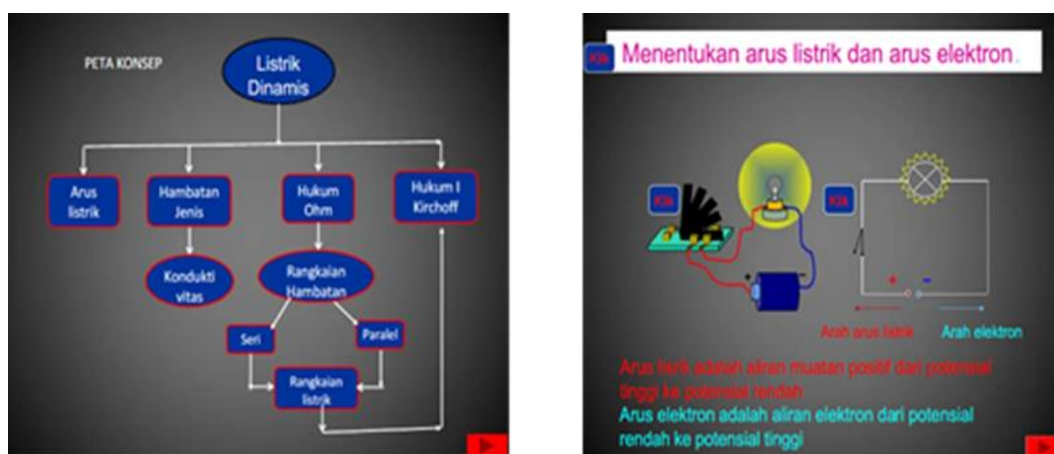


Figure 2. Google Sites Material View

Observations in grade XII Darul Ulum IT High School were carried out by conveying the objectives then to find out the effectiveness of interactive learning media Google Sites, an initial test was needed for students, namely using a pretest consisting of 10 multiple-choice questions a, b, c, d and e in accordance with the learning objectives on dynamic electricity material. After carrying out the pretest, students were given dynamic electricity material using media that the test researcher tested where students must know the learning objectives, read the material, and watch dynamic electricity material videos then carry out an evaluation in the form of a post test to find out students' abilities after using the interactive learning media.

Table 1. Pretest And Posttest Results

Question Number	Pre Test		Post Test	
	True	False	True	False
1	8	11	7	12
2	3	16	8	11
3	12	17	15	4
4	6	13	8	11
5	15	4	15	4
6	4	15	6	13
7	7	12	9	10
8	11	8	11	8
9	8	11	9	10
10	3	16	9	10
Total	77	123	97	93
Average	4,05		5,11	

The results of the observations carried out can be concluded that the use of interactive learning media in the form of Google Sites websites used in dynamic electricity material affects of improving student learning outcomes on dynamic electrical physics material. This is known from the average results of students' post-test scores are higher than the pretest scores in students. The average pretest score is 4,05 while the average post-test score is 5,11 where there is an increase in points of 1,06. This can be seen from the table of ability results before learning to use interactive media and after using interactive media there is a difference in results where there is an increase.

In addition to the data above, researchers also used supporting instruments, namely student response questionnaires to see how much influence the Google site learning media used on the learning process in grade XII Darul Ulum IT High School. After analyzing the overall results of the statement aspects on the questionnaire, the average score of 19 students was 4.58, this shows that they are very responsive to the use of Google site learning media because in terms of the usefulness or function of the media then associated with questions on the student response sheet, Google Site media is able to make them easily understand the material taught because of the renewal of the learning process that can stimulate student creativity. In the end, the teaching materials presented by educators are more easily conceptualized in students. The learning process using media is not new for students, therefore students' attention to the material explained by educators is increasing. The increased attention is what helps the teaching and learning process take place actively, as well as increasing the seriousness of students in receiving material and increasing the level of understanding of physics concepts.

Discussion

Web-based Physics learning media using Google Sites can be used as one solution to make students interested in the learning presented. With a design that can be arranged as attractive as possible and can be linked to other online facilities in the form of images, animations, videos, and even simulations are expected to make students interested and motivated to learn the material presented by the teacher. The advantages of this google site are easy to create and free, can be searched through google and are flexible. Google sites are interesting to learn, especially in an effort to improve student learning outcomes

because of the interactive multimedia so that learning activities become easier, more interesting and according to student needs. At finally, web-based physics learning media using Google Sites on dynamic electrical materials can be used as learning support.

