Jurnal Inovasi Teknologi Pendidikan
Volume 10, No. 4, Desember (395-407)
Online: http://journal.uny.ac.id/index.php/jitp

The effectiveness of video-assisted asynchronous learning on students' learning outcomes in the subject of akidah akhlak

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ARTICLE INFO

Article History
Received:
11 August 2023;
Revised:
01 October 2023;
Accepted:
18 October 2023;
Available online:
05 November 2023.

Keywords

Asynchronous Learning; Learning Outcomes; Video Learning.

ABSTRACT

The role of technology in the education sector is increasing and has impacted the realm of learning activities. Technology-integrated learning is highly needed to facilitate both teachers and students in their activities. Using asynchronous learning models provides flexibility with easy and efficient access in terms of time. The research aims to describe the implementation of the asynchronous learning model assisted by videos in the subject of *akidah akhlak*, as well as the learning outcomes of the experimental and control groups, and the effectiveness of the asynchronous learning model assisted by videos in improving student learning outcomes. The research method used is quantitative with a proper experimental design. The experiment takes the form of a pretest-posttest control group design, with an experimental class receiving treatment in the form of asynchronous learning assisted by videos, and a control class implementing conventional methods. The research results show that the questionnaire on video implementation obtained a TCR score of 82.95% for variable X and 81.79% for variable Y, both falling within the 81-100% interval scale, indicating a "Very Good" category. The post-test results of the experimental class yielded a score of 86.43, while the control class scored 76.57. The paired sample t-test showed an average difference of 15.29 for the experimental class, while the control class had an average difference of 8.71, with a n-gain value of 0.27 for the control class, indicating a "low" category, whereas the experimental class had a n-gain value of 0.53, falling within the "middle" category. The implementation of engaging video learning media creates a non-monotonous learning atmosphere, and the questionnaire on video implementation received a "Very Good" rating. The use of the asynchronous learning model assisted by videos effectively improves student learning outcomes in Islamic creed and ethics, as evidenced by a larger difference in the experimental class compared to the control class.

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How to cite:
Jamil. A. N., Thohir, M. (2023). The effectiveness of video-assisted asynchronous learning on students' learning outcomes in the subject of akidah akhlak. *Jurnal Inovasi Teknologi Pendidikan, 10*(4), 395-407. https://doi.org/10.21831/jitp.v10i4.63607

INTRODUCTION

In the 4.0 industrial revolution era, technological advances are increasingly being incorporated into the education sector. Various schools or educational institutions are competing to enhance further technology's role in technical administration and learning activities. Syamsuar and

Reflianto (2019) say that technology can easily replace conventional mechanisms with more advanced human power. Similarly, Lestari et al. (2022) said that technology could also enhance the human role in automating information provision and reconstruction.

The next issue is the capacity of human resources to use technology. In other words, it is about teachers who can adapt technology to learning activities. Andina (2019) said that the teacher's competence should be further developed because it is very influential in determining the students' learning process. Sunarsi (2018) also said that the development of human resources is an activity that is carried out so that knowledge, ability, and skills are adapted to the demands of the job. When associated with educators, the aim is to meet the objectives of the educational institutions or, more broadly, the national educational objectives.

In addition to the development of teacher competence, there are aspects of teaching and learning activities that need to be developed, such as the use of learning content, the formulation of assessments, the formulation of learning objectives, the formulation of learning materials to identify the needs of students based on their character, in order to support good learning (Wardhana, 2020). In applying these aspects of learning, many methods can be used. One of them is e-learning, which is one of the methods that uses technology.

In its application, e-learning can be divided into different types. According to Putri and Setiawan (2020), two types of online learning can be applied: asynchronous and synchronous. Asynchronous learning has the characteristics of learning that can be done anywhere, and there are no time limits. Students can learn independently but still get material guidance from teachers. The most commonly used media platforms are Google Classroom, WhatsApp, email, YouTube, etc. Synchronous learning is a type of learning where the teacher and student interaction coincides in real-time.

Some studies say that asynchronous learning is more effective when it is set and has a good impact on students' values (Ronny et al., 2019). However, in another study, Arianto et al. (2022) say synchronous learning is better for learning because it is done in real time, as if it were face-to-face, and the real-time involvement or time presented can help avoid miscommunication. In addition, online learning has the added benefit of improving teachers' skills in using online learning tools and their supporting applications, and students feel they are better prepared and able to organize and manage their learning online (Jatmiko, 2022).

