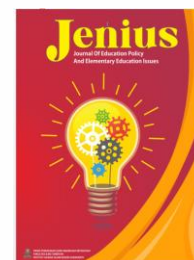




Jenius: Journal of Education Policy and Elementary Education Issues

<https://ejournal.uinsaid.ac.id/index.php/jenius>



Learning Video in Mathematics Online Learning: Study of the Effectiveness in Improving Learning Outcomes

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ARTICLE INFO

Article History

Received: 6 June 2022

Accepted: 20 December 2022

Published: 27 December 2022

Keywords:

Kinemaster Media; Learning Outcomes; Online Learning

ABSTRACT

This research is motivated by students' low mathematics learning outcomes during the Covid-19 pandemic. The purpose of this study was to reveal the effectiveness of using KineMaster Video to improve online mathematics learning outcomes for Madrasah Ibtidaiyah students. The type of research used is a quantitative Quasi Experiment. This research was conducted in the even semester of the 2021/2022 academic year. This research used all MIM Ngadirejo students as the population, while for the sample, it used Class V students. Respondents for the experimental class were 13 students using KineMaster video media, and for the control class, 12 students were using PowerPoint. The research instrument used was multiple choice questions consisting of 10 questions on addition and subtraction of fractions. The first data analysis is a prerequisite test with a normality test and homogeneity test. Further data analysis was carried out by testing the research hypothesis using an independent sample t-test for the pretest scores of both classes and post-test scores for both classes. The results showed that using KineMaster video media improved the learning outcomes of fifth-grade students at MI Muhammadiyah Ngadirejo compared to the control class, which only used power points.

INTRODUCTION

One of the countries affected by the coronavirus is Indonesia. The existence of this pandemic affects various aspects of life, namely the teaching aspect. There has been a change in the teaching system, which causes learning to be carried out online (Swastika & Lukita, 2020). The pandemic resulted in the decision to reform the way of teaching in Indonesia. The Minister of Education and Culture of the Republic of Indonesia announced the rules for online teaching and learning activities on 24 March 2020, referring to the implementation of learning rules during the emergency period of the spread of Corona Virus Disease (Surat Edaran Nomor 4 Tahun 2020).

However, online learning can sometimes lead to boredom for students (Novialistra *et al.*, 2022). So teachers must create an atmosphere of interactive learning and fun that can improve learning outcomes. Students will feel bored and lazy doing assignments when the learning process is monotonous because of the lack of interaction in online learning. Learning that is not carried out face-to-face has a negative effect on student learning outcomes. Teachers' face-to-face learning activities can pay attention and supervise students directly, whereas, in online learning, the teacher is constrained to supervise students fully. This condition causes a decrease in student interest in learning. Online learning has also been carried out at the madrasah Ibtidayah level and has been going on for a long time which has caused learning loss. Learning loss occurs when academic setbacks occur due to gaps (Pratiwi, 2021). The gap in question is reduced interaction in learning activities (Yahzanun *et al.*, 2022).

Hidayat *et al.* (2020) state that online learning is a learning activity that automatically demands independent learning. According to Rahmawati (2016), independent learning is structured by delivering student learning material, providing guidance and instructions, and monitoring student learning success (Rahmawati, 2016).

According to Yensy's statement (2020), a learning system that can motivate students is fun learning and can increase students' creativity. To make a positive and active response to students, both in terms of mastery of subject matter, students ask actively, and so on, something fun that can attract students is needed. Especially for Elementary-level students, it is easy to get bored with monotonous learning.

According to Mardhiah & Said (2018), materials are needed to find out, at least reduce, the boredom of online learning (Mardhiah & Said, 2018). One of them is using learning media. The media presents a form of visual image that the teacher uses to convey teaching material to students to achieve a lesson's objectives. During the online learning period, suitable media is needed, adapted to teaching materials and adapted to the needs of students so that the media can help students more easily understand the subject matter. The media is expected to help increase the acceptance of material by students (Nurrita, 2018).

