

The effect of interactive learning video media aided by Edpuzzle toward student learning

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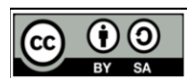
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ABSTRAK

Belum adanya media pembelajaran yang memadai, di mana sekolah hanya menggunakan lembar kerja siswa berupa kertas buram ditengarai menjadi salah satu penyebab rendahnya hasil belajar siswa. Hal ini didukung dengan hasil wawancara salah satu guru Matematika dan beberapa siswa. Tujuan dari penelitian ini untuk menganalisis pengaruh penggunaan media video pembelajaran interaktif berbantuan Edpuzzle terhadap hasil belajar siswa. Penelitian ini menggunakan quasi eksperimen dengan pendekatan kuantitatif. Wawancara, dokumentasi, dan tes digunakan sebagai metode pengumpulan data. Teknik random sampling merupakan teknik pengambilan sampel pada penelitian ini. Hasil uji hipotesis menunjukkan bahwa penggunaan media Edpuzzle berpengaruh pada hasil belajar siswa. Kontribusi penelitian ini yakni media video pembelajaran interaktif berbantuan Edpuzzle dapat digunakan sebagai alternatif sumber belajar Matematika.

ABSTRACT

The lack of adequate learning media, where schools only use student worksheets in the form of opaque paper, is suspected to be one cause of low student learning outcomes. This is supported by the results of the interviews with one Mathematics teacher and several students. The purpose of this study was to analyze the effect of the use of Edpuzzle-assisted interactive learning video media on student learning outcomes. This research uses quasi-experiments with a quantitative approach. Interviews, documentation, and tests were used in the data collection method. Random sampling technique is the sampling technique of this study. The results of the hypothesis test showed that the use of Edpuzzle media affects student learning outcomes. The contribution of this research is that interactive learning video media assisted by Edpuzzle can be an alternative source of learning Mathematics.



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INTRODUCTION

Recently, there are still a great number of schools applying conventional methods in which learning is not student-centered; learning that occurs is only knowledge transfer activities from teachers to students, resulting in no interaction in the learning process, and it brings monotonous

and unpleasant learning. This is supported by [Saparwadi \(2016\)](#) who claimed that using conventional methods tends to make students bored quickly and lack interest in learning, making them not achieve the score over the minimum completeness criteria. Moreover, [Adila \(2017\)](#) also argued that using lecture method makes students passive, so that it becomes one cause of low outcomes in learning. In line with it, [Pamungkas & Koeswanti \(2021\)](#) shared the same idea.

Teacher's role is to make the learning process fun and appealing by using appropriate learning strategies, such as models, methods, and learning media. Teachers can use some methods that make the class and learning process interactive to attract the student's interest and make them reciprocate, and make the class not monotonous. [Pamungkas & Koeswanti \(2021\)](#) averred that using learning media would be more meaningful if it's used in the learning process as a support for learning; accordingly, students are more eager to participate in their learning, and they can understand the material conveyed by the teacher clearly.

Regarding the result of interviews with Mathematics teachers at schools, the absence of learning media at schools is one of the causes of low student learning outcomes. He also argued that the school only provided worksheets with faded paper which was not that interesting and that teacher needs brilliant media. The results of interviews with students also stated that students easily find the books provided by the school a bore. The teacher only comes and explains on the blackboard or commonly known as the lecture method. Students also have difficulty studying independently at home due to a lack of learning media.

Using learning media is an alternative that can increase student learning outcomes. The researcher prefers to choose to use interactive learning video media, since it is believed to be able to foster student interest in learning, resulting in an improve in the student learning outcomes. It is similar with the research conducted by [Harsiwi & Arini \(2020\)](#) which discovered that students can be motivated to increase their learning accomplishment by using the learning model with interactive learning media (swf videos). In accordance with this study, research by [Prastica et al. \(2021\)](#) also concluded that there was an effect of using instructional video media on learning outcomes in Mathematics. In addition, a study conducted by [Dewi & Rimpiati \(2016\)](#) proved that there were significant differences in students' critical thinking skills between those who used interactive learning media and those who used conventional methods.

