

Development of Artificial Intelligence Based Animated Video Learning Media on Taharah Materials

Marcel Tri Wahyudi¹, Sri Murhayati², Muhammad Luthfi Hamzah³

^{1,2,3} Universitas Islam Negeri Sultan Syarif Kasim Riau

*22590113224@students.uin-suska.ac.id

ARTICLE INFO

Article history

Received May 12, 2026

Revised June 14, 2026

Accepted July 25, 2026

Keywords: Artificial Intelligence (AI), animated videos, learning media, lectures, learning outcomes.

ABSTRACT

The purpose of this project is to create animated video learning materials for Taharah materials (Major and Minor Hadats) using artificial intelligence (AI) and assess how well they improve students' learning outcomes. The research and development (R&D) process employed the ADDIE paradigm, which comprises the phases of Analysis, Design, Development, Implementation, and Evaluation. Thirty students from SMA Negeri 5 Pekanbaru's tenth grade participated. Descriptive statistics, the Kolmogorov–Smirnov normality test, the Paired Sample t-Test, and N-Gain analysis were utilized to examine the data collected from pretest and posttest learning outcome assessments. The results showed a 2.43-point improvement from the mean pretest score of 5.50 to 7.93 in the posttest. With significant scores of 0.122 and 0.200, respectively ($p > 0.05$), the pretest and posttest data were both found to be normally distributed by the normality test. The Paired Sample t-Test yielded a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between students' results before and after utilizing the created medium. The N-Gain value of 0.69, which was categorized as moderate and near the high category, also demonstrated a notable learning improvement. These findings show that students' comprehension and performance in Taharah (Major and Minor Hadats) can be improved by using AI-based animated video learning materials. The created media provides a cutting-edge, captivating, and technologically integrated educational tool that facilitates interactive teaching and satisfies the needs of education in the twenty-first century.

1. INTRODUCTION

In order to increase learning quality in the twenty-first century, education must be able to use technology advancements (Azzahra et al., 2024; Dewi, 2024; Zubaidah, 2016). The usage of suitable learning material is one of the elements that determines the success of the learning process. According to (Audie, 2019; Isnaeni & Hildayah, 2020; Zahwa & Syafi'i, 2022), learning media serves as a tool for disseminating knowledge and learning messages, making the subject matter easier, more engaging, and more relevant for students. In addition to aiding educators in imparting knowledge, the availability of cutting-edge educational resources can improve students' focus, motivation, engagement, and academic performance. Given the state of digital technology development now, learning media has undergone a transformation from conventional media to technology-based media that is more interactive, visual, and communicative so that it is able to support the creation of effective and efficient learning.

One of the innovations in digital learning materials that has been sparked by the development of information and communication technology is animated video content. In order to provide educational materials in a more visually appealing manner than traditional teaching techniques, animated video is an audiovisual medium that incorporates text, sound, moving

visuals, and visual graphics. Because the information is presented visually and methodically, animated movies have been shown to aid pupils in understanding abstract and procedural topics. Additionally, because animated video content can provide a more entertaining and understandable learning experience, it can help boost student participation in the educational process (Setiawan et al., 2023).

In learning Islamic Religious Education (PAI), the use of learning media has a very important role because some of the material requires concrete and demonstrative explanations so that they can be understood well by students didik (Suriyati et al., 2024; Suseno & Ritonga, 2025). One of the materials that requires visualization in its delivery is the material of taharah, especially the discussion of major and minor hadast. This material is not only related to the understanding of religious concepts, but also requires an understanding of the correct purification procedures in accordance with the provisions of Islamic law. Thus, in order for students to comprehend the content more thoroughly and practically, educational materials that can properly explain the purification process and procedure are required. According to data from the field, learning the taharah topic is still frequently accomplished by using textbooks as the primary learning resource, verbal explanations, and lecture techniques. Due to the lack of a clear visual representation of the purifying process, this circumstance makes it more difficult for students to comprehend practical content. Additionally, pupils' interest and drive to learn may decline if less variety learning materials are used. The desired learning objectives cannot be fully achieved as a result, and the learning process becomes less interactive. This situation emphasizes the need to develop instructional resources that are more imaginative, captivating, and compatible with the characteristics of students in the digital era.

Together with the rapid growth of technology, artificial intelligence (AI) is one of the innovations that can be used in the field of education, especially in the production of learning materials (Taufik & Rindaningsih, 2024; Tjahyanti et al., 2022). AI technology allows for more effective creation of animated videos with the support of automation features such as illustration creation, character animation, voice narration, and the creation of interesting visual content. By combining text, images, sounds, and visual simulations, AI-powered animated films give an opportunity for more contextual and interactive learning so that students can understand the material. In the taharah material, this technology can be used to display illustrations of major and minor hadats, the causes of hadats, as well as the correct purification procedures according to the guidance of Islamic law. The creation of animation video learning materials based on artificial intelligence (AI) is crucial since it can address learning requirements that are more inventive and pertinent to contemporary technology advancements. It is anticipated that this media will boost students' motivation to learn, help them comprehend the taharah content, and help teachers present the information in a more engaging and efficient manner. Additionally, the needs of the digital education transition, which stresses the use of technology to produce a better quality learning experience, align with the usage of AI technology in the creation of educational media.

