



THE EFFECTIVENESS OF ONLINE LEARNING THROUGH VIDEO-BASED LEARNING IN GEOGRAPHY SUBJECTS ON THE SUBJECT OF THE HYDROLOGICAL CYCLE CLASS X IPS SMA NEGERI 1 WATUBANGA

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Abstract

During the covid-19 pandemic, the learning outcomes of students in class X IPS SMA Negeri 1 Watubangga were still not optimal due to the learning media used, namely LKPD media, so that treatment was needed, namely by applying video-based learning media that could provide opportunities for students to better understand the material presented. This study aims to determine the application of video-based learning media is more effective than LKPD media on the subject of the hydrological cycle of class X social studies students at SMA Negeri 1 Watubangga. This research is an experimental research using nonequivalent control group design. The population of this study were X grade students of SMA Negeri 1 Watubangga with samples, namely X IPS 1 class as the experimental class and X IPS 3 class as the control class, the sample was taken by purposive sampling technique. Data collection techniques used tests before and after treatment. Data analysis used normality test, homogeneity and normalized gain test. The results showed that video-based learning media was more effective than LKPD media. The results of the mann whitney hypothesis test Z value of -1.928 with a significant $0.05 = 0.05$ then the hypothesis H_0 is rejected and H_1 is accepted with the conclusion that there is an average difference between the experimental class and the control class. The results of the gain test in the control class amounted to 0.42 medium category with a percentage of 41.96 interpreted as less effective while in the experimental class amounted to 0.58 medium category with a percentage of 58.10 interpreted as quite effective. The conclusion of this study is that the increase in learning outcomes in the experimental class using video-based learning media is more influential and effective compared to the control class using LKPD media in the learning process.

Keywords: *online learning, video-based learning.*

A. Introduction

Learning in the new normal era is an online learning activity carried out by students due to the COVID-19 pandemic that is happening in Indonesia. All levels of education under the Ministry of Education and Culture of the Republic of Indonesia and under the Ministry of Religious Affairs of the Republic of Indonesia have all been negatively affected (Amalia & Fatonah, 2020). Therefore, the government established a social distancing policy in order to

limit human interaction from the crowd to avoid the spread of the COVID-19 virus. The government replaced learning with digital-based online learning methods (Syarifudin, 2020).

Online learning is learning based on technology where learning materials are delivered electronically to students remotely using a computer network (Fauziyah, 2020). Online learning is an educational innovation that involves information technology in learning. Online learning is a distance education system with a set of teaching methods where teaching activities are carried out separately from learning activities (Mustofa, et al. 2019). Therefore, effective learning activities are needed to help develop children's thinking without ignoring the level of understanding of children according to their developmental age.

The level of understanding of students can be seen from their learning outcomes, so that the basis for considering determining learning outcomes in the use of video-based learning media in this study is because video media can improve the quality of student learning outcomes so that it is used as a reason for student learning outcomes in the use of video media (Hardianti & Asri, 2017). Students can use the senses of hearing and sight in obtaining information about learning materials that can normally be seen and cannot be seen, so that the learning process will not be boring because of the audio-visual media that can be used in learning in the form of movies or videos (Wiastruti et al. 2014).

The ability of video media is considered better and more interesting to help increase low student motivation, this is because using video media can facilitate the delivery of messages and understanding to students (Pranomo & Prihastanti, 2020). Videos can also present interesting events in the real world directly to students, so that students are imagined and can feel the actual events. In accordance with the presentation of videos with events related to real life or students' daily lives so that students are easier to understand the material being taught (Iza, 2014).

Effectiveness is a very important concept because it provides an overview of one's success in achieving goals or the level of achievement of objectives (Azizah, 2016). The success and learning outcomes of students in the learning process require a means to be able to convey material well and interestingly so that it can be understood by students during the COVID-19 pandemic. Technology in learning can be a learning tool, media, and learning resources for students. One of the learning technologies is video media, which has good advantages for the implementation of geography learning.

The utilization of video-based learning media on hydrological cycle material in the learning process will make it easier for students to digest, increase interest in learning and remember the material that has been delivered as well as watching movies, so that students remember the material that has been delivered longer and also easy to remember to understand the material taught. Video in this case has two elements, namely audio and visual, audio is used to describe information verbally while visuals provide the main source or exposure of content in writing or images. Videos present information, illustrate processes, explain complex concepts, manage skills, summarize or extend time, and make changes in attitudes (Putry et al. 2020).