Several studies above prove that using interactive learning video media has a good impact on student learning outcomes; choosing to use interactive learning video media, accordingly, is the best alternative. In that way, the researcher decided to use a web called Edpuzzle since it is a web-based tool that teachers can use to make learning videos more interactive by inserting questions or quizzes in the video so that there is feedback from the video user. In the opinion of [Abou Afach et al. \(2018\)](#), with the help of the online platform Edpuzzle, teachers can choose which films their pupils can view and study at any time. With Edpuzzle, teachers can access a variety of videos from various educational websites, like TED Talk, Khan Academy, YouTube, and others, that have been categorized. Edpuzzle is an excellent tool for students since it enables embedding of questions within videos, allowing them to interact with videos while they are being viewed [Orcos Palma et al. \(2018\)](#). Additionally [Amaliah \(2020\)](#) argued that Edpuzzle is a tool or medium that all teachers may use to develop engaging and interactive video lessons and materials from a variety of educational video sources, including YouTube, Khan Academy, and Crash Course. Teachers may simply make interactive learning films that monitor student understanding with Edpuzzle. By choosing a video, trying to pose aimed analytical questions, and monitoring student accountability and completion, any video can be turned into a lesson. In addition, teachers can find out if their students have watched the video. Moreover, Edpuzzle has been used to teach scientific concepts, for example in solving problems in polymeric materials ([Heliawaty & Rubini, 2020](#)), as well as in biochemistry laboratories ([Shelby & Fralish, 2021](#)).

In line with that, [Hidayat & Praseno \(2021\)](#) revealed that Edpuzzle learning media is a website resource that allows the use of video clips to support learning. Teachers can find and use content already available on top education channels such as YouTube, Khan Academy, TED Talks, National Geographic, and Vimeo on Edpuzzle. Therefore, to make interactive videos, this web is the best solution as by using this web students can interact and provide feedback so as to make the learning process fun and attracting interest and motivation to learn. As what has been stated

by Sugestiana & Soebagyo (2022), learning Mathematics using Edpuzzle is one of the innovations that can foster student interest and motivation to learn. Based on these explanations, this research contributes in the form of innovation to Edpuzzle-assisted interactive learning video media usable in learning to make the learning process interactive, and there will be reciprocity from the use of the media. Accordingly, the purpose of this research was to develop and measure the usefulness of interactive video media assisted by Edpuzzle on student learning outcomes.

METHOD

This research used a quantitative approach – research that begins with data collection, data analysis, and data visualization involving a great numbers (Siyoto & Sodik, 2015). The study attempted to ascertain how using interactive video learning materials aided by Edpuzzle affects student learning results. Furthermore, the form of this design is somewhat similar to the Pretest-Posttest Control Group Design, with the control group and the experimental group not randomly chosen in the researcher's quasi-experimental Nonequivalent Control Group Design (Sugiyono, 2019). Moreover, two variables of this study are the dependent variable and the independent variable. In this study, the independent variable is the interactive learning video assisted by Edpuzzle, while the dependent variable is student learning outcomes.

The subject in this study was grade 8 of Mts Ma'arif Ambulu. The sample was taken using a random sampling technique, in which the population was deemed homogeneous or the same, so that three classes were randomly selected. They were class VIII A as the experimental class, class VIII B as the control class, and class VIII F as the trial class. To collect supporting data for this study, several instruments were used. They were in the form of documentation and tests. The test was to find data regarding students' learning achievement with the aim of knowing the level of students' understanding of the material taught. Data analysis was carried out to answer the focus of study and hypothesis testing. For more information about hypothesis analysis in this study, see Figure 1.