This description states that the creation of artificial intelligence (AI)-based animation video learning resources for Taharah content (major and minor hadast) is the main emphasis of this project. It is anticipated that the development of this media will result in legitimate, useful, and efficient learning goods that may be utilized in the Islamic Religious Education

process, particularly in taharah materials, to enhance the caliber of learning and student learning results.

2. METHOD

Types of Research

The research and development (R&D) approach is employed in this study. Before an educational product is used in the learning process, its viability, usefulness, and efficacy are tested using the research and development (R&D) technique. An artificial intelligence (AI)-based animated video learning resource on Taharah (major and minor hadats) materials for high school (SMA) students is the result of this work.

The goal of this development research is to provide learning materials that are reliable, useful, and efficient in enhancing students' comprehension of Taharah content. The One Group Pretest-Posttest method, an experimental method that involves one group of research participants by offering pretest and posttest tests, was utilized in the study to gauge the efficacy of the developed product. The enhancement of learning outcomes for students after using the created learning medium was assessed by comparing the pretest and posttest findings. One way to characterize the research design is as following the learning process. An artificial intelligence (AI)-based animated video learning resource on Taharah (major and minor hadats) materials for high school (SMA) students is the result of this work:

Description:

O_1 = Pretest

X = Learning using AI-based animated videos

O_2 = Posttest (final test)

Pretest	Treatment	Posttest
O_1	X	O_2

Development Model

The five phases of the ADDIE approach include analysis, design, development, implementation, and evaluation was the development methodology employed in this study. The ADDIE model was selected because it offers appropriate and methodical procedures for creating technology-based educational materials.

1. Analysis

The analysis stage is used to pinpoint issues and learning requirements that arise during the Islamic Religious Education learning process. Analyzing student characteristics, learning materials, curriculum, and the demands of learning media in the Taharah material (major and minor hadast) are among the tasks completed.

2. Design

The design of the educational materials that will be created is completed at this point. Learning objectives, materials preparation, storyboard creation, visual design determination, narrative preparation, and the planning of using Artificial Intelligence (AI) technology to create animated videos are among the tasks completed.

3. Development

The technique of producing animated video learning materials using AI in accordance with the design is known as the development stage. At this point, all media components are integrated into a ready-to-use product unit, including animated characters, graphic illustrations,

voice narration, and video editing. After the product is finished, media and material experts validate it to get feedback and make adjustments.

4. Implementation

Learning media were piloted for SMA Negeri 5 Pekanbaru pupils as part of the implementation stage. At this point, students use developed AI-based animation video content to follow the learning process.

5. Evaluation

The evaluation phase's goal is to determine the quality and effectiveness of the produced instructional materials. The evaluation is based on student learning outcomes from the pretest and posttest, expert validation results, and product test results.



Figure 1. Product trial flow

This study's One Group Pretest-Posttest Design uses a single experimental group without a control group. It is not feasible to directly compare the improvement in learning outcomes achieved with learning outcomes utilizing other media or learning approaches. However, because the research focuses on the creation and preliminary assessment of the ensuing learning media, this design was selected.

The research findings' generalizability is still restricted because the media's efficacy is assessed using student learning outcomes in a single school and learning resource. To gather more solid empirical evidence about Further research utilizing a quasi-experiment design with a control group and a larger sample size is recommended to determine the effectiveness of AI-based animation video learning materials.

Location and Research Subject

This research was carried out at **SMA Negeri 5 Pekanbaru** in the even semester of the 2026/2027 school year. The research subjects consist of:



Figure 2. Research Subject

Purposive selection of research subjects is done by taking into account the needs of the study and the appropriateness of the material examined.

Products Developed

The product developed is an AI-based animation video learning media on Thaharah material which includes: (1) the definition of taharah; (2) the definition of the major hadats; (3)

the definition of minor hadats; (4) the cause of the major hadats; (5) the cause of minor hadats; and (6) the importance of maintaining purity in daily life. The media is presented in the form of audiovisual animated videos that combine moving images, sound narratives, text, and interesting illustrations. In order to draw students' attention and facilitate their understanding of Taharah's principles and procedures, the media is presented as an audiovisual that incorporates animation, visual graphics, text, sound effects, and narration.

Research Instruments

A nine-question multiple-choice learning outcome test served as the research tool. Students' comprehension of the Taharah content is assessed using this tool both before and after using the educational materials.

Table 1. Instrument Grille

No	Indikator Pembelajaran	Nomor Soal
1	Menjelaskan pengertian taharah	1
2	Mengidentifikasi contoh taharah dalam kehidupan sehari-hari	2
3	Menjelaskan pentingnya menjaga kebersihan dan kesucian dalam Islam	3
4	Menentukan waktu yang dianjurkan untuk berwudhu	4
5	Mengidentifikasi perilaku yang mencerminkan penerapan taharah	5
6	Mengidentifikasi contoh hadats kecil	6
7	Mengidentifikasi contoh hadats besar	7
8	Menentukan cara bersuci dari hadats kecil	8
9	Menentukan cara bersuci dari hadats besar	9

Data Collection Techniques

The following techniques are used to acquire data for this study:



Figure 3. Data Collection Techniques

Data Analysis Techniques

Quantitative descriptive analysis was used to examine the collected data.

