

1 1

2074_Similarity

 IAIN PTK - 1 Thesis IAIN Pontianak

Document Details

Submission ID

trn:oid::1:3672021645

Submission Date

Oct 7, 2026, 7:55 PM GMT+7

Download Date

Oct 7, 2026, 7:58 PM GMT+7

File Name

2074_Revisi.pdf

File Size

716.9 KB

12 Pages**5,241 Words****33,284 Characters**

20% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text
- Cited Text
- Small Matches (less than 9 words)

Match Groups

-  **64 Not Cited or Quoted 20%**
Matches with neither in-text citation nor quotation marks
-  **0 Missing Quotations 0%**
Matches that are still very similar to source material
-  **0 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
-  **0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 19%  Internet sources
- 7%  Publications
- 1%  Submitted works (Student Papers)

Match Groups

- 64 Not Cited or Quoted 20%**
Matches with neither in-text citation nor quotation marks
- 0 Missing Quotations 0%**
Matches that are still very similar to source material
- 0 Missing Citation 0%**
Matches that have quotation marks, but no in-text citation
- 0 Cited and Quoted 0%**
Matches with in-text citation present, but no quotation marks

Top Sources

- 19% Internet sources
- 7% Publications
- 1% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	cahaya-ic.com	2%
2	Internet	jurnal.staisumatera-medan.ac.id	1%
3	Internet	rama.unimal.ac.id	1%
4	Internet	ejournal.unibabwi.ac.id	<1%
5	Internet	journal.lpkd.or.id	<1%
6	Internet	ejournal.iainpalopo.ac.id	<1%
7	Publication	Oktian Fajar Nugroho, Lisna Hikmawaty, Silvia Ratna Juwita. "Enhancing Element...	<1%
8	Internet	jpfis.unram.ac.id	<1%
9	Internet	lintar.untar.ac.id	<1%
10	Internet	proceedings.uinsaizu.ac.id	<1%

11	Internet	e-journal.undikma.ac.id	<1%
12	Internet	journal.unm.ac.id	<1%
13	Internet	digitalcommons.aaru.edu.jo	<1%
14	Internet	ejournal.abcollab.id	<1%
15	Internet	journal.uad.ac.id	<1%
16	Internet	e-journal.stkipsiliwangi.ac.id	<1%
17	Internet	etheses.uin-malang.ac.id	<1%
18	Internet	ejournal.uin-suka.ac.id	<1%
19	Internet	jipm.irandoc.ac.ir	<1%
20	Internet	societyfisipubb.id	<1%
21	Internet	iconimadxv.uinsgd.ac.id	<1%
22	Internet	journalweb.org	<1%
23	Internet	jurnalstebibama.ac.id	<1%
24	Publication	Suriadi Suriadi. "Internalization of Tasawuf Values in Learning Fiqh at Madrasah ...	<1%

25	Internet	journals.rta.lv	<1%
26	Internet	jurnal.iicet.org	<1%
27	Internet	syekhnurjati.ac.id	<1%
28	Publication	Kun Setyaning Astuti, Gary E. McPherson, Bambang Sugeng, Nila Kurniasari et al. ...	<1%
29	Internet	jurnalfkip.unram.ac.id	<1%
30	Internet	www.journal.uiad.ac.id	<1%
31	Internet	www.researchgate.net	<1%
32	Publication	Herwin Herwin, Lantip Diat Prasajo, Bambang Saptono, Shakila Che Dahalan. "An...	<1%
33	Internet	ejurnal.ubharajaya.ac.id	<1%
34	Internet	iapress.org	<1%
35	Internet	www.ijjet.org	<1%
36	Publication	Stamatios Papadakis. "Teaching with Artificial Intelligence - A Guide for Primary a...	<1%
37	Internet	ijaseit.insightsociety.org	<1%
38	Internet	joiv.org	<1%

39	Internet	journal2.unusa.ac.id	<1%
40	Internet	mdpi-res.com	<1%
41	Internet	repository.lcu.edu.ng	<1%
42	Internet	repository.uin-malang.ac.id	<1%
43	Internet	www.gphjournal.org	<1%
44	Internet	www.jatit.org	<1%

From Historical Narratives to Immersive Experiences: The Impact of Augmented Reality on Learning in Islamic Cultural History Classrooms

Ratna Kasni Yuniendel^{1*}, Abdul Basit², Remiswal³, Muhammad Zalnur⁴, Nini⁵

^{1,2,3,4,5}Universitas Islam Negeri Imam Bonjol Padang, Indonesia

Article Info

Article history:

Received 2026-09-01

Revised 2026-09-24

Accepted 2026-10-07

Keywords:

Augmented reality
Islamic cultural history
Immersive learning
Learning outcomes
Educational technology

