Development of Artificial Intelligence-Assisted Learning Videos to Improve Students' Understanding of Islamic History Materials

Robi'atul 'Adawiyah Universitas Ibrahimy ORCID: 0009-0008-1226-0594	**Taufiqurrahman** Universitas Ibrahimy

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Corresponding author
robiatuladawiyah2721@gmail.com

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Abstract: The delivery of Islamic history material in several schools, including SMK Khamas, still uses conventional methods such as lectures, which tend to be monotonous. The delivery of material through textual explanations and teacher-centered learning is less appealing to students. Furthermore, students' low interest in reading history materials, which are typically very long texts with few visuals, has resulted in a low level of understanding of the material. In response to this issue, artificial intelligence-assisted learning videos were developed with the aim of presenting the material in a more interesting and easy-to-understand manner. The main objective of this activity is to design educational videos that meet students' needs and to determine their effectiveness in improving students' understanding. The development process utilises a Research and Development (R&D) approach with a 4D model, comprising the Define, Design, Develop, and Disseminate stages. The effectiveness test was conducted by involving two departments, namely TJKT and DKV, using the Mann Whitney U Test. The test results showed a statistical value of W = 351 and a p-value = 0.0006539 (two-sided), which means that there is a significant difference in student understanding between the two departments. The one-sided (greater) test also produced a p-value = 0.0003269, indicating that the scores of students in the TJKT department were significantly higher than those in the DKV department. Based on these findings, it can be concluded that the development of AI-based learning videos effectively improves students' understanding of Islamic history material. This video is expected to be a more engaging alternative learning medium that is tailored to the needs of today's digital generation.

Keywords: Educational videos; History of Islam; Student understanding

Introduction

The world of education is experiencing rapid technological developments. Technology can help students understand the material better through the use of educational videos (Gritz, Salih, Hoppe, & Ewerth, 2025), artificial intelligence (Leiker, Gyllen,

Eldesouky, & Cukurova, 2023), and others. Educational videos support the process of knowledge construction visually and multimodally. Through a combination of visual, auditory, and textual elements, videos can improve students' absorption and memory retention.

The use of educational videos in the learning environment is a more engaging method for students to understand the subject matter compared to text or audio (Zhang, Lucas, Bem-haja, & Pedro, 2024). Professor of psychology Richard E. Mayer at the University of California, Santa Barbara is renowned for his theory on how people learn from words and images, known as multimedia learning. Students can improve their understanding by using a combination of words and pictures rather than just learning the words on their own (Richard E Mayer, 2021). The learning materials presented in the digital age are increasingly diverse, with the use of multimedia on the rise, but they are not always designed with consideration for how the human mind works (Richard E Mayer, 2014). Many learning media are visually appealing, but they do not help students understand concepts and burden their working memory. Multimedia instructional messages designed based on how the human mind works are more likely to produce useful knowledge (R E Mayer, 2001). According to David R Krathwohl, comprehension refers to an individual's ability to process information by interpreting, explaining, summarizing, interpreting, classifying, and comparing the information that has been obtained (Krathwohl, 2002). Comprehension occurs when students are able to connect new knowledge with knowledge they already possess, through a process of integration into existing cognitive frameworks and schemas (Granello, 2001). Students are said to understand when they are able to construct meaning from various learning messages, whether verbal, written, or visual (Anderson et al., 2001).

Video learning resources stimulate students to be active and enable them to immediately visualise abstract concepts. Videos can manipulate space and time, allowing students to view visual events or historical events through the videos shown (Heinich, 2002). However, the enormous potential of this technology has not yet been matched by its practical implementation in the field. The delivery of Islamic history material in several schools, including SMK Khamas, still uses conventional methods such as lectures, which tend to be monotonous. The delivery of material through textual explanations and teacher-centred learning is less appealing to students. The history of Islam, which should be a very important subject to understand, is often considered uninteresting. Furthermore, students' low interest in reading history material, which is synonymous with very long texts and few visuals, often means that they do not fully understand the text and may not realise that they need to read it again (Mamani-Quispe, Valero-Ancco, & Condori-Lazarte, 2025), This has resulted in students' poor understanding of Islamic history. Factors such as limited resources, limited understanding of technology, and the need for content that is in line with Islamic values have become obstacles in implementing video-based learning media.