1. Media Validity Analysis

The percentage calculation was used to examine the data from expert validation results:

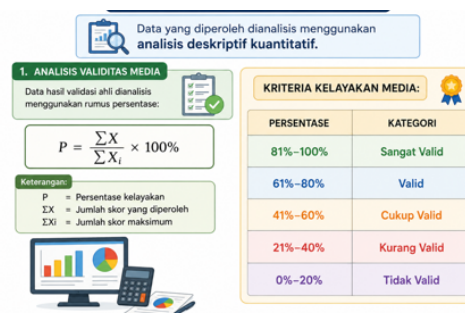


Figure 4. Media Validity Analysis

2. Analysis of Learning Outcomes

The average value is calculated using the formula:



Figure 5. Learning Outcome Analysis

3. Analysis of Learning Outcome Improvement (N-Gain)

The formula is used to assess how learning outcomes have improved:



Figure 6. Learning Outcome Improvement Analysis (N-Gain)

4. Normality Test

Using the Kolmogorov-Smirnov Test and the SPSS software, the normalcy test was performed.

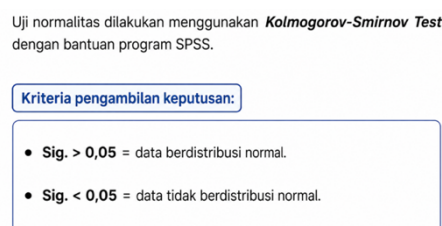


Figure 7. Normality Test

5. Hypothesis Test

Learning outcomes before and after using AI-based animated video learning materials were compared using the Paired Sample t-Test for hypothesis testing.

Research hypothesis:

H_0 : Prior to and following the use of AI-based animation video learning, there is no change in the learning outcomes of the students.

H_1 : Prior to and following the use of AI-based animated video learning, student learning outcomes differed.

Decision-making criteria: If the value of Sig. (2-tailed) < 0.05 then H_0 is rejected and H_1 is accepted. If the value of Sig. (2-tailed) > 0.05 then H_0 is accepted and H_1 is rejected.

Therefore, the improvement of students' learning outcomes following their participation in the *Thaharah* material (major and minor hadast) can be used to assess the efficacy of AI-based animation video learning materials.

3. RESULT AND DISCUSSION

Result

Learning Media Development Results

Artificial Intelligence (AI)-based animated video learning resources on Thaharah (major and minor hadast) for high school students were the result of this research. Learning films are created using animation, visual drawings, text, and voice narration to make the content more engaging and simple for students to comprehend. The material presented in the video includes the meaning of taharah, the importance of maintaining cleanliness and purity in Islam, manjor hadats, minor hadats, and examples of hadats. The learning video was then implemented to SMA Negeri 5 Pekanbaru students to find out its effectiveness in improving student understanding.



Figure 8. Learning Media (Thaharah)

Pretest and Posttest Results

To evaluate the effectiveness of the produced media, the researcher administered a pretest to students before instruction and a posttest after they watched AI-based animated films. The results of the pretest and posttest are shown in Table 2. follows.

Table 2. Pretest and posttest results

Keterangan	Nilai
Jumlah Siswa	30
Jumlah Soal	9
Rata-rata Pretest	5,50
Rata-rata Posttest	7,93
Kenaikan Rata-rata	2,43

The average student pretest score is 5.50, according to the preceding table. The average posttest score rose to 7.93 after students engaged in learning using AI-based animation video content. As a result, the average rise was 2.43 points. These findings demonstrate that using AI-based animation video learning resources improves students' comprehension of Thaharah content.

Table 3. Descriptive Statistics of Pretest and Posttest Results

Data	N	Red	Std. Deviation	Minimum	Maximum
Pretest	30	5,50	1,87293	2	9
Posttest	30	7,93	1,14269	6	9

Table 3 indicates that there were thirty students who participated in the study. The pretest's standard deviation was 1.87293 and its mean was 5.50. A minimum score of two and a maximum score of nine are possible for students. After using AI-based animation video learning resources, the average posttest score increased to 7.93 with a standard deviation of 1.14269. The minimum score on the posttest is six, while the maximum score is nine. The increase in the average student score is displayed in Table 3.

Table 4. Increase in Pretest and Posttest Scores

Remarks	Value
Average Pretest	5,50
Posttest Average	7,93
Value Enhancement	2,43

Table 4 shows that when students used AI-based animation video media to learn, there was an average improvement of 2.43 points. These findings demonstrate that students' comprehension of the Taharah content has increased.