Media can function to convey intent or purpose (Khaira, 2020). Video media is a good choice for teachers to use during online learning because video media is accessible for today's children to understand and understand and can foster the attractiveness of students who tend to prefer something new in learning. According to Tafonao (2018), learning media must get the teacher's attention. This is because it will determine the success of the learning process. According to Kusuma & Hamidah (2020), teachers must understand online learning media, such

as making learning videos to overcome student learning difficulties.

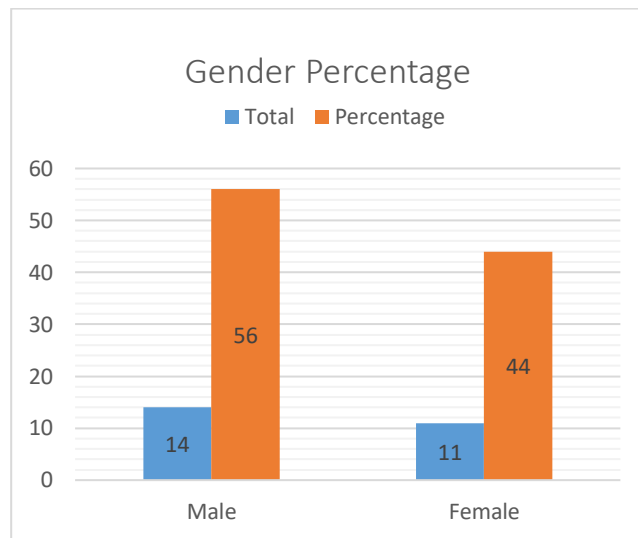
Video media is the most appropriate and accurate learning media for conveying messages and will significantly help students' understanding (Yudianto 2017). In Central Java, many learning video media have been developed. This study was carried out by Supryadi et al. (2013) that video media can cover the needs of students with different learning styles. Video media can present physically impossible events to bring to class so that students can learn more about these events. Student learning activities using video media can provide situations and sunny conditions, and students are more able to focus/concentrate on the material in learning videos. With video learning media, teaching and learning can be effective and efficient. Other research states that video as a learning medium positively contributes to student learning outcomes (Irfan et al., 2016). According to Ridha et al. (2021, many applications can be used in making video media, including the Macromedia Flash, Kine Master, Camtasia Studio and Sparkoll Videoscribe applications.

The success of students in mastering mathematics material becomes an essential thing. However, the reality on the ground, especially in Madrasah Ibtidaiyah, shows the low or lack of learning outcomes in mathematics, where the learning process is carried out online. Based on Daily Test Scores, PTS and PAS scores in Class V students at MIM Ngadirejo were lower when learning online than when learning face to face. Mastery of fractional material before the pandemic was, on average better than online. Therefore, teachers need to use the right media in the learning process, such as the Kinemaster video application, to help students master the math module. This study seeks to test whether the Kinemaster video media applied in the mathematics learning process effectively improves student learning outcomes at Madrasah Ibtidaiyah Muhammadiyah Ngadirejo.

METHOD

This study uses a quantitative method with a Quasi-Experimental research design (Sugiyono, 2015). This research was conducted in the even semester of the 2021/2022 academic year at MIM Ngadirejo. This research used all MIM Ngadirejo students as the population, while the sample used Class V students. The respondents were class V students at MI Muhammadiyah Ngadirejo, with 25 people. The experimental class consisted of 13 students using KineMaster video media, and the control class consisted of 12 students using old media. The experimental category was given treatment with the application of Kinemaster videos and

multiple choice questions, namely ten questions on addition and subtraction of fractions. In contrast, the control category uses PowerPoint and the same questions as the experimental category. Each question has 10 points.



Picture 1. Comparison of the Percentage of Respondents by Gender

Methods and techniques for data collection using online multiple choice test techniques. The first data analysis is a prerequisite test with a normality test and homogeneity test. The normality test was carried out on the pretest and posttest data for the experimental and control classes. Homogeneity test for the pretest of the two classes and the posttest of the two classes. Further data analysis was conducted by testing the research hypothesis using the free sample t-test or independent samples t-test. The independent sample t-test for the pretest data for both classes (experimental and control) functions to determine whether there are differences between the two classes. Furthermore, there was an independent sample t-test for posttest data from the experimental and control classes. Data analysis was carried out with the help of the SPSS 23 application.