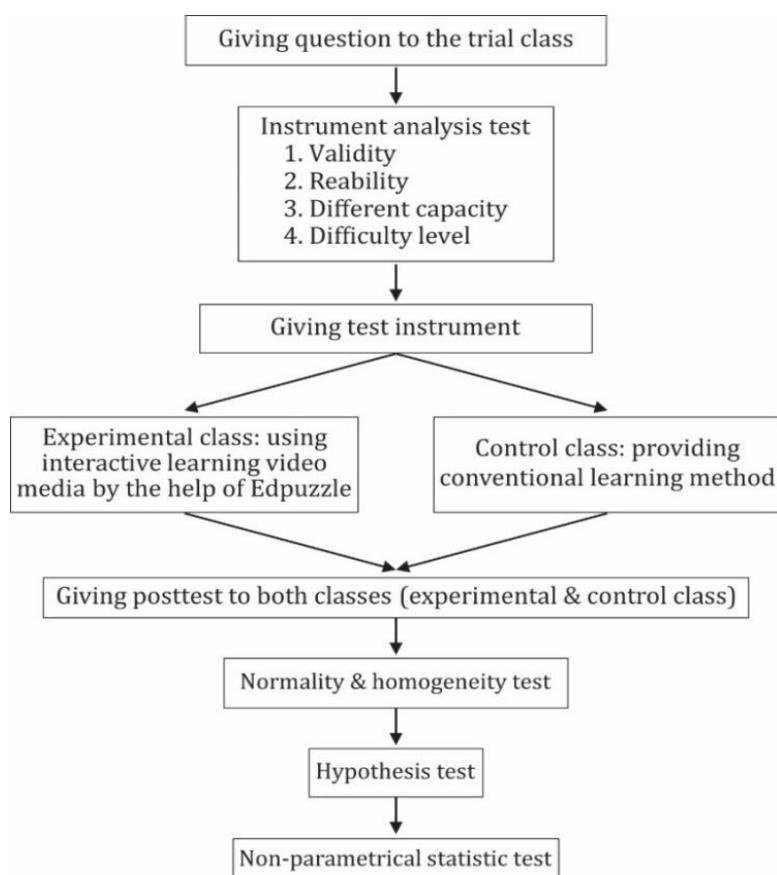


Figure 1. Research design

The data analysis method in this study led to the testing associative hypothesis to determine the relation/influence between the independent variable and the dependent variable. It can be seen in Figure 1, done before conducting research in the experimental class and control class. Test questions were given to class VIII F with twenty-five questions later analyzed using instrument analysis in the form of validity, reliability, discriminating power, and difficulty level tests. After that, good, valid, and reliable questions were selected as test instruments (pretest and posttest). The next was doing a pretest to the experimental class and control class to figure out the students' initial abilities. The upcoming step was applying interactive learning video media assisted by Edpuzzle to the experimental class and providing conventional learning to the control class. After that, the posttest or final test was given to both classes.

The normality and homogeneity tests were also carried out to determine the parametric statistical analysis to test the hypothesis. The ordinarieness test is a method used to see if the information comes from a population that is typically dispersed or is in typical dissemination. The modus, mean, and median are located in the middle of the normal distribution, which is a symmetrical distribution (Nuryadi et al., 2017). The normality test used was the Kolmogorov-Smirnov test with the help of IBM SPSS version 24. On the contrary, the homogeneity test is used to learn whether several population variants are similar. Thus, this test was conducted to find out the difference in variance between two or more groups, whether or not they have the same variance (homogeneous). This homogeneity test used Levene's test with the help of IBM SPSS version 24.

Furthermore, knowing whether the population is normally distributed and homogeneous, it can be determined that parametric statistics will be used. In the event that it is normal and homogeneous, it uses parametric statistical tests. According to Sugiyono (2019), using parametric statistics requires several assumptions, one of which is that the data must be normally distributed and homogeneous, while non-parametric tests do not require many assumptions, like the fact that the data does not have to be normally distributed. So if it is not normal, a non-parametric statistical test is used.

RESULT

Based on the research objectives, learning media has succeeded in providing some influences on student learning outcomes. This is tangible in the results of tests conducted. Before the test was given to students, the researcher conducted a question validation test, where out of twenty-five questions, there were only ten questions that were declared valid to be used in the pretest and posttest. Furthermore, the pre-research hypothesis analysis test was carried out, namely normality and homogeneity in Table 1.