Normality Test Results

The Kolmogorov-Smirnov test was employed for the normality test to ascertain if the pretest and posttest data were regularly distributed. The findings of the normality test are shown in Table 5 below:

Table 5. Kolmogorov-Smirnov Normality Test Results

Data	Sig.
Pretest	.122
Posttest	.200*

The pretest's significance value was 0.122 and the posttest's was 0.200*, according to the normalcy test results. It is possible to conclude that the pretest and posttest data are regularly distributed because both values are bigger than 0.05. A parametric test, such as the Paired Sample t-Test, can be used to continue the study because the data is normally distributed:

If the Sig. value > 0.05 , then the data is normally distributed.

If the Sig. value < 0.05 , then the data is not distributed normally.

Table 4.3 shows that the pretest significance value was 0.122 and the posttest significance value was 0.200. Given that both results are greater than 0.05 ($p > 0.05$), it is reasonable to infer that the pretest and posttest data are regularly distributed. Because the study data is regularly distributed, the Paired Sample t-Test is a parametric test that can be utilized to carry out additional research.

Hypothesis Test Results

The Paired Sample t-Test was used for hypothesis testing to see whether the pretest and posttest findings differed significantly. Table 6 displays the hypothesis test findings.

Table 6. Paired Sample t-Test Test Results

Variable	Sig. (2-tailed)
Pretest – Posttest	0,000

The following research hypotheses were employed: H_0 : Students' comprehension of Thaarah material is unaffected by the use of AI-based animation video learning materials; H_1 : Students' comprehension of Thaharah material is affected by the use of AI-based animation video learning materials. The Paired Sample t-Test yielded a Sig. (2-tailed) value of 0.000. H_0 is rejected and H_1 is approved because the value is less than 0.05 ($0.000 < 0.05$). Therefore, it can be said that the adoption of AI-based animation video learning materials has a major impact on students' comprehension of Thaharah content.

N-Gain Analysis Results

N-Gain was computed using the average pretest score of 5.50, the average posttest score of 7.93, and the maximum score of 9 in order to assess the degree of change in student learning outcomes. Table 4.4 below displays the N-Gain computation results.

Table 7. N-Gain Results

N-Gain Value	Categories
0,69	Medium

An N-Gain value of 0.69 indicates that the improvement in student learning outcomes is in the medium group and close to the high category. An N-Gain value of 0.69 was determined based on the computation results. The value is quite near to the high category and falls into the medium group. These findings demonstrate the effectiveness of AI-based animated video learning materials in raising student learning outcomes in Thaarah content.

Overall, the usage of AI-based animation video learning materials was able to significantly improve students' comprehension of the Thaharah content, significant t-test results show that the average pretest score increased to the posttest (Sig. = 0.000), and an N-Gain value of 0.69. These results demonstrate that the created material can be used as a substitute for high school instruction in Islamic Religious Education.

Discussion

The study's findings demonstrate that using animated video learning materials based on artificial intelligence (AI) can improve students' comprehension of Thaharah content. The average student score increased from 5.50 in the pretest to 7.93 in the posttest, indicating this. The hypothesis test results, which revealed a significance value of 0.000 (< 0.05), reinforced the improvement in learning outcomes. These findings demonstrate that the material created was successful in improving students' comprehension of ideas pertaining to major hadats, minor hadats, and purifying techniques.

Additionally, the N-Gain calculation values of 0.69 indicated that the improvement in learning outcomes was in the medium and high categories. The features of the media that offer content in the form of animations, visual representations, and auditory narration to enable pupils to simultaneously process information through several senses contribute to this achievement. The AI-based animation video learning medium created is successfully utilized in PAI learning on Thaharah material (major and minor hadast) at SMA Negeri 5 Pekanbaru, according to the findings of the pretest-posttest analysis, normality test, hypothesis test, and N-Gain.

Development of AI-Based Animated Video Learning Media and Data Analysis Feasibility

The study's findings demonstrate that learning materials on Taharah materials (major and minor hadast) can be presented in a way that is more engaging, dynamic, and simple for students to comprehend through the use of artificial intelligence (AI)-based animation movies. A multimodal learning experience that is consistent with the features of 21st-century learning, which stress students' active participation in the learning process, is produced by combining aspects of animation, visual illustration, text, and voice narration. These findings align with previous studies showing that animated video-based education materials can improve students' focus, motivation, and conceptual comprehension when compared to traditional teaching strategies (Kotimah, 2024; Kurnia et al., 2025; Pradana, 2025a; Subhan et al., 2025).

In addition to presenting the content graphically, this AI-based media makes abstract ideas like taharah more tangible and understandable for pupils. Many of the concepts covered in Islamic Religious Education, particularly the taharah content, are abstract and challenging to comprehend if they are merely explained orally. As a result, using AI-based interactive visual media is a good way to close the comprehension gap among students. This is consistent with Mayer's notion of Cognitive notion of Multimedia Learning in Ali et al., (2024), it claims that students will absorb material more easily and experience less cognitive load when it is presented to them simultaneously through both verbal and visual channels (Mayer, 2019, 2022, 2024).