Table 1. Indicators of Learning Outcomes Test

Indicator	Number
Students can correctly calculate the addition of fractions with different denominators	1, 5, 9
Students can correctly calculate the subtraction of fractions with different denominators	2, 6
Students can correctly calculate the addition and subtraction of fractions with different denominators	3, 7
Students can calculate the addition of mixed fractions correctly.	4, 8, 10

The researcher used the Quasi-Experimental method on the sample doing the test with one group pretest-posttest as shown in Table 2.

Table 2. Quasi-Experimental Research Design

Category	Pretest	Treatment	Post-test
Experiment	x1	Y	x2
Control	x3		x4

Notes:

- x1 : Pretest for the experimental class
- x2 : Posttest for the experimental class
- x3 : Pretest for control class
- x4 : Posttest for control class
- y : Treatment

After the respondents were given the treatment above, the experimental results were grouped in Table 3.

Table 3. Learning Achievement Score Details

Learning Outcome Score	Category
< 60	Very less
61 - 74	Less
75 - 80	Enough
81 - 90	Good
91-100	Very good

RESULTS AND DISCUSSION

The pretest and post-test value data before the hypothesis test is carried out. It is necessary to test the prerequisite analysis in the form of the normality test for the experimental and control classes, the homogeneity test for the two classes and the free sample t-test for the pretest for both classes. The normality test results for the experimental class's pretest were $L_{obs} 0.122 < L_{table} 0.234$ at a significance level of 0.05, meaning that the sample came from a population with a normal distribution. At the same time, the pretest value for the control class was $L_{obs} 0.1765 < L_{table} 0.242$ at the significance level 0.05, which means that the sample comes from a normally distributed population. The normality test results for the posttest experimental class were $L_{obs} 0.1587 < L_{table} 0.234$ meaning the population was normal, while the posttest value for the control class was $L_{obs} 0.1867 < L_{table} 0.242$ meaning the population was also normal.

Another requirement that must be met in the t-test is that the population must be homogeneous. The results of the homogeneity test with 23 degrees of freedom are for the pretest value of the experimental class and control class $F_{count} 0.877 < F_{table} 2.7875$, then the variances of the two samples are homogeneous. Whereas for the posttest value of the experimental class and control class $F_{count} 0.135 < F_{table} 2, 7876$, then both samples are

homogeneous.

Test independent sample t-test on the pretest value of the experimental and control classes to get the result that $t \text{ count } 0.387 < t \text{ table } 2.069$, then H_0 is accepted and H_a is rejected. The results were less effective based on the t-test for the pretest of the two classes before using Kinemaster media. The free sample t-test is continued for the experimental and control classes' post-test data. The results of the calculation of the free sample t-test for the experimental and control classes' post-test data are $t \text{ count } 2.769 > t \text{ table } 2.068$, which means H_0 is rejected, and H_a is accepted. This result means that learning video media Kinemaster is more effective than conventional media.

Improving Student Learning Outcomes in Learning Mathematics

According to Sudjana (2011), Learning outcomes are abilities that students must have after they receive their learning experience. Based on the research that has been done, the researchers revealed that the experimental class that used KineMaster videos experienced an increase in learning outcomes in Mathematics compared to the control class that used power points. The scores for the mathematics learning outcomes of the experimental class and the control class are described in Table 3 and Table 4.

Table 3. Mathematic Learning Outcome in Experiment Class

No	Name	Gender	Age (Year)	Pretest	Posttest
1	AAN	L	12	30	80
2	ABS	L	11	70	90
3	AKA	L	11	90	100
4	AAF	P	11	60	90
5	FWA	L	11	70	90
6	FAZ	L	12	60	90
7	GFAA	L	12	90	100
8	GSP	L	11	40	80
9	IS	L	12	60	70
10	NAH	P	11	40	80
11	NAP	P	11	80	100
12	RM	L	11	90	100
13	TA	L	12	100	100

Table 4. Mathematic Learning Outcome in Control Class

No	Name	Gender	Age (Year)	Pretest	Posttest
1	AWH	L	11	80	90
2	APP	L	12	80	90
3	AANR	P	12	90	90
4	CMPM	P	11	30	40
5	FAS	P	12	30	60
6	HA	L	11	70	80
7	KNS	P	11	60	60