Using educational videos on Islamic history is an effective approach to reviving complex and abstract narratives of the past, building stronger emotional and historical connections. The visuals displayed can help students imagine historical events in Islam. educational videos are able to present historical events in a more dynamic and easily digestible manner (Fahmi & Jauhari, 2024). This research also incorporates artificial intelligence components to help optimise visualisation. Artificial intelligence

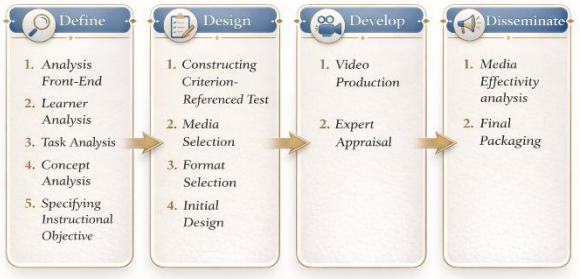
has great potential to revolutionise education, particularly in the design of multimodal learning experiences (AlShaikh, Al-Malki, & Almasre, 2024). Artificial intelligence can help create text, audio, images, and videos (Ngo & Hastie, 2025), The use of artificial intelligence in this study focuses solely on the creation of images and videos.

Secondary school level teaching materials have been developed through instructional videos. Previous studies have shown that video-based learning media can improve student understanding. However, there is still a research gap in the development of learning videos that integrate artificial intelligence and human creativity components, which include storyboarding, narrative voice production, and creative video editing that focuses on Islamic history material for Grade X vocational high school students, taking into account multimedia principles. The application of AI-assisted learning videos in this context is an innovative approach that is still rarely found, especially in Islamic-based vocational education environments. The combination of sophisticated AI technology and human creativity has the potential to enrich the learning experience and address the challenges of 21st-century learning, which demands the integration of technology.

Based on this background, this educational video was designed to present Islamic history content visually, providing an alternative solution for students who have difficulty understanding Islamic history material, while also serving as an innovative learning medium that can improve the quality of the teaching and learning process. This study utilised the 4D Research and Development model, applying the principles of Richard E. Mayer's multimedia learning theory as the basis for the design of the instructional video.

Research Method

This study utilises R&D (Research & Development) development with the Four-D (4D) development model proposed by Thiagarajan. The 4D model consists of four main stages: Define, Design, Develop, and Disseminate (Thiagarajan, Semmel, & Semmel, 1974).



Picture 1. Instructional design process flowchart

This study utilised four methods of data collection. To conduct preliminary studies before performing the analysis, data collection techniques were used, namely observation and interviews with teachers and students. The validation technique involves experts assessing learning media using a Likert scale, to ensure that the media meets learning standards. Testing techniques to measure improvements in students' abilities or learning progress in knowledge (Francisco, n.d.) objectively and efficiently (Ali & Ruit, 2015) using the true experimental model Posttest Only Control Group Design method. The data obtained was analysed using learning analysis techniques, descriptive analysis and quantitative analysis.

Result

This educational video was developed to help students understand Islamic history. The process of creating this educational video consisted of four stages.

1. Define

Analysis at the define stage shows that there is a need for learning media specifically designed to improve students' understanding of Islamic history material. Observations and interviews with teachers and students

revealed that the greatest challenge was how to convey Islamic history material, which is characterised by long texts and minimal visuals, in a way that is easily understood by students, while the teaching methods used so far are still centred on lectures and reading books.

Students today are accustomed to using smartphones and watching videos on social media, so learning that still focuses on lectures and books no longer interests them. Students find it easier to imagine stories from Islamic history with the visuals displayed. However, currently there are no teaching materials in the form of instructional videos that specifically discuss topics related to Islamic history for Grade X vocational high school students and are designed to meet the learning needs of students.