Additionally, the advancement of AI technology in education has greatly aided in the creation of learning materials that are more effective, engaging, and adaptable. AI makes it possible to create more dynamic media, including procedures for content presentation, music, and visuals, based on the needs of learners. According to recent studies, using AI into education can increase its effectiveness because it can provide a more personalized and interesting learning environment than traditional media (Demartini et al., 2024; Gligorea et al., 2023; Hariyanto et al., 2025; Sari et al., 2024).

This finding is Sahyan et al., (2025), reinforced by research showing that digital technology-based animation video media can make abstract ideas more tangible and engaging, which can boost students' interest and comprehension in learning Islamic Religious Education. Furthermore, additional research (Tabina et al., 2024), has also demonstrated that using animated movies in the classroom can greatly boost student engagement since the kids are more attentive and engaged with the information displayed visually.

The pretest (0.122) and posttest (0.200) data were found to be normally distributed with a significance value larger than 0.05, according to the results of the Kolmogorov-Smirnov normality test. This demonstrates that the research data satisfies the fundamental requirements of parametric tests, ensuring the accuracy and statistical accountability of the Paired Sample t-Test analysis. In order to make sure that the data does not depart from the normal distribution and that the analytic results are more legitimate and trustworthy, the normality test is a crucial step in educational research (Muliana et al., 2025; Muslimah et al., 2026).

Additionally, prior research has demonstrated that when Parametric tests such as the Paired Sample t-Test are used when data is regularly distributed are very suitable for use in educational experimental research. This is due to the test's ability to precisely quantify the notable variations between before and after therapy. As a result, the study's findings provide a

solid and trustworthy statistical basis for characterizing the efficacy of the created educational materials (Solehah et al., 2025; Wafirah, 2025).

Numerous findings from earlier studies demonstrate that AI technology and video animation-based learning materials improve students' cognitive, affective, and psychomotor learning quality (Aswatun & Sari, 2025; Haryani et al., 2025; Maharani et al., 2025; Suryani et al., 2024). This supports the research findings that it is both theoretically and experimentally possible to improve student comprehension through the creation of AI-based animated video content based on Thaharah materials.

Improving Learning Outcomes, Hypothesis Testing, and Media Effectiveness

According to the study's findings, the average student score increased by 2.43 points from 5.50 in the pretest to 7.93 in the posttest. This rise indicates that students' comprehension of Thaharah content is improved by the usage of animated videos based on artificial intelligence (AI). These results show that interactive visual and audio learning materials may help pupils grasp abstract ideas during the learning process by making them more concrete (Pradana, 2025b; Yusnaldi et al., 2025; Zahroh et al., 2025b).

The constructivism method, in which students actively construct knowledge through meaningful learning experiences rather than merely passively receiving information, can account for the improvement in learning outcomes. Through clearer representations, AI-based animated video content gives students the chance to see, comprehend, and relate the idea of thaharah to actual context. This is consistent with studies that demonstrate how multimedia-based instruction can enhance concept comprehension since it increases students' cognitive engagement (Kurniawati & Nita, 2018; Setyawati et al., 2020). The study's findings are consistent with those of Rizki et al. (2022), who claimed that animated video content can greatly enhance students' learning outcomes when compared to traditional instruction. The study demonstrates that animation-based media boosts students' enthusiasm and involvement in the educational process in addition to improving conceptual knowledge. Additionally, the hypothesis test findings indicated that H_0 was rejected and H_1 was accepted because the Sig. (2-tailed) value was $0.000 < 0.05$. This indicates that students' comprehension of Thaharah content is significantly impacted by the usage of AI-based animated video learning materials. These findings demonstrate that the increase was a direct outcome of the treatment given through technology-based learning materials rather than an accident.

These results support the study by Khodijatussoleha et al., (2024), which claims that animated video content significantly enhances students' comprehension of Islamic Religious Education ideas. Animation-based media can improve learning because it presents information in a more structured, interesting, and comprehensible manner than conventional teaching methods. According to Yuliana et al., (2024), animated video content can greatly enhance students' motivation, concentration, and academic performance. This occurs as a result of interactive visual media's capacity to hold students' interest for extended periods of time, improving the information-gathering process. Furthermore, Further research shows that using digital technology-based media, including artificial intelligence (AI), can improve learning quality since it provides a more dynamic and interesting learning environment. With more lifelike visual aids, students become more active learners as well as information consumers (Azmi et al., 2024; Ghazy et al., 2025; Jusman & Usman, 2025a). Overall, the rise in pre-posttest scores, significant hypothesis test findings, and N-Gain values in the medium-high

category demonstrate how well AI-based animation video learning materials work to enhance students' comprehension of Taharah content. These results support the idea that integrating AI technology into education is both theoretically and experimentally significant for raising the caliber of student learning outcomes (Haq & Prasetyo, 2025; Jusman & Usman, 2025b; Putra et al., 2025).