The results of initial observations at SMA Negeri 1 Watubangga, researchers found problems faced by students during online learning. Where students are only given learner worksheets in online learning and are directed to study independently. Therefore, it makes students less understanding of the material presented by the teacher during learning activities and the learning process seems monotonous. In order for the learning process to be more interactive, a medium such as video-based learning is needed which can attract students' attention and help students more easily remember the material that has been conveyed. Based on this, researchers are interested in conducting a study with the title Effectiveness of Online Learning Through Video-Based Learning Geography Subjects on the Subject of the Hydrological Cycle in Class X IPS Students of SMA Negeri 1 Watubangga.

B. Methodology

1. Research Design

This research uses quantitative descriptive research. The use of descriptive quantitative research in this study is expected to provide an overview through the calculation of the data obtained regarding the effectiveness of online learning through video-based learning in geography subjects on the subject of the hydrological cycle. The research method used in this study used an experimental method with a quasi-experimental design research form. This research was conducted at SMA Negeri 1 Watubangga which is located in Watubangga District, Kolaka Regency, Southeast Sulawesi Province, Indonesia.

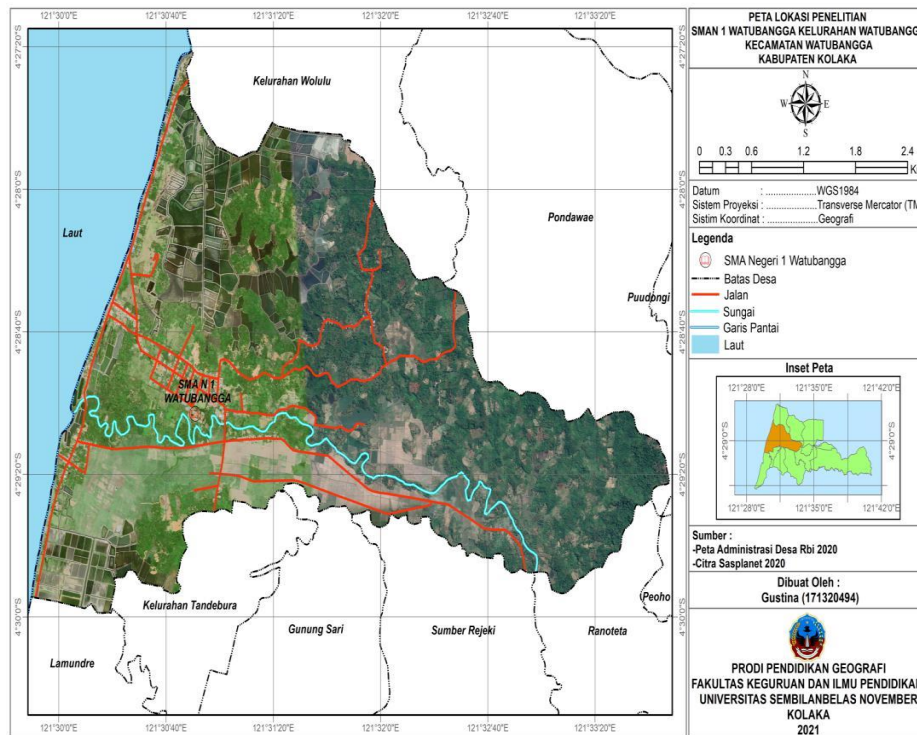


Figure 1. Research location map of SMA Negeri 1 Watubanga.

The population in this study were X Social Studies class students totaling 91 students consisting of 3 classes in the 2020/2021 school year in the even semester. The sample technique used in this study was purposive sampling. Class X IPS 1 totaling 32 students as an experimental group that will be given treatment using learning video media and class X IPS 3 totaling 32 students as a control group that is not given treatment or learning without using learning video media only student worksheets. The sample met the criteria in the study, namely active in the implementation of geography learning on the subject of the hydrological cycle so that it was used as a sample for research. The research design in this study used a non-equivalent control group design which can be presented in table 1.

Table 1. Research design

Group	Pretest	Treatment	Posttest
Eksperimen	O_1	X_1	O_2
Kontrol	O_3	X_2	O_4

Description:

- O_1 : Pretest on the experimental class.
- O_2 : posttest on the experimental class.
- O_3 : pretest on the control class.
- O_4 : posttest on the control class.
- X_1 : class using video-based learning media.
- X_2 : The class used student worksheets without video-based learning media.

2. Instruments

The research instrument used in this study is a learning outcome test which will be analyzed by analyzing validity, reliability, difficulty level, and differentiability. The learning outcomes test is intended to measure the level of student mastery of the material before experiencing treatment and the level of student mastery obtained after experiencing the learning process within a certain period of time. This learning outcome test is in the form of pretest and posttest question sheets which are used as evaluation instruments in research. The pretest and posttest questions used are descriptive questions. The following is a lattice of pretest and posttest questions on student learning outcomes on hydrological cycle material in table 2:

Tabel 2. Grids of instruments for preparing test questions

Basic Competency	Indicators	Number of Questions	
		Pretest	Posttest
Analyze the dynamics of the hydrosphere and its impact on life.	Explain the meaning of the hydrological cycle.	5	5
	Explain the process of the hydrological cycle.	5	5
	Identify the dynamics of the hydrosphere and its impact on life.	5	5

3. Technique of Data Analysis

Knowing the improvement of student learning outcomes before and after learning is done through inferential analysis, namely normality test, homogeneity test, and gain test (g). The Normalized Gain Test was conducted to determine how much the students' learning outcomes improved after treatment. This increase is taken from the pretest and posttest scores obtained by students. The steps to calculate the gain score are as follows.