The objective of this development is to create learning media that can assist students in analyzing the role of the figure of the ulama (Wali Songo) in the spread of Islam in Indonesia. By formulating objectives that are in line with the learning outcomes of Islamic Education and Morality Phase E, educational videos can support the achievement of competencies in the areas of knowledge and Islamic character building for students.

2. Design

At the design stage, various ideas and concepts obtained from the analysis at the define stage are transformed into designs. The design includes the preparation of reference tests, media selection, format selection, and preliminary design. The tests were designed with the aim of objectively measuring the level of student achievement against predetermined learning objectives. This test was developed based on learning outcome indicators taken from the learning achievements of Islamic Religious Education and Ethics for Phase E of Grade X vocational high school, specifically on the subject matter of "Peran Tokoh Ulama dalam Penyebaran Islam di Indonesia".

The selection of media is carried out by considering several factors.

a. The characteristics of Islamic history materials are generally narrative, historical, and chronological in nature.
b. Vocational school students tend to be more active learners and prefer technology-based approaches.
c. Availability of resources. Various artificial intelligence-based platforms and software are available to help produce learning videos efficiently.
d. The suitability of the media for the learning objective, which is to improve students' understanding of Islamic history.

Video-based media designed pedagogically in accordance with Richard E Mayer's multimedia principles can support conceptual understanding and application in an engaging, efficient manner that is tailored to the characteristics of the students. This learning video format integrates various elements such as images, audio, video, and text with a logical narrative storyline lasting less than 10 minutes per session and is compatible with various devices such as laptops, tablets, and mobile phones.

The initial design serves as a link between the concept and its implementation and forms the basis for subsequent production steps. The first step is to write the script that will be used by the narrator to deliver the material. This script is written taking into account the language style appropriate to the level of understanding of vocational school students. After writing the script, the next step is to create a storyboard, followed by determining the sequence of information delivery, including the opening, content and closing.

3. Develop

At this stage, video production, modification and refinement of the initial product plan designed at the design stage are carried out. All plans that had been drawn up

from the narrative script and storyboard began to be turned into educational videos. Video production begins with the narration being recorded by a narrator according to the script that has been written. In the visualisation process, not all images are available in a ready-to-use form. Therefore, some images that are difficult to find or unavailable through open sources, such as scenes of ancient markets, were created with the help of AI image generators DALL.E, Ideogram AI, dan Leonardo AI, image prompts are created based on descriptions in the script and adapted to the cultural and historical context of Indonesia.

Once the images are available, proceed to generate the images into a video using Kling AI. For visual requirements, several images were processed using Adobe Illustrator and Adobe Photoshop. Once the voice narration and video are available, video editing is carried out using the CapCut Pro application. During the editing stage, all image elements, narrator's voice, video, background music, and text are arranged according to the storyboard flow.

Expert Appraisal

Expert assessment is used to obtain input and suggestions for improvement on the initial product from experts. In this study, a number of experts were asked to evaluate the AI-assisted learning videos that had been developed, covering aspects such as the substance of the material on Islamic history, the media used, and the use of language.

Subject matter experts are individuals who possess academic and practical competence in the field of Islamic History. In this study, the first subject matter expert validator was Dr. Luluk Maktumah, M.Pd.I., and the second subject matter expert was Alfina Wildatul Fitriyah, M.Pd.

Material Validator 1 : $M_1 = \frac{37}{12} = 3{,}08$

Material Validator 2 : $M_2 = \frac{46}{12} = 3{,}83$

Average total of both validators

$$M_{Total} = \frac{M_1 + M_2}{2} = \frac{3{,}08 + 3{,}83}{2} = 3{,}46$$

Media experts are individuals who possess academic and practical competence in the field of technology or media. In this study, the first media expert validator was Nadzirotul Fithriyah, M.Kom., and the second media expert was Helyatin Nisyak, M.Kom.