On the subject of *akidah akhlak*, the main focus is to inculcate Islamic values in behavior and action. Amin in Ginanjar & Kurniawati (2017) said that akhlak is a deliberate and planned effort to help students to know, understand, feel and believe in Allah Swt, which is achieved through the activities of guidance, teaching, and practice and the application of these values in daily life.

However, based on the researchers' observations of the application of academic learning, the reality is that there are still obstacles, especially in MAN 1 Lamongan where learning is monotonous in the use of methods or media. Thus, the learning process is less attractive and leads to low access to students' competence. The research also aims to uncover the impact of learning loss caused by the long-distance application of the Covid-19 pandemic time. According to the data, 50.9% of teachers believe that students experience a decline in access to learning in different subjects, and 37% even believe that there is a decline in student access across the subject. Only 12.1% believe student access will not decrease during the pandemic (Medcom.id, 2021).

The problem prompted the researchers to reveal the facts in the field, especially in MAN 1 Lamongan, and not found other researchers who revealed the same problem on the object of research. Specifically, this study wants to link the urgency of the subject of akidah akhlak, which often involves understanding the ethical and moral values in Islam. The researchers want to explore how asynchronous learning methods supported by video can help students understand and internalize the values of Islam, which has not yet been explored to integrate such methods and media in morality subjects.

In this case, educators must always be creative in their choice of media or teaching methods to improve and enhance the students' experience. The use of video media will be more helpful in improving students' memory of learning material. As they say Wisada et al. (2019), the video assistant has a lot of information and data that does not need to be printed, which can be moving

images with voice or can be added to a new dimension. In line with this, Yudha and Sundari (2021) said that in visual learning, presentations contribute 75%, hearing 13% and other senses remain. It does not matter the condition and ability of the students. Everyone has a difference.

Similar research was conducted by Nurwahidah et al. (2021) and Purwanti (2015), which showed that the choice of learning video media is very beneficial in delivering messages in the teaching-learning process. In this regard, Nuritha and Tsurayya (2021) said that video is effectively used as a student medium for learning activities that can improve independent learning. Atmawati (2021) said that implementing asynchronous learning with Google Classroom can make students 95% active and positively influence material mastery as learning results increase. With this, Siswanto et al. (2021) showed that the application of asynchronous learning positively impacts student motivation and learning outcomes.

The study aims to investigate video learning, the learning outcomes of experimental and control classes, and the effectiveness of the asynchronous model of video-supported learning in ethics. Students are introduced to flexible and interactive learning methods. The videos presented help students to better understand essential concepts and moral values through practical examples, visual illustrations, and engaging narratives. With an exciting learning experience and the ability to learn independently, students can deepen their understanding of morality, potentially improving their learning outcomes in these subjects.

Ultimately, this study seeks to explore how innovation in technology and education can affect student learning outcomes. The results of this research are expected to contribute to the development of education, especially in the use of learning media technology. Specifically, this research can be used as an alternative for MAN 1 Lamongan teachers in applying asynchronous learning using video learning media.

METHOD

The research method used is quantitative with a proper experimental form. The experimental form of the pretest-posttest control group design is shown in Table 1. Thus, in this study, experimental classes are given asynchronous learning treatments that support video and control classes that use conventional methods. The research was conducted at MAN 1 Lamongan from October 2021 to February 2022. As for the population in the study, there were 39 classes with a cumulated quantity of 1284 students, with a sample of 2 classes of 70 students.

Asynchronous learning uses Google Classroom platforms, e-learning madrasah, and YouTube, which are used to provide materials, collective tasks, and indirect comments between teachers and students. A pretest is given at the beginning of the lesson and a post-test at the end.

Table 1. Comparison Class Experiment and Control

Group	Pretest	Treatment	Post-test
Experiment	O_1	X	O_2
Control	O_3	-	O_4

Table 1 outlines the research subjects to be studied. The classification has designated class XI MIPA 5 as the experimental group and class XI MIPA 6 as the control group. Both groups underwent a pretest before treatment to determine their initial conditions. The experimental group (O1) received treatment (X) through video learning. In addition to the group undergoing conventional treatment (-) and the control group (O2), the research was carried out over five months at MAN 1 Lamongan. The following research plan was formulated based on the design.