From the results of the normality test obtained using the Kolmogorov Smirnov and Shapiro-Wilk tests in Table 1, the Kolmogorov-Smirnov significance value was obtained in the experimental class, namely 0.014 in the pretest and 0.01 in the posttest; while in the control class, the significance value was 0.015 in the pretest and 0.000 in the posttest. For the normality test with Shapiro-Wilk in the experimental class, the significance value was 0.048 in the pretest and 0.000 in the posttest, while the control class obtained a significance value of 0.018 in the pretest and 0.002 in the posttest. Therefore, from the pretest and posttest values of both classes where the significance value is <0.05 , it can be concluded that the classes are not normally distributed in Table 2.

In the normality test using Levene test that obtained significance value of 0,088 meaning $>0,05$, both classes were homogenous. It was found out that after the normality and homogeneity tests were carried out, both classes were not normally distributed or normal distribution; accordingly, hypothesis analysis test will be carried out to recognize the influence of using interactive learning video media with the help of Edpuzzle toward student learning outcomes. Using non-parametric statistic test by Wicoxon test with the help of IBM SPSS application version 24, it is obtained some criteria with hypothetical analysis results are shown in Table 3.

- If the Sig score is $< (0,05)$, H_a is accepted and H_o is rejected
- If the Sig score is $> (0,05)$, H_o is accepted and H_a is rejected

Table 1. Test of normality

| Class | | Kolmogorov-Smirnov ^a | | | Shapiro-Wilk | | |
|----------|------------------|---------------------------------|----|------|--------------|----|------|
| | | Statistic | Df | Sig. | Statistic | Df | Sig. |
| Learning | Pretest_Eks | .180 | 30 | .014 | .930 | 30 | .048 |
| Outcomes | Posttest_Eks | .219 | 30 | .001 | .796 | 30 | .000 |
| | Pretest_Control | .174 | 32 | .015 | .917 | 32 | .018 |
| | Posstest_Control | .243 | 32 | .000 | .875 | 32 | .002 |

A. Lilliefors Significance Correction

Table 2. Test of homogeneity

| Construct and categories | | Levene Statistic | df1 | df2 | Sig. |
|--------------------------|--------------------------------------|------------------|-----|--------|------|
| Learning | Based on Mean | 3.155 | 1 | 60 | .081 |
| Outcomes | Based on Median | 1.797 | 1 | 60 | .185 |
| | Based on Median and with adjusted df | 1.797 | 1 | 54.052 | .186 |
| | Based on trimmed mean | 3.065 | 1 | 60 | .085 |

Table 1. Wilcoxon test

| | Posttest_exp - Pretest_exp | Posttest_cont - Pretest_cont |
|------------------------|----------------------------|------------------------------|
| Z | -4.839 ^b | -5.028 ^b |
| Asymp. Sig. (2-tailed) | .000 | .000 |

Ha : there is an influence of using interactive learning video media with the help of Edpuzzle on student learning outcomes

Ho : there is no influence of using interactive learning video media with the help of Edpuzzle on student learning outcomes

Table 3 shows that the significance value in the experimental class is 0.000; it also happens to the control class, namely with a significance value of 0.000; accordingly, all the more that the significance value is <0.05, the decision making is that Ha is accepted and Ho is rejected. This means that there is an influence of using interactive learning video media with the help of Edpuzzle on student learning outcomes.

DISCUSSION

By comparing student learning outcomes before and after treatment, this associative research seeks to identify the relationship between the independent and dependent variables through data analysis. In this study, learning media in the form of Edpuzzle-supported interactive learning videos serve as the treatment. Researchers chose to use Edpuzzle due to the fact that this is usable as a recent innovation to make learning videos interactive, as suggested by [Sugestiana & Soebagyo \(2022\)](#). One of the innovations in mathematics education is the use of learning media in the form of the Edpuzzle application. Edpuzzle is an interactive video-based learning media that allows teachers or educators to customize learning videos for students.