4. CONCLUSION

Based on the research findings and discussion, it can be said that this study has been successful in using the ADDIE development paradigm to create AI-based animation video learning materials on Taharah materials (major and minor hadast) for high school students. By combining animation, visual illustration, text, and voice narration, the media created can convey information in a more engaging, interactive, and understandable manner. The study's findings demonstrate that using AI-based animation video learning resources improves student learning outcomes. The average student score increased from 5.50 in the pretest to 7.93 in the posttest, a difference of 2.43 points, indicating this. Prior to and following the use of educational media, learning outcomes differed noticeably, according to the findings of the hypothesis test using the Paired Sample t-Test, which had a significance value of 0.000 (< 0.05). Furthermore, the improvement in student learning outcomes was in the medium group and in the high category, according to the N-Gain analysis results of 0.69. This result demonstrates the effectiveness of using animated video learning materials based on artificial intelligence (AI) to enhance students' comprehension of Taharah content (major and minor hadast). As a result, the media created is appropriate for use as an alternative instructional medium for Islamic Religious Education that is creative, engaging, and in line with the advancement of educational technology in the digital age.

The numerous limitations of this study must be considered while assessing the research findings. Without a control group, the study used a one-group pretest-posttest design, making it impossible to compare the improvement in learning results with the use of media or other teaching strategies. In addition, the number of research subjects involving only 30 students from SMA Negeri 5 Pekanbaru causes the results of the research to not be widely generalized to all high school students. The test instruments used are also still limited to 9 questions so they do not fully represent all aspects of competence in the Taharah material. In addition, the research is only focused on the material of Taharah (major and minor hadast) and focuses more on measuring students' cognitive aspects, so that the influence of media on affective aspects, learning motivation, and practical skills has not been studied in depth. However, the study's findings indicate that animation videos based on artificial intelligence (AI) have the potential to be a useful substitute learning tool for Islamic Religious Education, particularly for materials that call for procedural demonstration and visualization. With the help of sufficient technology resources and infrastructure from the school, educators are therefore encouraged to use this media to enhance the quality of instruction so that it is more engaging, interactive, and in line with the traits of students in the digital age. For further development, the media can be refined through the addition of interactive quiz features, simulations, independent exercises, and automatic feedback, as well as expanded to other Islamic Religious Education materials such as prayer, zakat, fasting, hajj, morals, and Islamic cultural history. In order to gather more solid empirical data on the efficacy of AI-based learning materials, it is also advised that future

research incorporate more sophisticated AI technologies, such as educational chatbots, adaptive learning, and virtual assistants, and employ quasi-experiment or true experiment designs with control groups and larger sample sizes.

5. REFERENCES

- Ali, A., Maniboey, L. C., Megawati, R., Djarwo, C. F., & Listiani, H. (2024). *Media pembelajaran interaktif: Teori komprehensif dan pengembangan media pembelajaran interaktif di sekolah dasar*. PT. Sonpedia Publishing Indonesia.
- Aswatun, M. M., & Sari, N. (2025). Efektivitas Video Pembelajaran Animasi Dalam Meningkatkan Motivasi Dan Hasil Belajar Siswa Sekolah Dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, 10(04), 410–423.
- Audie, N. (2019). Peran media pembelajaran meningkatkan hasil belajar peserta didik. *Prosiding Seminar Nasional Pendidikan FKIP*, 2(1), 586–595.
- Azmi, M. N., Mansur, H., & Utama, A. H. (2024). Potensi pemanfaatan virtual reality sebagai media pembelajaran di era digital. *Jurnal Dimensi Pendidikan Dan Pembelajaran*, 12, 211–226.
- Azzahra, N., Putri, A., & Khoirunnisa, P. (2024). Peranan guru dalam menghadapi perkembangan teknologi informasi melalui pendidikan abad 21: pendekatan kualitatif tinjauan pustaka. *JIPSD: Jurnal Inovasi Pendidikan Sekolah Dasar*, 1(1), 56–72.
- Demartini, C. G., Sciascia, L., Bosso, A., & Manuri, F. (2024). Artificial intelligence bringing improvements to adaptive learning in education: A case study. *Sustainability*, 16(3), 1347.
- Dewi, A. C. (2024). Peran teknologi dalam meningkatkan kualitas pembelajaran di era digital. *Jurnal Riset Guru Indonesia*, 3(3), 165–170.
- Ghazy, A. C., Ghozali, G., & Wibowo, K. A. (2025). Transformasi pendidikan: Pengembangan metodologi dan media pembelajaran di era digital. *Action Research Journal Indonesia (ARJI)*, 7(4), 2974–2997.
- Gligorea, I., Cioca, M., Oancea, R., Gorski, A.-T., Gorski, H., & Tudorache, P. (2023). Adaptive learning using artificial intelligence in e-learning: A literature review. *Education Sciences*, 13(12), 1216.
- Haq, M. D., & Prasetyo, N. T. (2025). Deep learning sebagai pendekatan transformasional dalam pendidikan: Sebuah tinjauan literatur. *Jurnal Studi Guru Dan Pembelajaran*, 8(3), 1826–1842.
- Hariyanto, Kristianingsih, F. X. D., & Maharani, R. (2025). Artificial intelligence in adaptive education: a systematic review of techniques for personalized learning. *Discover Education*, 4(1), 458.
- Haryani, P., Nugroho, R. R., Arniagsa, H. A., Harsanti, P. D., & Saputra, I. (2025). Studi Literatur: Pemanfaatan Media Pembelajaran Digital Berbasis AI Untuk Meningkatkan Hasil Belajar IPAS Siswa Sekolah Dasar. *Arus Jurnal Pendidikan*, 5(3), 378–391.
- Isnaeni, N., & Hildayah, D. (2020). Media pembelajaran dalam pembentukan interaksi belajar siswa. *Jurnal Syntax Transformation*, 1(5), 148–156.
- Jusman, J., & Usman, A. (2025a). Peran teknologi pendidikan dalam meningkatkan kualitas pembelajaran di era digital: Sebuah studi literatur. *Jurnal Pendidikan Multidisiplin*, 1(1), 1–10.