ABSTRACT

This study examines the impact of Augmented Reality (AR) on learning in Islamic Cultural History classrooms by transforming historical narratives into interactive, immersive learning experiences. This study used a quantitative, quasi-experimental design with a nonequivalent control group. The participants were eighth-grade students divided into an experimental group and a control group. The experimental group received instruction using AR-based learning media, while the control group was taught through conventional learning methods. The findings indicate that AR had a significant positive effect on students' learning outcomes. Before the intervention, only 37% of students in the experimental group met the minimum mastery criterion (KKM). After implementing AR-based learning, the percentage increased to 87%. In comparison, the control group increased from 32% to 64%. The independent-samples t-test showed a significance value of 0.000 ($p < 0.05$), indicating a significant difference between the two groups. In addition, the Mann-Whitney test yielded significance values of 0.000 and 0.001 ($p < 0.05$), confirming the effectiveness of the treatment provided to the experimental group. The study concludes that Augmented Reality is an effective instructional medium for Islamic Cultural History learning, as it promotes more engaging and immersive learning experiences and contributes to improved student learning outcomes. These findings highlight AR's potential to support innovative, technology-enhanced history education in Islamic schools.

This is an open-access article under the [CC BY-SA](#) license.



Corresponding Author:

Ratna Kasni Yuniendel

Islamic Religious Education Study Program, Faculty of Teacher Training and Education, Universitas Islam Negeri Imam Bonjol Padang, Indonesia

Email: ratnakasni@uinib.ac.id

1. INTRODUCTION

The rapid advancement of digital technology in the twenty-first century has significantly transformed various aspects of human life, including education. This era is characterized by the widespread dissemination of information, the expansion of digital

communication, and the increasing demand for learning environments that provide meaningful educational experiences [1]. In this context, technology is no longer merely a supporting tool but an integral part of the educational process, improving learning quality, effectiveness, and efficiency. Integrating technology into classroom instruction creates opportunities for more interactive, participatory, and student-centered learning environments [2].

In line with these developments, teachers are expected to possess adequate pedagogical competence to design and implement learning experiences that respond to the challenges of the digital age [3]. One manifestation of such competence is the ability to select and utilize instructional media that align with students' characteristics and learning objectives. Innovative learning media have become increasingly important, particularly as classroom instruction in many schools still relies heavily on conventional teacher-centered approaches [4]. Such practices often position students as passive recipients of information, limiting their engagement, motivation, and understanding of the subject matter.

From the perspective of Islamic education, Islamic teachings strongly support using media to transmit knowledge [5]. The Qur'an, particularly in Surah Al-'Alaq (96:1–5), emphasizes the importance of reading, writing, and using instruments that facilitate the acquisition and dissemination of knowledge. These verses show that knowledge is conveyed through various forms of mediation (wasilah), enabling people to understand and develop their intellectual capacities. Therefore, using instructional media is not only pedagogically relevant but also consistent with Islamic values that encourage using appropriate means to support learning and knowledge development [6].

Given these considerations, integrating innovative technology-based instructional media has become an essential requirement in contemporary education [7]. Instructional media bridge learning content and students' learning experiences, enabling abstract concepts to be presented in more concrete, engaging, and meaningful ways [8]. Consequently, technology integration in education extends beyond improving instructional delivery; it can also foster richer, more interactive, and more meaningful learning experiences that align with the demands of twenty-first-century education [9].

Islamic Religious Education in Indonesian madrasahs encompasses several core subjects, including Aqidah Akhlak, Al-Qur'an Hadith, Fiqh, and Islamic Cultural History [10]. Among these subjects, SKI plays a strategic role in fostering students' understanding of Islamic civilization, historical events, prominent Muslim figures, and the cultural values that have shaped Islamic societies throughout history. Beyond acquiring historical knowledge, SKI aims to cultivate students' appreciation of Islamic heritage and encourage them to internalize the moral and educational values embedded in historical experiences [11].

Despite its importance, teaching Islamic Cultural History often faces pedagogical challenges. Preliminary observations at MTsN 6 Kota Padang revealed that many students perceive SKI primarily as a collection of past events to be memorized. Such perceptions contribute to low learning interest, limited classroom engagement, and a tendency to regard the subject as less relevant than other academic disciplines. Consequently, students

frequently experience boredom during instruction, which may hinder their understanding of historical content and negatively affect their academic achievement [12].

These challenges indicate a need for innovative instructional approaches that shift historical learning from passive information reception to active, meaningful experiences. One promising alternative is Augmented Reality (AR), a technology that integrates virtual content with real-world environments and enables learners to interact with digital objects in real time [13]. By presenting historical information through interactive visualizations, AR has the potential to transform abstract historical narratives into contextual, exploratory, and immersive learning experiences [14].