Figure 1 demonstrates that the research commences with determining the learning materials employed. Additionally, a research tool was developed as a test question and evaluated by subject matter experts, media authorities, and experts in research materials involving Moh. Munari, an *akidah akhlak* teacher at MAN 1 Lamongan, and Agus Harianto, S.Ds, M.Kom, a product design teacher at MAN 1 Lamongan and a multimedia lecturer at a private university, served as validators

due to their expertise. The pretest and post-test were conducted online via Google Forms. The resulting data was analyzed using the paired sample t-test and the gain test to assess progress.

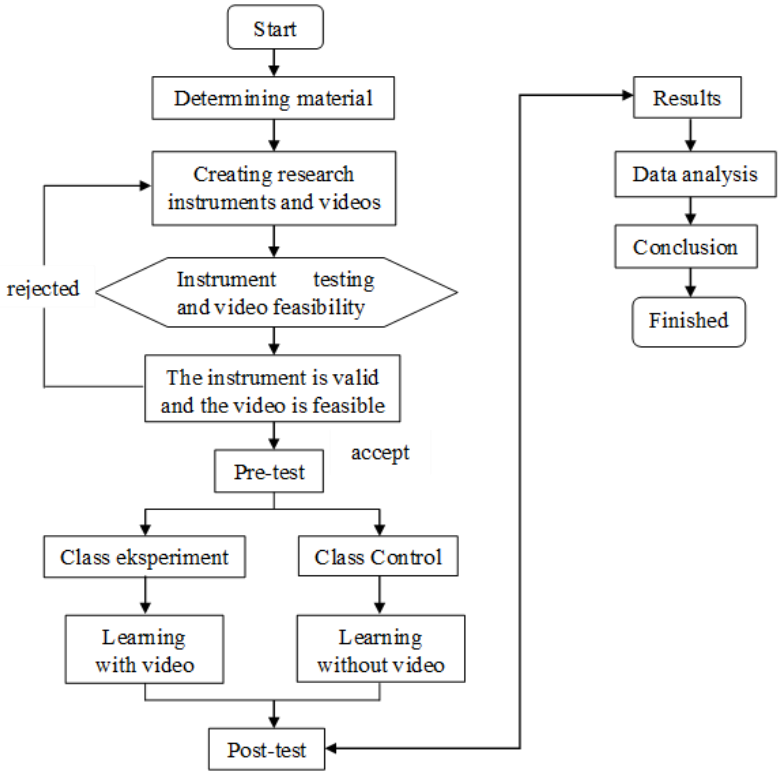

Figure 1. Research Design

Regarding the instrument's validity, the binary correlation coefficient formula indicates a table r result of 0.361, where n = 30 and α is 5%. Of the 25 questions in the test, 20 are deemed valid, and five are deemed invalid. Only 20 valid questions will be utilized for the research instrument, as the other five questions have been deemed invalid. The instrument's reliability has also been confirmed by calculating the r_{xy} coefficient, which yielded a value of 0.93 and the r_{11} value of 0.96. As per the coefficient classification table submitted by Guilford, these results place the instrument in the "Very High" category for reliability.

RESULTS AND DISCUSSION

Results

The results of the pretest and post-test among both experimental and control groups can be seen in Table 2. The average value of the pretest measurement for the experimental group was 71.14, compared to the control group's average pretest score of 67.86. In the post-test, the experimental group had an average score of 86.43, while the control group's average was 76.57. It should be noted that both classes had a total of 35 students.

Table 2. Learning Outcomes Class Experiment and Control

	Experiment	**Control**
Students Quantity (N)	35	35
Data Pretest	71.14	67.86
Data Post-Test	86.43	76.57
Gain Test	0.53	0.27

Table 3 illustrates normality data for the pretest and post-test in the experiment and control classes. The value of the experiment class is 0.085, whereas the control class is 0.065. Both values fall under the "sig. (2-tailed) > 0.05" category, demonstrating no deviation in data normality

Further, during the post-test, the "sig. (2-tailed)" value for the experimental group was 0.072, compared to 0.074 in the control group. Both values were found to be above the "sig.2 (tailed) > 0.05" level, indicating that (Ha) was rejected while (Ho) was accepted. It suggests that there is no significant difference in the post-test data's normality; therefore, we can assume that they are normally distributed.