- Jusman, J., & Usman, A. (2025b). Peran teknologi pendidikan dalam meningkatkan kualitas pembelajaran di era digital: Sebuah studi literatur. *Jurnal Pendidikan Multidisiplin*, 1(1), 1–10.
- Khodijatussoleha, N., Komarudin, K., Hasanah, E., Ismatullah, A., & Malik, M. I. (2024). Efektivitas Media Video Animasi Islami terhadap Peningkatan Kemampuan Literasi dalam Pembelajaran PAI dan Budi Pekerti di Sekolah Dasar: The Effectiveness of Islamic Animated Video Media in Enhancing Literacy Skills in Islamic Education and Character Learning at Elementary Schools. *Kharismatik: Jurnal Ilmu Pendidikan*, 2(1), 49–67.
- Kotimah, E. K. (2024). Efektivitas Media Pembelajaran Audiovisual Berupa Video Animasi Berbasis Powtoon Dalam Pembelajaran Ipa. *Katera: Jurnal Sains Dan Teknologi*, 1(1), 5–12.
- Kurnia, Y. D., Adrias, A., & Suciana, F. (2025). Tinjauan literatur: Pengaruh media video animasi dalam pembelajaran ipa terhadap pemahaman konsep dan motivasi belajar siswa sekolah dasar. *Jurnal Media Ilmu*, 4(1), 56–66.
- Kurniawati, I. D., & Nita, S. (2018). Media pembelajaran berbasis multimedia interaktif untuk meningkatkan Pemahaman konsep mahasiswa. *DoubleClick: Journal of Computer and Information Technology*, 1(2), 68–75.
- Maharani, A. A., Rahmadani, N. C. P., & Renca, Z. S. (2025). Analisis Media Vidio Animasi Terhadap Partisipasi Aktif Siswa Pada Pembelajaran Pancasila Di SDN 2 Tulungagung. *Menulis: Jurnal Penelitian Nusantara*, 1(5), 1–7.
- Mayer, R. E. (2019). What do teachers and administrators need to know about multimedia learning theory. *Multimedia Learning Theory: Preparing for the New Generation of Students*, 85, 18–30.
- Mayer, R. E. (2022). The future of multimedia learning. *The Journal of Applied Instructional Design*, 11(4), 69–77.
- Mayer, R. E. (2024). The past, present, and future of the cognitive theory of multimedia learning. *Educational Psychology Review*, 36(1), 8.
- Muliana, S., Ramadhani, R., Auliani, C., Zulpan, Z., Rusli, A., Wulandari, M. N., & Setyowati, H. (2025). Analisis Data dalam Pendidikan: Memahami Konsep Homogenitas Normalitas dan Pengujiannya untuk Peningkatan Kualitas Pembelajaran. *Teaching and Learning Research Journal*, 1(4), 110–116.
- Muslimah, N., Yuliani, C. E., Putri, R. A., Mayura, V., Rahmadhansyah, A., Selvira, D., Nurrahman, H., Qadri, R., Bramantyo, D., & Rifaldi, A. (2026). Uji Normalitas Dan Homogenitas Dalam Analisis Statistik. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, 12(01), 98–105.
- Pradana, S. (2025). Efektivitas penggunaan video animasi sebagai media pembelajaran interaktif di sekolah dasar. *Jurnal Transformasi Pendidikan Dasar*, 1(1), 33–39.
- Putra, M. S., Lasmawan, I. W., Suharta, I. G. P., & Widiani, I. W. (2025). Transformasi pendidikan di era digital solusi kreatif dalam meningkatkan kualitas pembelajaran. *JPSL: Jurnal Pendidikan, Sosial Dan Lingkungan*, 3(2), 68–78.
- Sahyan, S., Gotri, S., Fadli, M., & Muttawakil, M. A. (2025). Penggunaan media digital interaktif dalam pembelajaran pendidikan agama Islam untuk meningkatkan literasi