The results of this research on dynamic electrical are identical to research on other physics materials such as conducted by Mukti, et al (2020) which concluded that web-based Physics learning media on static electricity material using Google Sites is flexible because it can be accessed via smartphones, laptops, and tablets. In addition, research conducted by Ismawati, et al (2021) concluded Learning media using Google Sites aims to help students learn physics independently, especially in learning physics on sound schrodinger wave material. Another research conducted by Ramadannisa & Hartina (2021) concluded that Google Sites can explain the material on heat and temperature topic, can understand concepts that are still abstract and with the addition of experiment videos related to the material, students can do experiments at home independently and anywhere. Another study conducted by Wulandari et al (2022) concluded that interactive multimedia in the form of google sites is suitable for use in physics learning on energy material.

Conclusion

The conclusion of this research is the effectiveness of Google Sites learning media in improving student learning outcomes on dynamic electrical physics material before being taught using Google site to students of grade XII Darul Ulum IT High School with an average of 4,05 and after being taught using Google site in grade XII Darul Ulum IT High School with an average of 5,11. It means there is a significant difference between the learning outcomes of physics in dynamic electricity material students before being taught with Google site learning media and after being taught with Google site learning media.

References

- Astuti, L., Wihardi, Y., & Rochintaniawati, D. (2020). The Development of Web-Based Learning using Interactive Media for Science Learning on Levers in Human Body Topic. *Journal of Science Learning*, 3(2), 89–98.
<https://doi.org/10.17509/jsl.v3i2.19366>
- Exposto, A. P. P. (2022). Development of Interactive Learning Media Using Adobe Flash Professional. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*, 10(2), 510-517.
- Inanna, I. (2018). Peran Pendidikan Dalam Membangun Karakter Bangsa Yang Bermoral. *JEKPEND: Jurnal Ekonomi Dan Pendidikan*, 1(1), 27.
<https://doi.org/10.26858/jekpend.v1i1.5057>
- Ismawati, I., Mutia, N., Fitriani, N, Masturoh, S. (2021). Pengembangan Media Pembelajaran Fisika Berbasis Web Menggunakan Google Sites Pada Materi Gelombang Bunyi. Schrodinger, *Jurnal Ilmiah Mahasiswa Pendidikan Fisika*, 2(2), 140-146.
- Kurniawan, R. E., Makrifatullah, N. A., Rosar, N., Triana, Y., & Kunci, K. (2022). Pengembangan Media Pembelajaran Interaktif Berbasis Website (Google Sites) pada Materi Fungsi di SMA Negeri 15 Medan. *Jurnal Ilmiah Multi Disiplin Indonesia*, 2(1), 163–173.
- Mukti, W. M., Puspita, Y. B., & Anggraeni, Z. D. (2020). Media Pembelajaran Fisika Berbasis Web Menggunakan Google Sites pada Materi Listrik Statis. *Webinar Pendidikan Fisika 2020*, 5(1), 51–59.

- Prameswari, A. & Wahyudi. (2019). Pembelajaran Fisika Menggunakan Model Problem Based Learning dan Project Based Learning Ditinjau dari Keterampilan Proses Sains Siswa pada Materi Fluida Dinamis Kelas XI SMA Panca Bhakti Pontianak. *Jurnal Pendidikan Sains dan Aplikasinya*, 2(2), 60–65.
- Ramadannisa, R. F., & Hartina, M. M. (2021). The Design of Web-Based Learning Using Google Sites for Teaching Heat and Temperature Topic. *Jurnal Penelitian & Pengembangan Pendidikan Fisika*, 7(2), 107-114. <https://doi.org/10.21009/1.07202>
- Salsabila, F., & Aslam, A. (2022). Pengembangan Media Pembelajaran Berbasis Web Google Sites pada Pembelajaran IPA Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6081-6090.
- Sugiyono. (2012). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta
- Tambunan, M. A. & Siagian, P. (2022). Pengembangan Media Pembelajaran Interaktif Berbasis Website (Google Sites) Pada Materi Fungsi Di SMA Negeri 15 Medan. *Humantech : Jurnal Ilmiah Multidisplin Indonesia*, 2(10), 1520-1533.
- Wulandari, M., Hakim, L., Sulistyowati, R., Mian, Y. (2022). Interactive Multimedia Development Using Google Sites to Improve Student Learning Outcomes and Energy. *EDUSAINS*, 14(2), 188-201.