

Effectiveness of Using YouTube Video-Based Science Learning Media on Class VIII Student Learning Outcomes

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ABSTRACT

Natural science education (IPA) is an integral part of the education curriculum that aims to introduce students to scientific concepts, develop problem-solving skills, and improve their understanding of natural phenomena. The use of YouTube video-based science learning media has great potential in improving the effectiveness of science learning. By stimulating student engagement, strengthening visual understanding, providing accessibility and flexibility, and increasing learning motivation, YouTube video-based science learning media can be a powerful tool in achieving better learning outcomes at the secondary education level. This research uses a quantitative research approach. This type of research uses Quasi-experimental Design research. Quasi experimental Design, while the research design is Non equivalent Control Group Design. that there is a difference in learning outcomes between the control class and the experimental class with a significant value of $0.021 < 0.05$ which means H_0 is rejected and H_1 is accepted. The results of this study concluded that there was an effect of using Youtube video-based science learning media on the learning outcomes of 8th grade students. Continue to integrate the use of YouTube videos in teaching methods and always carry out regular monitoring and evaluation of the impact to ensure that learning objectives are achieved optimally.

Keywords: Learning Media, Learning Outcomes, Youtube

INTRODUCTION

Natural science education (science) is an integral part of the educational curriculum that aims to introduce students to scientific concepts, develop problem-solving skills, and increase their understanding of natural phenomena. In an effort to increase the effectiveness of science learning, educators continue to look for various methods that are innovative and relevant to technological developments. One method that has attracted attention is the use of YouTube video-based learning



media. The use of YouTube video-based learning media can help improve students' problem-solving skills and increase their understanding of natural phenomena in a more interactive and interesting way. Thus, the use of YouTube video-based learning media can be an effective strategy in increasing the effectiveness of science learning (Candra & Yuliantini, 2022; Hendrawan et al., 2022; Mutoharos et al., 2022).

The use of YouTube video-based science learning media provides opportunities for students to be actively involved in learning. By presenting content in an engaging visual format, videos can stimulate student interest and engagement more than conventional learning. Direct interaction with material through this media can strengthen students' understanding of science concepts (Iwantara et al., 2014; Jaya et al., 2020).

YouTube videos allow for more dynamic and detailed visualization of science concepts. Students can view experiments, simulations, or demonstrations that clarify concepts that may be difficult to understand through text alone. By strengthening visual understanding, this media can help students gain a deeper understanding of the material (Anggraini et al., 2019).

One of the main advantages of using YouTube learning media is its accessibility and flexibility. Students can access learning videos anytime and anywhere using the devices they own, whether at school or at home. This provides flexibility for students in studying material according to their needs and preferences (Tamara & Thohir, 2022).

Dynamic visualization and interesting content in YouTube videos can increase students' motivation towards science learning. The interactive nature of videos can stimulate student interest and trigger further exploration of the topics studied. This high motivation can influence student learning outcomes positively (Ayu et al., 2017; Pebriani, 2017).

The use of YouTube video-based science learning media is expected to improve student learning outcomes in a more effective way. By actively involving students in the learning process, the use of this media can increase learning motivation and strengthen students' visual understanding of science concepts. The accessibility and flexibility offered by YouTube videos allows students to access the material anytime and anywhere, thereby allowing them to study the material according to their needs and preferences. In this way, students are expected to be able to master the material better and be able to apply science concepts in real life situations (Ayu et al., 2017; Jaya et al., 2020).

The use of YouTube video-based science learning media has great potential in increasing the effectiveness of science learning. By stimulating student engagement, strengthening visual understanding, providing accessibility and flexibility, and increasing learning motivation, YouTube video-based science learning media can be a powerful tool in achieving better learning outcomes at the secondary education level. Therefore, it is important to carry out further research to evaluate the effectiveness of using this media in the context of science learning.



METHODS

This research uses a quantitative research approach. Quantitative research is defined as a research method used to research certain populations or samples, data collection using research instruments, quantitative/statistical data analysis, based on the philosophy of positivism with the aim of describing and testing predetermined hypotheses (Abdullah et al., 2021) .

This type of research uses Quasi experimental design research. Quasi experimental design is a design that has a control group, but does not function fully to control external variables that influence the implementation of the experiment. Meanwhile, the research design is Non-equivalent Control Group Design. This design is a design with an experimental group and a control group not chosen randomly. The experimental group is the group that is given treatment (manipulation or intervention), while the control group is not given treatment.

Population is a generalized area consisting of objects or subjects that have certain qualities and characteristics determined by research to be studied and then conclusions drawn (Amin et al., 2023). A sample is a part or representative of the population studied or part of the population which is the actual source of data for a study. Sampling in this research was carried out using purposive sampling technique. Purposive sampling technique is a technique for determining samples with certain considerations (Amin et al., 2023; Rahayu, 2022; Salma, 2021).

The data collection technique used in this research is a questionnaire. A questionnaire is a data collection technique that is carried out by giving a number of questions and other tools to the subject whose data we want to know (Deepublish Store, 2023; Agribusiness Study Program, 2023).