Media Validator 1 : $M_1 = \frac{38}{10} = 3{,}8$

Media Validator 1 : $M_2 = \frac{40}{10} = 4{,}0$

Average total of both validators

$$M_{Total} = \frac{M_1 + M_2}{2} = \frac{3{,}8 + 4{,}0}{2} = 3{,}9$$

Linguists play an important role in ensuring that the use of language in educational videos is effective and complies with the rules of proper and correct Indonesian. The linguistic validator in this study was Asia Anis Sulalah, M.Pd.

$$M = \frac{27}{7} = 3{,}86$$

Perhitungan rata-rata keseluruhan hasil validasi.

Total score of all validators = 188

Total assessment items = 51

$$M_{Total\ overall} = \frac{\sum X}{N} = \frac{188}{51} = 3{,}69$$

Feasibility Assessment Calculation

Table 1. Criteria

Score Range	Criteria
X ≥ M + SBi	highly feasible
M+SBi > X ≥ M	Feasible
M > X ≥ M-1 SBi	Less feasible
X< M-1 SBi	Not feasible

Average Ideal Score (M):

$$M = \frac{1}{2}\ X\ (Highest\ Ideal\ Score + lowest\ Ideal\ Score)$$

$$M = \frac{1}{2}\ X\ (4 + 1) = \frac{5}{2} = 0{,}5$$

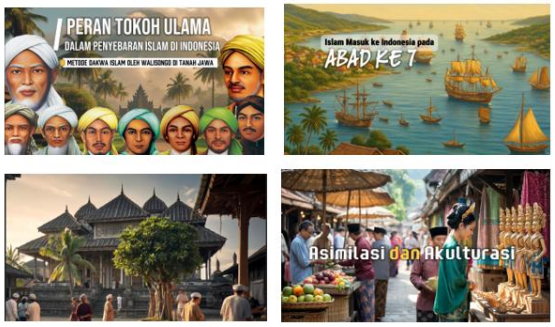
Standard Deviation (SBi):

$$SBi = \frac{1}{6}\ X\ (Highest\ Ideal\ Score + Lowest\ Ideal\ Score)$$

$$SBi = \frac{1}{6}\ X\ (4-1) = \frac{3}{6} = 0{,}5$$

X ≥ M + SBi = 2,5 + 0,5 = 3,0
The score obtained: 3,69
Score: 3,69 ≥ 3,0

Based on the above results, artificial intelligence-assisted learning videos are considered highly feasible. The resulting learning video products.



Picture 2. Islamic History Educational Video Products

4. Disseminate

a. Media Effectivity analysis

The effectiveness test was conducted in class X of Khamas Vocational School. The researchers used two classes, consisting of an experimental class and a control class. The experimental group, namely the TJKT class, was the class that was given learning activities using instructional videos in accordance with the suggested guidelines. Meanwhile, the control class, namely the DKV class, carried out the learning process as usual. Measuring the effectiveness of instructional videos using the two-tailed Mann Whitney-U Test with R Studio.

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        Wilcoxon rank sum test with continuity correction

data:  nilai$TJKT and nilai$DKV
W = 351, p-value = 0.0006539
alternative hypothesis: true location shift is not equal to 0
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Picture 3. Results of the Two-Side Mann Whitney Test

Based on the analysis results shown, a statistical value of W = 351 and a p-value = 0.0006539 were obtained. The test was conducted with a significance level (α) of 0.05 and used a two-sided approach to determine whether there was a difference between two independent groups, namely the TJKT class and the DKV class. A p-value < 0.05 indicates that the null hypothesis (H_0) is rejected, so it can be concluded that there is a statistically significant difference between the scores of students majoring in TJKT and DKV.

Next, the Mann-Whitney test was performed again with a one-sided test direction (greater). This test aims to determine whether the scores of students majoring in TJKT are significantly higher than those of students majoring in DKV.