- a. Calculate the gain score with the following formula:

$$g = \frac{S_{post} - S_{pre}}{S_{Max} - S_{pre}}$$

Description:

g : gain

S post : Score posttest

S pre : Score pretest

S max : Score maximal ideal

- b. Categorizing the gain score based on the gain category obtained.

Table 3. Categorizing the gain score

Interval gain score (g)	Category
$g \geq 0,7$	High
$0,3 \leq g < 0,7$	Medium
$g < 0.3$	Low

(Reference Source: Hake, 1999)

Table 4. N-gain effectiveness interpretation

Percentage (%)	Interpretation
> 76	Effective
56 – 75	Quite effective
40 – 55	Less Effective
< 40	Not Effective

(Reference Source: Siswandi, 2019)

C. Findings and Discussion

1. Findings.

Description of Control Class Learning Outcome Data

This study obtained data from pretest and posttest results. Pretest is a test given to students before treatment, while posttest is a test of ability given after treatment. The following is a table of pretest and posttest results in the control class.

Table 4. Learning outcomes of control class X IPS 3

Control Class		
Sample Quantity	32	
	Pretest	Posttest
Average	49,69	72.19

Highest score	70	90
Lowest score	30	50

Source: research results (2021).

The average pretest score or before being given treatment in the control class obtained an average score of 49.69 and obtained an average posttest score or after being given treatment, a score of 72.19 was obtained, so in this case the learning outcomes in the control class have increased.

Description of Experimental Class Learning Outcome Data

After conducting research on the experimental class, the researchers obtained data on the results of the pretest and posttest. The experimental class is a class that is given treatment using video-based learning media in the learning process of geography subjects. The learning outcomes of the experimental class are presented in table 5.

Table 5. Learning outcomes of experimental class X IPS 1

Experimental Class		
Sample Quantity		32
	Pretest	Posttest
Average	53,4	81,6
Highest score	80	90
Lowest score	30	70

Source: research results (2021).

The data in the table above, shows that the average pretest score in the experimental class was 53.4 and the average posttest score was 81.6, so in this case there was an increase in learning outcomes that increased in the experimental class whose learning process used video media.

The student learning outcomes in the control class and experimental class above can be seen that the increase in student learning outcomes in the control class obtained 72.19 and in the experimental class obtained 81.6. So it can be concluded that there is a significant difference in student learning outcomes between the control class and the experimental class.

Description of Inferential Analysis Results

1) Normality Test

The results of the normality test of student pretest and posttest data in the experimental class and control class can be shown in table 6 below.

Table 6. Kolmogorov Smirnov normality test results

	Class	Statistic	Df	Sig
Student learning outcomes	Pretest eksperimental	.175	32	.014
	Posttest eksperimental	.211	32	.000
	Pretest control class	.270	32	.000
	Posttest control class	.256	32	.000

Source: research results (2021).

The results of data analysis displayed in table 6 show that the pretest and posttest values in the control class and experimental class are smaller than the value of $\alpha = 0.05$, so it can be concluded that the learning outcomes data are not normally distributed, therefore the next step is to test the hypothesis with a nonparametric test, namely the mann-whitney test.

2) Mann-whitney Test

The mann-whitney test is used to determine the difference in performance between two groups on non-normal data. The results of the mann-whitney test in tables 7 & 8 below

Table 7. Mann-whitney test results

	Class	N	Mean Rank	Sum of Ranks
Student learning outcomes	Posttest eksperimental	32	36.81	1178.00
	Posttest control class	32	28.19	902.00
	Total	64		

Source: research results (2021).

Table 8. Statistical Test

	Student learning outcomes
Man-Whitney U	374.000
Wilcoxon W	902.000
Z	-1.928
Asymp.Sig. (2-tailed)	.05

Source: research results (2021).

Based on the results of the mann-whitney statistical test analysis, the mean rank value of the experimental class is greater than the control class, namely 36.81 while the control class is 28.19, so it can be said that the learning outcomes of classes using video-based learning media are better than classes that do not use video-based learning media while through hypothesis testing, the Z value is -1.928 with a significant $0.05 \leq 0.05$, so the H_0 hypothesis is rejected, so the conclusion is that there is an average difference between the experimental class and the control class.