RESULTS

1. Pre Test and Post Test Data Normality Test Results

Table 1. Normality Test Results for Pre-test and Post-test Data

	Class	Kolmogorov-Smirnov	
		Statistics	Sig.
Student learning outcomes	Pre test experiment	0.230	0.001
	Experimental post test	0.160	0.066
	Pre test control	0.167	0.044
	Post test control	0.205	0.004

The normality test results obtained using the Kolmogorov-Smirnov test for the Pre Test Experiment, Post Experiment Experiment, Pre Test Control and Post Test Control classes in the table produce Sig values. respectively, namely 0.001, 0.066, 0.044, and 0.004. The value has Asymp. Sig < 0.05, it can be concluded that the value is not normally distributed. Because if one of the values of Asymp. Sig < 0.05 means it is said to be not normally distributed.



2. Mann Whitney Test Results Pre Test Scores for Control Class and Experimental Class

Table 2. Mann Whitney Pre Test Table for Control Class and Experimental Class

Student learning outcomes	Mann Whitney	Wilcoxon	Sig.
	390,500	796,500	0.980

The results of the statistical analysis above show a significance value of $0.980 > 0.05$, so H_0 is accepted and H_1 is rejected. This means that there is no significant difference between the control class pre-test and the experimental class pre-test. In this way, data analysis can be carried out by comparing the post test scores of the control class and the experimental class.

3. Mann Whitney Test Results Post Test Scores for Control Class and Experimental Class

Table 3. Mann Whitney Post Test Results for Control and Experimental Classes

Student learning outcomes	Mann Whitney	Wilcoxon	Sig.
	111,500	517,500	0.021

The results of comparing the post test scores of the control class with the experimental class show that the significance value is $0.021 < 0.05$, so H_0 is rejected and H_1 is accepted. This means that there is a significant difference between the post test scores of the control class and the experimental class.

DISCUSSION

This hypothesis test compares the scores before and after the test in the experimental class which uses YouTube video-based science learning media and in the control class which uses conventional learning. The results of the first analysis showed that the initial abilities of students in the experimental class and the control class were the same; there are significant results in the comparison of pre-test scores, namely 0.980 greater than 0.05 , which shows that there is no difference between the two classes, which means that the initial learning results of the two classes are the same or almost the same. The results of the second analysis showed that students in the experimental class and control class had the same final abilities. There is a difference between the two classes, according to the post-test score of the control class and the experimental class, namely $0.021 < 0.05$. This shows that students in the experimental class learned better than students in the control class. This shows that students in class VIII of Padang State Middle School experienced the impact of using YouTube video-based science learning media.

Research conducted by Iwantara shows that the use of YouTube video media in science learning has a significant effect in increasing students' understanding of concepts. The research results show that the use of YouTube video media can help visualize abstract concepts to become more real and concrete, thereby increasing students' ability to understand science material. The animations found in YouTube videos play an important role in this process, as they can help students understand difficult concepts in a more interactive and easy-to-understand manner. Thus, this research shows that the use of YouTube video media can be an effective strategy in improving student learning outcomes, especially in science subjects which require a deeper understanding of concepts (Gayo, 2023; Iwantara et al., 2014).



Research conducted by Amalia shows that the use of YouTube-based learning media has a significant effect on the science learning outcomes of fifth grade elementary school students with theme 7, Kalor material. The research results show that the sig. (2-tailed) is 0.001, which is smaller than 0.05. Thus, it can be concluded that H_0 is rejected and H_a is accepted, which means there is a significant difference between the science learning outcomes of the experimental class and the control class. This shows that the use of YouTube-based learning media has a significant influence on students' science learning outcomes, so it can be used as an effective strategy in improving science learning outcomes (Iwantara et al., 2014).

Research conducted by Oktiana shows that the use of YouTube video media has a significant effect on student motivation and learning outcomes. The results showed that the experimental class's learning motivation increased from 74.47 to 89.63, while the control class increased from 74.87 to 85.40. The independent sample test shows that the sig value is $0.035 < 0.05$, so the first alternative hypothesis (H_a) is accepted, which means that the use of YouTube video media has a significant influence on student learning motivation.

Apart from that, the research results also show that the use of YouTube video media has a significant effect on student learning outcomes. The average score of the experimental class increased from 62.17 to 88.50, while the control class increased from 50.17 to 83.67. The independent sample test shows that the sig value is $0.022 < 0.05$, so the second alternative hypothesis (H_a) is accepted, which means that the use of YouTube video media has a significant influence on student learning outcomes (Juita et al., 2021).

The fourth research conducted by Mamin shows that the use of video tutorial-based learning media in elementary school science courses is effective. The research results show that student learning outcomes exceed 70%, namely 76.95%. This shows that the use of video tutorial-based learning media can improve students' science learning outcomes. Nurul Magfiroh in his research also stated that YouTube videos are very alternative as a learning medium and are able to motivate students because the concepts studied are very interesting for students so that they can improve science learning outcomes for class VIII students at SMP Negeri 2 Sungguminasa, Gowa Regency (Wulandari, 2021; Wulandari et al., 2021).

CONCLUSIONS

Based on research conducted at state junior high schools in class VIII, especially science subjects on light and optical instruments, there is a difference in learning outcomes between the control class and the experimental class with a significant value of $0.021 < 0.05$, which means H_0 is rejected and H_1 is accepted. The results of this research concluded that there was an influence of the use of YouTube video-based science learning media on the learning outcomes of class VIII students.

The use of YouTube-based learning media can increase the effectiveness of science learning for students. Continue to integrate the use of YouTube videos in teaching methods and always carry out regular monitoring and impact evaluation to ensure that learning objectives are achieved optimally.



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