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        Wilcoxon rank sum test with continuity correction

data:  nilai$TJKT and nilai$DKV
W = 351, p-value = 0.0003269
alternative hypothesis: true location shift is greater than 0
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Figure 4. Results of the "Greater" One-Way Mann Whitney Test

The test results showed a statistical value of W = 351 with a p-value = 0.0003269. The test was conducted with a significance level (α = 0.05) and an alternative hypothesis stating that the median location of the TJKT value was greater than that of the DKV. Since the p-value is < 0.05, the null hypothesis (H_0), which states that there is no difference or that the TJKT score is ≤ DKV, is rejected. Thus, the alternative hypothesis (H_1) is accepted, which states that the scores of TJKT students are significantly higher than those of DKV students.

b. Final Packaging

The distribution of learning media developed in this study was carried out in two ways. First, the instructional videos are distributed directly via video file copies stored on portable storage media, such as flashdisk. This method was chosen to anticipate internet network limitations or digital access constraints in some schools, so that teachers can still utilise the learning media offline during classroom teaching and learning activities. Second, the instructional videos are also uploaded to the YouTube digital platform. This step aims to make

educational videos more accessible and flexible for teachers as part of their lesson preparation and delivery.

To maximise its use, teachers are provided with technical and pedagogical guidance on how to use this medium in learning. The guide includes instructions on how to use the videos in accordance with the sequence of the material, suggested viewing times, and recommendations for inserting tasks to make the learning process more interactive.

Picture 5. Video Learning Guidebook

Through this dissemination stage, the AI-assisted learning videos that have been developed can be utilised sustainably and become part of innovations in Islamic history learning in schools. The use of this medium not only aims to enrich the variety of teaching methods, but also to improve students' conceptual understanding, strengthen material retention, and foster interest in learning about Islamic history through a visual approach that is relevant to current technological developments.

Discussion

The results showed that the use of artificial intelligence-assisted learning videos improved students' understanding of Islamic history material. The improvement in students' understanding shows that viewing historical events in video media can help them build more concrete conceptual representations. Compared to conventional learning approaches, which tend to be text-based and teacher-centred, presenting material that combines visual, audio and narrative elements enables students to understand the flow of historical events in a more systematic way.

Richard E. Mayer, in a scientific article, said that throughout the 20th century there had been several cycles of enthusiasm for the potential of visual technology for education, which were then followed by disappointment due to the lack of application in the world of education. Then, in this era of internet videos, access to various educational videos in informal learning settings has become widely available, including videos on YouTube (Richard E Mayer, Fiorella, & Stull, 2020). The digital age has changed the learning style of the younger generation, with educational videos making the material clearer and more interesting. This helps students understand and remember concepts and increases their interest in learning.

AI-assisted learning videos are becoming a more innovative and adaptive learning medium. UNESCO Director-General Audrey Azoulay said on International Education Day 2025 that AI offers great opportunities for education and is a tool that can help teachers and students (Parlier, 2025). AI-assisted learning videos can accommodate the complexity of Islamic history material in a more communicative and easily understandable manner.

This study still has several limitations. The number of research subjects is limited, and the product implementation is still being carried out on a limited trial scale. Therefore, further research is recommended to test its effectiveness in a wider range of schools to improve the quality of Islamic history learning.

Conclusion

Based on the results of research and development of video learning media, the following conclusions can be drawn:

1. This research and development resulted in a product in the form of an educational video with the subject matter 'The Role of Islamic Scholars in the Spread of Islam in Indonesia (Islamic Da'wah Methods by the Wali Songo in Java)'. The stages involved in producing the video used the 4D development model from research and development, which includes the stages of Define, Design, Develop, and Disseminate.
2. The effectiveness of instructional videos was analysed through field test results using experimental and control classes. Based on the Mann Whitney U Test calculation results, a statistical value of W = 351 and a p-value of 0.0006539 were obtained. The test was conducted with a significance level (α) of 0.05 and using a two-sided approach. A p-value < 0.05 indicates that the null hypothesis (H_0) is rejected, so it can be concluded that there is a statistically significant difference between the scores of TJKT and DKV students. Then, the one-sided (greater) test results showed a statistical value of W = 351 with a p-value = 0.0003269. The test was conducted with a significance level (α = 0.05) and an alternative hypothesis stating that the median value of TJKT is greater than that of DKV. Thus, the learning video is effective and suitable for use.

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