Table 3. Pre-test and Post-test Normality

Data	Class	Sig. (2-tailed)	Description
Pre-test	Experiment	0.085	Normal
	Control	0.065	Normal
Post-test	Experiment	0.072	Normal
	Control	0.074	Normal

Table 4. Pre-test and Post-test Homogeneity

Data	Sig.	Levene Statistic	Description
Pre-Test	0.417	0.667	Homogen
Post-Test	0.47	2.151	Homogen

In Table 4, the Levene Statistic is used to obtain values for the pretest sig. 0.417 and post-test sig. 0.147, both of which are not statistically significant ($p > 0.05$). It should be noted that the data was collected from populations with similar variations.

Table 5. Pretest Mean Difference

Pretest	Variances Assumed. Sig.(2-tailed)	Description
Experiment and Control	0.181	No Difference

Based on the statistical tests on the pretest experimental and control class, as shown in Table 5, the obtained sig. (2-tailed) level was 0.181, which is higher than the predetermined threshold of 0.05. It implies that the null hypothesis (Ho) should be accepted. Therefore, it can be deduced that there are no significant differences in the initial abilities of the control and experimental classes. Thus, the two groups can be equitably compared in this research.

To investigate discrepancies in the academic achievement of students in the experimental and control classes, a paired-sample t-test using parametric statistics was performed. The subsequent results are presented below.

Table 6. Paired Sample t-test

Class	Data	Average	Average Difference	Sig.(2-tailed)	Criteria
Experiment	Pretest	71.14	15.29	0.00	There are differences
	Post-Test	86.43			
Control	Pretest	67.86	8.71	0.00	There are differences
	Post-Test	76.57			

Table 6 shows that the significance (2-tailed) for the experimental and control groups is 0.00, below the 0.05 threshold. Hence, the null hypothesis (Ho) is rejected, and the alternative hypothesis (Ha) is accepted. It indicates a significant difference between the two classes when considering the difference in the initial and final test results on average. Specifically, the experimental class achieved an average difference of 15.29, while the control class obtained a mean difference of 8.71. The results demonstrate that the average differences in the experimental classes are more significant than those in the control classes.

Table 7 portrays the average improvement in the learning outcomes of both the experimental and control classes and the results of the gain test.

Table 7. Gain Test of Experimental and Control Classes

Class	Average Grade Pretest	Average Grade Post-Test	Increase (N Gain)	Criteria
Experiment	71.14	86.43	0.53	Middle
Control	67.86	76.57	0.27	Low

The gain test shows that the difference between the post-test and the pretest indicates increased learning outcomes for students in the experimental class compared to the control class. The N Gain score for the control class is 0.27, which meets the "low" criterion. However, the experimental class achieved an N Gain score of 0.53, which meets the criterion for "middle."

Additionally, in the experimental class at MAN 1 Lamongan, asynchronous learning-assisted videos were implemented to enhance academic lessons. To determine the results, the author conducts a respondent access rate test on variables (X) and (Y), as presented in Figure 2.

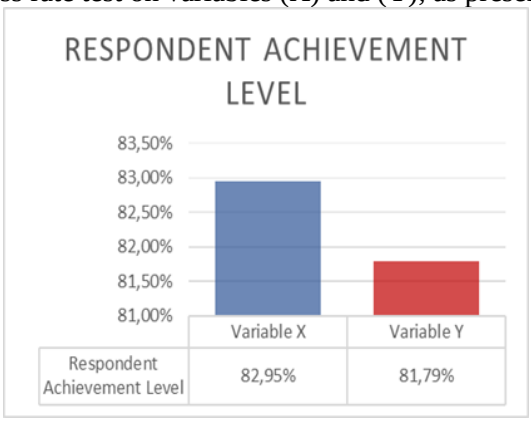

Figure 2. TCR Test Results

Figure 2 depicts the outcomes of implementing asynchronous learning with video assistance, which students receive following classroom activities in a test environment. According to the respondent's access rate test, video learning, denoted as variable (X), achieved an 82.95% score, whereas learning outcome, denoted as variable (Y), achieved 81.79%. Both scores were within the 81-100% category termed "Very Good."