8	MFA	L	12	60	70
9	PANF	P	12	60	80
10	RDS	P	12	30	50
11	SAP	P	12	90	90
12	SAH	P	11	90	90

The posttest means score in the experimental class was 96.15. Meanwhile, the post-test mean score for the control class was 74.17. This result shows that teaching and learning using KineMaster-based video has a significant influence on the achievement of students' success. The average score is shown in Table 5 below. The pretest values for the experimental class and the control class were almost the same. This result shows that the characteristics of the respondents for the experimental and control classes are almost the same.

Table 5. The Average Score of Students' Mathematics Learning Achievement

Class	Pretest Average	Posttest Average
Experiment	67,692	96,15
Control	64,167	74,17

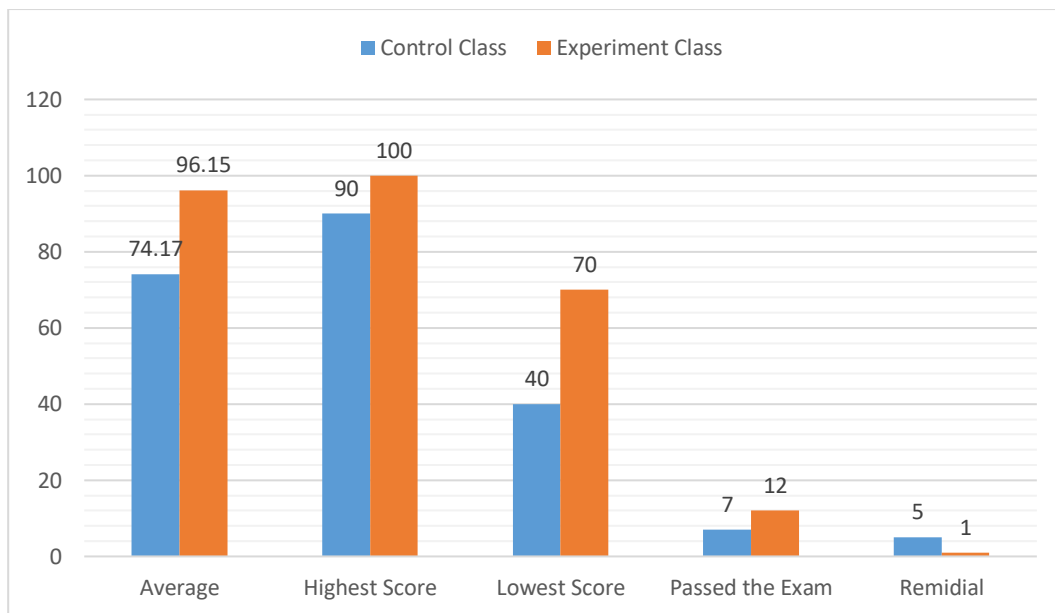
Applying Kinemaster videos in the Mathematics learning process can improve student learning outcomes. The results of this research are also relevant to previous studies, which will be described as follows. The research conducted by Guswiani et al. (2018) in his article which reveals that video media has a significant influence on student learning achievement. Research by Miftahussurur dan Pramono (2016) shows increased student learning outcomes after using video media. Using video in the teaching process will make it easier for students to understand the material's content rather than just using the old/lecturing method.

Indriani & Pangaribuan (2020), in their research conducted at the Muhammadiyah 05 Private Middle School in Medan, said that there was an increase in the ability to write procedural texts after applying video media in the teaching process. Fourth, audio-visual media based on the Kinemaster application is effective compared to conventional media in class IV students at SDN 105360 Jambur Pulau Village, Perbaungan District (Dwi & Alfaroby, 2020). In addition, Kinemaster-based learning is feasible/appropriate and practical for integrated thematic learning (Amelia & Arwin, 2021).

Kinemaster media applications can attract sympathy and make it easier for students to receive or understand lessons (Asmarita & Mudinillah, 2022). In addition, students' Arabic vocabulary mastery can be improved through using Kinemaster-based audio-visual media (Rochman & Nashoih, 2020). Research results by Qoirunnisa (2021) show increased learning outcomes in Arabic subjects using audio-visual media based on the WhatsApp application.