In the opinion of [Ware \(2021\)](#), Edpuzzle is an e-learning making its users capable of editing and adding some questions to YouTube videos. Additionally, users can also make their own videos and learning materials and use Edpuzzle to make the learning media interactive. Reported from [Mischel \(2018\)](#) the Edpuzzle platform has advantages and disadvantages. The first advantage is that Edpuzzle can improve the distance learning experience of students. The second is that students can see and repeat important information from videos that have been studied. It facilitates students' comprehension of the material. Finally, teachers can easily measure student learning outcomes.

In addition, this research is consistent with previous findings that the use of interactive learning video media can improve student learning outcomes and increase student learning interest, such as research conducted by [Harsiwi & Arini \(2020\)](#) which concluded that overall, learning through interactive learning media (swf videos) can motivate students to improve their learning outcomes. In line with this, research conducted by [Prastica et al. \(2021\)](#) that also

concluded that there was an effect of using learning video media on learning outcomes in Mathematics in class IV elementary school.

Using interactive learning video media has an effect on student learning outcomes for the simple reason that the media is not only a learning video, but there are also questions inserted in the video; as a result, there is reciprocity from students as video users, which makes learning more fun. [Suharwati \(2014\)](#) has proven that learning using audio-visual media like Edpuzzle videos can help provide real and clear concepts, so as to increase students' interest and learning outcomes as reported by [Cesare et al. \(2021\)](#) and [Gedera et al. \(2018\)](#). Another study conducted by [Silverajah & Govindaraj \(2018\)](#) explains that using Edpuzzle during the learning process has excellent potential to improve students' independent learning abilities and support the Mathematics learning process. Moreover, learning using Edpuzzle videos can motivate low-achieving participants and foster students' self-confidence through the questions embedded in Edpuzzle.

Theories related to the influence of the Edpuzzle video media on learning outcomes are very relevant to the results of the research the authors conducted. The results showed that the class that used video media in learning (experiments) had a higher average learning achievement score than the class that did not (control). Thus, the theories above suggest that the use of video media can affect student learning outcomes.

This research is relevant to the research by [Biassari et al. \(2021\)](#) that concluded that to improve student learning outcomes, interactive learning video media can be used at the speed of material in class V SDN, considering that the proportion of classical student completeness has reached $\geq 75\%$ and the class average value is ≥ 75 . In line with that, the research conducted by [Gunawan \(2020\)](#) concluded that there was an effect on student learning outcomes in class IV A (experimental group) of 79.54 and class IV B (control group) of 71.59 class IV SD using interactive videos. The suggestions from teachers and students obtained from the interviews are that the questions should be more adapted to the abilities of students as some were classified as difficult questions to work on, beyond their abilities. The teacher also mentioned that some students had difficulties in terms of internet quota. The results of the interviews also stated that students could learn independently, became more active in doing assignments, and did not need to get a lot of explanation from the teacher. Thus, the teacher's task here was only to monitor when students used the media and to direct them if they found some difficulties in using it.

This research contributes to learning which can use learning media that is interactive and not monotonous so that interactions can occur in learning. It can increase student interest and affect student learning outcomes. With this research, it is expected that teachers can master the development of information and communication technology, in the hope that they can improve the quality of education and student learning outcomes.

CONCLUSION

Based on the results of the research and data analysis, it can be concluded that there is an influence of using interactive learning video media assisted by Edpuzzle on student learning outcomes in Mathematics. There is a need for further research to use different materials. There are some limitations of this video, namely, the Edpuzzle video used was a learning video taken from YouTube, not developed; accessing Edpuzzle videos requires a good network; and accessing Edpuzzle videos on laptop devices is more stable than Android devices. Some data were also not normally distributed, of which cause of this needs to be identified, and the proper corrective measurement needs to be performed. One of the causes is that a data collection has too many extreme values, which causes the distribution to be skewed. By deleting the data, data normalization can be accomplished. To overcome this, removing them from the data set is reasonable. It is very significant that outliers are identified as causes that actually make the data abnormal before they are eliminated.

Author contributions

The authors made significant contributions to the study's conception and design. The authors were in charge of data analysis, interpretation, and discussion of results. The final manuscript was read and approved by the authors.

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Conflict of interest

The authors declare that there is no potential conflict of interest.

Data availability statement

All data are available from the authors.

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