The validation performed by subject matter and media specialists is displayed in the subsequent Table 8:

Table 8. Expert Team Validation Results

Validators	Score	Category
Content Expert	118	Very Worthy
Media Expert	64	

Table 8 displays the validity test outcomes, evidencing the very worthy status of the video media with a total score of 64 out of 70. The material expert rated it 118 out of 125. Furthermore, the validity of the video media, as evaluated by both media and material experts, is positioned lies on the scale $S_{min} + 4P \leq ST \leq S_{maks}$ between classified as "Very Worthy."

In the research phase aimed at determining students' learning outcomes, a pretest is required before the commencement of the learning activities. Subsequently, a post-test is conducted after the completion of the learning activities. The outcomes are presented in Figure 3.

According to Figure 3, the experimental class had an average pretest score of 71.14, while the control class achieved 67.86. In the post-test, the experimental grade increased to 86.43, while the control class recorded an average of 76.57, indicating that it did not meet the minimum limit. Moreover, the average post-test score of the experimental class, which is higher than the minimum satisfaction criterion established by the MAN 1 Lamongan, is 80.

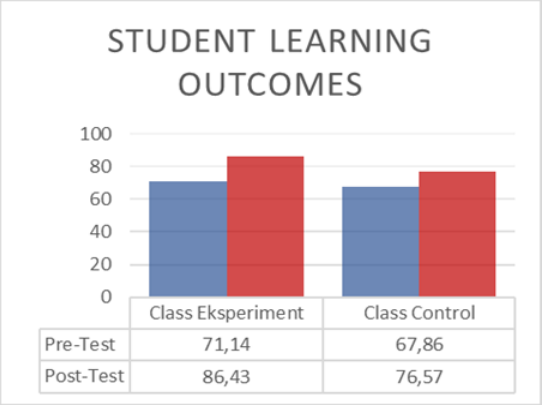

Figure 3. Student Learning Outcomes

To evaluate the effectiveness of the experimental class, normality, and homogeneity tests were conducted on both the experimental and control groups. The obtained data showed normal and homogenous distribution, following which the paired sample t-test was conducted. The results showed that the experimental class yielded a sig. (2-tailed) value of 0.00 and an average difference of 15.29 between the two pairs of samples. Meanwhile, the control group also obtained a sig. (2-tailed) of 0.00 and a mean difference of 8.71, indicating a statistically significant difference between the experimental and control groups in the pre-and post-test averages. Refer to Figure 4 and Figure 5 for further details.

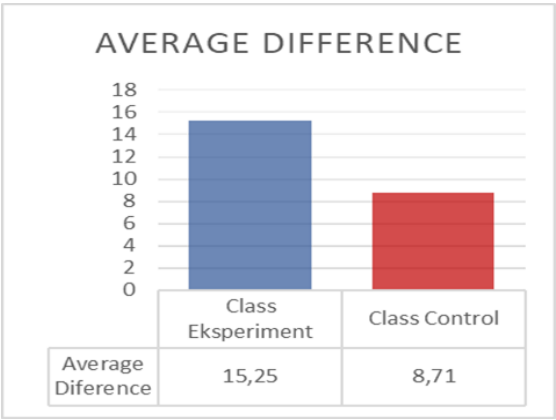

Figure 4. Average Difference

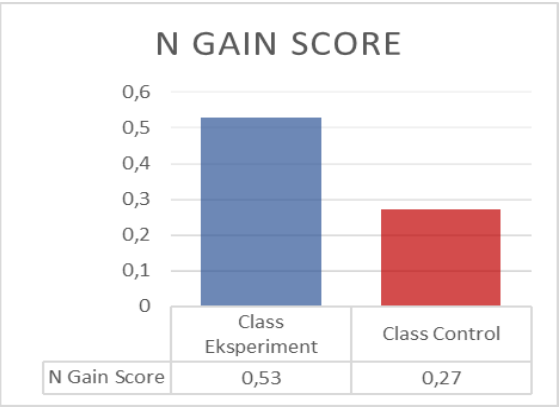

Figure 5. N Gain Score

Based on the data, the average difference between the experimental and control groups indicates that the experimental classes have higher values. Specifically, experimental classes achieved a gain test score of 0.53, classifying them as "middle," while control classes achieved a

gain test score of 0.27, classifying them as "low." There is a significant difference in average learning outcomes between the experimental and control classes, with the experimental group exhibiting more significant improvement.