3) Gain Test

The calculation of gain is done to determine the increase in student learning outcomes after treatment using both learning models applied in experimental and control classes. After the gain test is carried out, the gain value is normalized to determine the category of each increase in student learning outcomes. The results of the gain calculation are as follows:

Table 9. Control class gain test results

	Control Class
Highest N-gain	80.00
Lowest N-gain	-33.33
Average N-gain	0.42
Percentage	41.96
Category	Medium
Interpretation	Less Effective

Source: research results (2021).

Table 10. Experimental class gain test results

	Eksperimental class
Highest N-gain	85.71
Lowest N-gain	0
Average N-gain	0.58
Persentase	58.10
Category	Medium
Interpretation	Quite effective

Source: research results (2021).

The results of the gain test in the experimental class obtained an average N gain of 0.58 with moderate criteria and a percentage of 58.10 interpreted as quite effective, while the gain test in the control class averaged N gain of 0.42 moderate category with a percentage of 41.96 interpreted as less effective. This means that the increase in learning outcomes in experimental classes that use video-based learning media in the learning process is quite effective compared to control classes that do not use video media in the learning process.

2. Discussion

This study is an experimental research that aims to determine whether online learning through video-based learning media is effective or not on student learning outcomes in geography subjects with the subject matter of the hydrological cycle. Before conducting research, researchers conducted instrument trials in the form of validity tests, instrument reliability, question difficulty levels and question differentiability. After testing the instrument, the researchers conducted research to collect pretest and posttest data. After that, it is continued by tabulating the average scores of students in the control class and experimental class, then testing normality, homogeneity, and normalized gain to determine whether there is an influence or not on student learning outcomes.

After calculating the data analysis in the study, the research results in the control class obtained the average pretest results of students were 49.69 and the posttest results were 72.19. While the results of research in the experimental class using video-based learning media obtained an average pretest result of 53.4 and a posttest result of 81.6. So it can be concluded that student learning outcomes in the experimental class are higher than the control class.

The results of the mann-whitney test statistically on the Z value of -1.928 with a significant $0.05 = 0.05$ so that the hypothesis H_0 is rejected, so the conclusion is that there is an average difference between the experimental class and the control class. The mann-whitney test results show the comparison between the control class and the experimental class. Then proceed with calculating the N gain to determine whether the learning is effective or not in the class that uses video-based learning media in the experimental class. The next stage is to test the gain in the experimental class and control class, in the experimental class, the average N gain is 0.58 which is in the medium criteria with a percentage of 58.10 with a fairly effective interpretation, while the gain test in the control class had an average N gain of 0.42 in the medium category with a percentage of 41.96 interpreted as less effective.

Research using video-based learning media is said to be more effective because it is able to foster student curiosity and skills and can present geography material on the subject of the hydrological cycle more concretely so that it is easily understood by students. Kurniawati et al (2013) explained that learning using video-based learning media can make students understand an object without having to present the object directly to students, besides that video media can attract students' interest and attention so that students are more enthusiastic and active in participating in the learning process.

Video media used in online learning is able to provide better learning stimuli for students because with video media students can remember learning material longer (Febriani, 2017). In addition, the use of video media in the learning process can also make it easier for teachers to convey learning material so that students easily understand the material being taught (Ramadinata et al. 2020). Learning using video media can provide a fun and not boring atmosphere for students so that students' attention is focused on videos that contain information about learning materials, video media can meet different learning characteristics. (Sofyan, 2017), In addition, the animation and various features contained in the learning video media can help students understand the learning material well. (Hariyadi et al. 2022). Learning outcomes in geography learning on the subject of the hydrological cycle using video media are better and quite effective compared to classes that use student worksheet media.

D. Conclusion

Based on the results of the analysis and discussion that has been carried out, it can be concluded in accordance with the objectives and formulation of the problem, namely the results of the mann whitney test analysis produce a mean rank value of the experimental class of 36.81 while the control class is 28.19. Then the experimental class is greater than the control class, so it can be concluded that the learning outcomes of the class using video-based learning are better than the class using the student worksheet media. Meanwhile, through the mann whitney hypothesis test, the value is -1.928 with a significant $0.05 = 0.05$, so the hypothesis is rejected with the conclusion that there is an average difference between the

experimental class and the control class. The gain test results aim to measure the increase in learning outcomes before and after learning. The average N gain result in the control class was 0.42 in the medium category with a percentage of 41.96 interpreted as less effective while the average N gain in the experimental class was 0.58 in the medium category with a percentage of 58.10 interpreted as quite effective. This means that the increase in learning outcomes in the experimental class using video-based learning media is more influential and effective compared to the control class using student worksheet media in the learning process.

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