- keislaman siswa MIS Pendidikan Agama Islam Medan. *At-Tazakki: Jurnal Kajian Ilmu Pendidikan Islam Dan Humaniora*, 9(2), 142–155.
- Sari, H. E., Tumanggor, B., & Efron, D. (2024). Improving educational outcomes through adaptive learning systems using AI. *International Transactions on Artificial Intelligence*, 3(1), 21–31.
- Setiawan, Z., Pustikayasa, I. M., Jayanegara, I. N., Setiawan, I. N. A. F., Putra, I. N. A. S., Yasa, I. W. A. P., Asry, W., Arsana, I. N. A., Chaniago, G. G., & Wibowo, S. E. (2023). *Pendidikan Multimedia: Konsep dan Aplikasi pada era revolusi industri 4.0 menuju society 5.0*. PT. Sonpedia Publishing Indonesia.
- Setyawati, E., Hidayati, I. S., & Hermawan, T. (2020). Pengaruh penggunaan multimedia interaktif terhadap pemahaman konsep dalam pembelajaran matematika di MTs darul ulum muhammadiyah galur. *Intersections: Jurnal Pendidikan Matematika Dan Matematika*, 5(2), 26–37.
- Solehah, A., Ekowati, E., & Tamyis, T. (2025). Efektivitas Metode Pembelajaran Drill dengan Pendekatan Teori Behavioristik Terhadap Hasil Belajar Siswa Pada Pelajaran Fiqih di MTs Hidayatul Muftadiin Kecamatan Jati Agung. *Edu Society: Jurnal Pendidikan, Ilmu Sosial Dan Pengabdian Kepada Masyarakat*, 5(3), 2173–2184.
- Subhan, M., Tasya, C. A., Rahmadia, K. M., Artha, M. A., & Lestari, N. T. P. (2025). Pengaruh Penggunaan Video Pembelajaran Berbasis Animasi terhadap Hasil Belajar Siswa: Studi Literatur. *Jurnal Teknologi Pendidikan Dan Pembelajaran* | E-ISSN: 3026-6629, 2(4), 974–980.
- Suriyati, S., Mytra, P., Nur, M. J., & Wahdania, W. (2024). Penerapan Media Pembelajaran Berbasis Audio Visual Menggunakan Alat Peraga Pada Materi Pelajaran PAI di SMP Negeri 35 Sinjai. *Jurnal Al-Ilmi Jurnal Riset Pendidikan Islam*, 4(02), 77–83.
- Suryani, A., Loliyana, L., Rohman, F., Sowiyah, S., Sugianto, S., & Khomsiyati, S. (2024). *Artificial Intelligence sebagai Media Pembelajaran untuk Anak Usia Dini*.
- Suseno, S., & Ritonga, S. (2025). Desain media pembelajaran dalam pendidikan agama Islam (PAI). *Jurnal Manajemen Pendidikan*, 10(2), 562–577.
- Tabina, M. H. C., Mubarak, A. I., Sari, I. M., Nabela, Y. A., Fakhriyah, F., & Fajrie, N. (2024). Analisis media pembelajaran interaktif dalam minat belajar siswa kelas 5 SD 03 Tergo. *J-CEKI: Jurnal Cendekia Ilmiah*, 3(5), 2493–2502.
- Taufik, I., & Rindaningsih, I. (2024). Pelatihan dan Pengembangan Guru Sebagai Sumber Daya Manusia Bidang Pendidikan di Era Kecerdasan Buatan (AI). *Management of Education: Jurnal Manajemen Pendidikan Islam*, 10(1), 63–69.
- Tjahyanti, L. P. A. S., Saputra, P. S., & Santo Gitakarma, M. (2022). Peran artificial intelligence (AI) untuk mendukung pembelajaran di masa pandemi Covid-19. *Komteks*, 1(1), 15–21.
- Wafirah, M. (2025). Penerapan Problem-Based Learning Dalam Pembelajaran Statistika Mahasiswa Manajemen Pendidikan Islam. *Wahana Islamika Jurnal Studi Keislaman*, 11(1), 128–143.
- Yuliana, Y., Hermawan, Y., & Solihat, A. N. (2024). Penerapan Model Pembelajaran Pbl Berbantuan Media Video Animasi Powtoon Dalam Meningkatkan Kemampuan Berpikir Kritis Siswa. *Journal Sains Student Research*, 2(4), 423–436.

-
- Yusnaldi, E., Sihotang, A. S., Rizqi, I. H., Anggraini, N., Daulay, N. H., & Wulandari, Y. (2025). Peran media pembelajaran dalam meningkatkan minat belajar siswa pada mata pelajaran ilmu pengetahuan sosial. *Pema*, 5(1), 80–89.
- Zahroh, F., Apriyani, A., & Afrilia, Y. (2025). Analisis manfaat media audio visual animasi sebagai bahan pembelajaran efektif untuk anak sekolah dasar. *Jurnal Ilmiah Penelitian Mahasiswa*, 3(1), 633–644.
- Zahwa, F. A., & Syafi'i, I. (2022). Pemilihan pengembangan media pembelajaran berbasis teknologi informasi. *Equilibrium: Jurnal Penelitian Pendidikan Dan Ekonomi*, 19(01), 61–78.
- Zubaidah, S. (2016). Keterampilan abad ke-21: Keterampilan yang diajarkan melalui pembelajaran. *Seminar Nasional Pendidikan*, 2(2), 1–17.