Discussion

The learning video was implemented in the experimental class during two class meetings, totaling 52 minutes. Both variables (X) and (Y) were rated excellent based on the respondents' access rate. The use of video media was well received by students, demonstrating high enthusiasm and strong support for participation in the learning process. Video-based learning is not a recent phenomenon. Although it is a medium employed by only a few educators at MAN 1 Lamongan, students should pay closer attention to this rarely utilized method. Supporting this notion, Qurrotaini et al. (2020) assert that video-based learning positively impacts student motivation and interest in learning. Similarly, Panggabean et al. (2021) stated that incorporating video learning media could enhance student comprehension and motivation.

Sitepu (2022) argues that utilizing various forms of media is crucial for successful learning and plays a central role in the learning system. Media utilization can create a more diverse and engaging learning experience, promoting student interest and contentment. For instance, media that incorporates captivating colors can be beneficial for students with a fascination for color, and media that cater to students' interests in objects or other subjects can be specifically designed and adapted to accommodate their preferences. Video learning media can enhance students' absorption and memory, facilitating their comprehension of the learning material (Khairani et al., 2019). Additionally, students benefit from the flexibility to review and reinforce the material via replaying the video content provided by the educator.

Validation is essential to ensure that the learning video content is appropriate. The results of material expert and media classification were excellent. Prior to product application, the input of a team of validation experts is necessary to advise and provide constructive criticism on product validity and conduct a thorough analysis of the same (Dewi & Handayani, 2021). Earlier on, video media creation, particularly in asynchronous learning, required an approach that could enhance the sense of student presence. It can be achieved by adding narratives that are fundamental in building student motivation, enabling students to represent their learning more realistically (Ribosa & Duran, 2023).

In referring to the results of the pretest and post-test, it was found that the average values obtained by experimental classes that used learning media were higher than those of the control classes that employed conventional methods. Other research has suggested that the instructor's choice of media characteristics plays a significant role in the success of asynchronous learning. Choosing the most appropriate media may boost student motivation. However, an incorrect choice of media could decrease learners' interest (Perry et al., 2022). It highlights the crucial role of teachers in facilitating asynchronous learning as both guides to ensure progress and motivators for students to engage. This phenomenon puts the competence of teachers to the test.

Teacher competence has a significant impact on learning outcomes. Teachers who demonstrate mastery of the material and its approach can effectively support improving students' learning outcomes (Dakhi, 2020). Similarly, research conducted by Wahyuningtyas and Sulasmono (2020) showed that teachers' use of learning media can enhance student understanding of course material and ultimately improve learning outcomes. Teachers' use of learning media can aid comprehension of learning materials, leading to improved learning outcomes. When students attain satisfactory learning outcomes, the goals of learning can be accomplished. In addition, learning media offers other advantages, such as students not relying solely on teacher explanations. However, disregarding the application, for example, insufficiently synchronizing the content with the video display or poor time management, creates an unnatural learning experience and evokes a pessimistic response from students (Okabe-Miyamoto et al., 2022). It requires supporting strategies such as explicit instruction mentoring questions, which are necessary to trigger elaboration to improve student learning outcomes.

Further investigation revealed that implementing video-based learning had a positive impact on enhancing student learning outcomes. The experimental class demonstrated higher pretest and

post-test scores than the control group average. It supports our research hypothesis that integrating video-aided asynchronous learning would improve learning outcomes more effectively. Furthermore, the t-test sample results indicated significant positive differences between the initial and final test values. Learning results play a vital role in providing feedback to teachers on students' learning progress. According to Nabillah and Abadi (2020), learning results can inform educational policies and determine the continuation of the learning process. Similar to Rapono et al. (2019), the assessment results function as a means of ascertaining the students' ability to comprehend various aspects of the course material in alignment with the learning objectives.