Use of Kinemaster Video Media on Student Learning Outcomes

The success of this research showed an increase in student learning outcomes obtained after observing students' average scores, the highest and lowest scores obtained after teaching materials, and the level of completeness after providing KineMaster-based video materials. The data collected in this research was carried out online using WhatsApp. This research aims to describe students' understanding of the material and student learning outcomes. The analysis results show that learning outcomes in the experimental class using KineMaster-based video media have increased learning achievement, as explained in Figure 2.



Picture 2. Increase in MI Muhammadiyah Ngadirejo Students' Learning Achievement in the Experimental and Control Classes using the Kinemaster Application.

Figure 2 above shows that there is a significant influence from the experimental category and the control category. The average score of the experimental category is better than the control class. The experimental category has the highest score of 100 and the lowest of 70. The control class scored the highest at 90 and the most minor at 40. The number of complete experimental categories is 92.31%, and the control category is 58.33%. Remedial students were reduced to 7.69% from the experimental category. Based on the scores described above, it can be concluded that KineMaster-based video media significantly influences student learning outcomes in class V MI Muhammadiyah Ngadirejo, Watubonang, Tawang Sari, Sukoharjo.

The results obtained by the researchers above follow some of the research results of previous researchers, including research conducted by Busyaeri et al. (2016) shows that the

achievement of students using learning videos has increased due to the influence of audio-visual videos used by educators in presenting lesson content. Research conducted by Gusmania and Wulandari revealed that the use of video media could significantly influence learning outcomes/grades of class VIII students of SMPN 20 Batam (Gusmania & Wulandari, 2018). Furthermore, research conducted by Ilham Baharuddin showed an increase in the average score given by learning video media (Baharuddin, 2014).

The results of Purwandari's research stated that the average score before and after the test showed an increase in the learning achievement of the experimental group. The experimental class obtained learning achievement through assessment sheets before and after the test. The results before the test were 7.14, and after the test was 9.14, with an average score of 8.14. Meanwhile, students in the control group who used conventional methods in providing teaching materials produced a pre-test score of 7.17, a post-test score of only 8.17 and an average of 7.67 (Purwandari, 2017). Research by Jusmiana et al. explains if there is a better and more visible effect on the achievement of student learning outcomes at SMPN Libureng Bone. Look at the average value after the students are given a test is 65.60% or are in the less group in the control group. The average value after the test in the good category in the experimental group is 75.71% (Jusmiana et al., 2020). Khaira explained in her article that the use of learning videos in teaching and learning could make it easier for students to understand learning (Khaira, 2020). In her research, Ilmiani et al. (2020) show that using audio-visual learning aids can improve class X learning outcomes.

The conclusions from the results of this research reveal that learning activities will be more effective when using KineMaster audio-visual aids. Several educators expressed their agreement that the use of audio-visual aids is ideal for use, especially in teaching materials that use activities in the laboratory or field practice. Audio-visual aids are one of the applications that students are interested in and support students to be more diligent in learning whenever and wherever.

The results of research conducted at MI Muhammadiyah Ngadirejo revealed that video lessons could increase learning achievement, reduce boredom during distance teaching and learning activities, and make students more enthusiastic. The Kinemaster application, a type of audio-visual media, is very effectively used in learning mathematics in the experimental class compared to the control class, especially in understanding fractional material in class V MI Muhammadiyah Ngadirejo. The results of the t-test evidence this at a significant level of 5%, namely $t_{count} > t_{table}$ or $2.769 > 2.068$, so H_a is accepted and H_o is rejected.

CONCLUSION

The pretest values for the experimental and control classes were 67.692 and 64.167, while the posttest values for the experimental and control classes were 96.15 and 74.17. The study results show that using KineMaster video media can improve student learning outcomes compared to conventional media in online mathematics learning. It is hoped that the following research will be carried out on more significant subjects and populations, such as schools and broader areas, so the results can be generalized. This instrument can be developed more specifically in the affective and psychomotor domains so that learning outcomes are maximized.

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