Based on the gain test results, it is evident that the experimental class reached one classification level higher than the control class. It indicates a significant difference in the average learning outcomes between the experimental and control classes. Therefore, it can be concluded that video-assisted asynchronous learning is more effective in enhancing learning outcomes. Following these findings, Ridha et al. (2021) stated that video media is particularly effective in the asynchronous learning model, as it assists students in distance learning without any time constraints. Additionally, it spurs educators to generate and create innovative learning videos, thereby enhancing time efficiency. Similarly, Setiawan et al. (2019) concurred that using the appropriate model, supplemented with the appropriate materials, can lead to optimal learning outcomes.

In a previous study, Zeng and Liu (2021) discovered that using media in learning materials can enhance student cognition. The media aids students' comprehension and focus during the teaching and learning process. According to relevant theory, the significance of media extends beyond mere communication and plays an essential role in cognition. Relevant content can act as an external stimulus or internal representation contributing to the cognitive process (Bujang & Subset, 2022). According to another perspective, instructors can organize asynchronous learning for distance education. In contrast, self-paced learning scenarios utilize worksheets and instructional videos as guides to attract students' attention and provide solutions to distance learning difficulties (Flegr et al., 2023).

Regarding the study's contribution to designing educational videos, it is essential to adhere to design principles that ensure appropriateness for the material and activities that support cognitive processing and engage thinking activities (Waluyohadi & Lopatka, 2022). However, teachers need to take into account individual differences beyond cognitive activities. For instance, students will likely be more motivated to engage with educational videos and comprehend their content effectively if they employ supplementary learning tactics. This research suggests that student motivation and achievement goals can play a role in determining how students are incentivized to learn in multimedia environments. Students focus on mastering a subject are likely to gain from a multimedia learning environment with instructional videos. However, students prioritizing the outcome over attaining an in-depth understanding or knowledge may not receive the same advantages.

Therefore, it is suggested that practitioners and researchers explore methods to engage outcome-focused students in designing, creating, and implementing educational videos with supplementary techniques, including furnishing targeted remarks on personal learning objectives in comparison with general attainment criteria. Employing such an approach could prompt achievement-orientated scholars to reconsider their views and appreciate the instructional content delivered by the teacher.

Additionally, it is essential to note that this study has limitations. For example, the research sample may be limited in size and representativeness. It means that whether the research sample includes a variety of student backgrounds or is limited to specific groups may affect the generalisability of the research findings. Secondly, the research findings will have greater significance for cohorts of students who possess the required skills to utilize learning technology and have access to necessary facilities. In order to obtain more widely applicable results, future investigations must expand their sample size or include students from diverse backgrounds.

Thirdly, when planning lessons, it is necessary to consider external variables like family support, student motivation, or even video media quality, as students may have different interests.

Another limitation of this study is time, which may render it irrelevant in the long term. It is well known that technology and learning approaches will continue to evolve, and what is effective today may not be so in the future. Therefore, forthcoming research must align with the trends in technology development and applicable learning strategies.

Fourth, this is about assessing the effectiveness of students' learning based on the duration they spent watching the video. The time spent on a learning video may not guarantee that a student has grasped the comprehension of the content. Nonetheless, the study employed a multimedia learning video that adhered to multimedia design principles and was authenticated by professionals. It aligns with the research outcomes by Kuhlmann et al. (2023). Irrespective of the impact of the application of video learning media, students are more motivated to watch learning videos if the videos are relatively short. Therefore, teachers should provide content in learning videos that is meaningful but also short.

In addition, the research could use other data, such as digital footprint data, to better understand how students process the material presented in the video learning media. For information, digital footprints can provide insights into how often students use video interface features, pause, play, and scroll forward or backward through the video. These measures can enhance comprehension of the relationship between supporting the achievement of learning objectives and different student behaviors during video viewing.

CONCLUSION

The implementation of exciting learning video media has a positive impact on students' motivation and enthusiasm for the learning process. A varied and non-monotonous learning approach makes the learning atmosphere more colorful and students more motivated. The study results show that video learning applied to variables x and y achieved a "Very Good" rating on the 81% -100% scale. Implementing an asynchronous learning model has been instrumental in successfully enhancing student outcomes through video-mediated instruction, as demonstrated by experimental classes achieving significantly more significant improvement compared to their controlled counterparts. This effectiveness is further corroborated by the assessments of renowned material and media experts, categorized as "Very Worthy." However, further efforts towards enhancing the diversity of video media are necessary to provide comprehensive support to students' learning activities.

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