Previous studies have demonstrated that Augmented Reality can enhance student motivation, engagement, conceptual understanding, and learning achievement across various educational disciplines [15]. In addition, AR facilitates active exploration and collaborative learning, allowing students to construct knowledge through direct interaction with learning materials [16]. These advantages make AR particularly relevant for history-related subjects, where understanding historical events often requires learners to visualize places, figures, artifacts, and socio-cultural contexts they cannot directly observe [17].

Given the pedagogical potential of Augmented Reality and the challenges associated with Islamic Cultural History instruction, this study investigates the impact of AR-based learning on students' learning outcomes in Islamic Cultural History classrooms. Specifically, the study examines whether integrating Augmented Reality can transform students' learning experiences and improve learning outcomes among eighth-grade students at MTsN 6 Kota Padang.

2. METHOD

This study employed a quantitative approach using a quasi-experimental design to investigate the impact of Augmented Reality (AR)-assisted learning on students' learning outcomes and learning experiences in Islamic Cultural History (ICH) classrooms [18]. The target population comprised all eighth-grade students of MTsN 6 Padang, consisting of nine classes (VIII-1 to VIII-9) with a total of 279 students. Given the large population size and the practical limitations of involving all students, the study focused on eighth-grade learners who possessed relatively similar academic and developmental characteristics relevant to the research objectives [19].

The sample included 61 students from two intact classes. Class VIII-1, comprising 30 students, was assigned as the experimental group and received AR-supported instruction, while Class VIII-2, consisting of 31 students, served as the control group and participated in conventional learning activities. The selection of both classes was based on specific considerations to ensure comparable characteristics and relatively homogeneous learning conditions. Therefore, the researchers employed purposive sampling to determine the research sample [20].

Data were collected using both test and non-test techniques. The test instrument consisted of an objective multiple-choice achievement test designed to assess students' cognitive learning outcomes in Islamic Cultural History [21]. Meanwhile, non-test instruments included a student perception questionnaire and an observation sheet [22]. The

6434

<https://doi.org/10.58421/gehu.v5i5.2074>

questionnaire explored students' perceptions and learning experiences after implementing AR-based instruction on the Ayyubid Dynasty. The observation instrument examined students' participation, engagement, and learning behaviors throughout the instructional process, providing evidence of how learners interacted with and applied the knowledge gained during classroom activities [23].

Before data analysis, all research instruments underwent validity and reliability testing to ensure they were appropriate for data collection (Lim, 2024). The collected data were analyzed through prerequisite statistical tests, including normality and homogeneity testing, followed by hypothesis testing to determine the effectiveness of Augmented Reality in enhancing students' learning outcomes and learning experiences in Islamic Cultural History learning [24].

3. RESULTS AND DISCUSSION

Before implementing Augmented Reality (AR)-supported instruction, teachers in the participating classrooms taught Islamic Cultural History (ICH) primarily through conventional approaches. Learning activities largely centered on teacher explanations, textbook-based instruction, and printed student worksheets, creating a learning environment characterized by one-way knowledge transmission. In this setting, historical content was presented primarily as textual narratives, limiting students' opportunities to visualize historical events, figures, and cultural contexts in a meaningful way.

The preliminary assessment revealed that students' achievement levels in both the experimental and control groups fell below the school's minimum mastery criterion. The experimental group recorded a mean pre-test score of 68.3, while the control group achieved a mean score of 66.3. These findings indicate that students initially struggled to comprehend and internalize Islamic historical content when learning relied primarily on conventional instructional methods.

Following the instructional intervention, notable differences emerged between students who participated in AR-enhanced learning and those who received traditional instruction. Analysis of students' performance across cognitive, affective, and psychomotor domains demonstrated superior outcomes in the experimental group. Integrating Augmented Reality enabled students to interact with three-dimensional visualizations and contextual representations of historical content, fostering deeper engagement with learning materials and facilitating a more meaningful understanding of historical concepts.

The observed improvement suggests that AR functions not merely as a technological supplement but as a pedagogical tool that can transform the nature of historical learning. By bridging abstract historical narratives with interactive visual experiences, AR helps students construct richer mental representations of past events and civilizations. Consequently, learning shifts from passive reception of information to active exploration and interpretation, consistent with contemporary perspectives on immersive learning environments.

Furthermore, the findings indicate that AR's positive influence extends beyond cognitive achievement. Increased participation, interest, and classroom engagement among

students in the experimental group suggest that immersive technologies can strengthen affective and behavioral dimensions of learning. This reinforces the argument that effective history education should not only promote knowledge acquisition but also cultivate meaningful learning experiences that encourage students to connect with historical content in more authentic and engaging ways.

Figure 1 presents the differences in learning outcomes between the experimental and control groups.

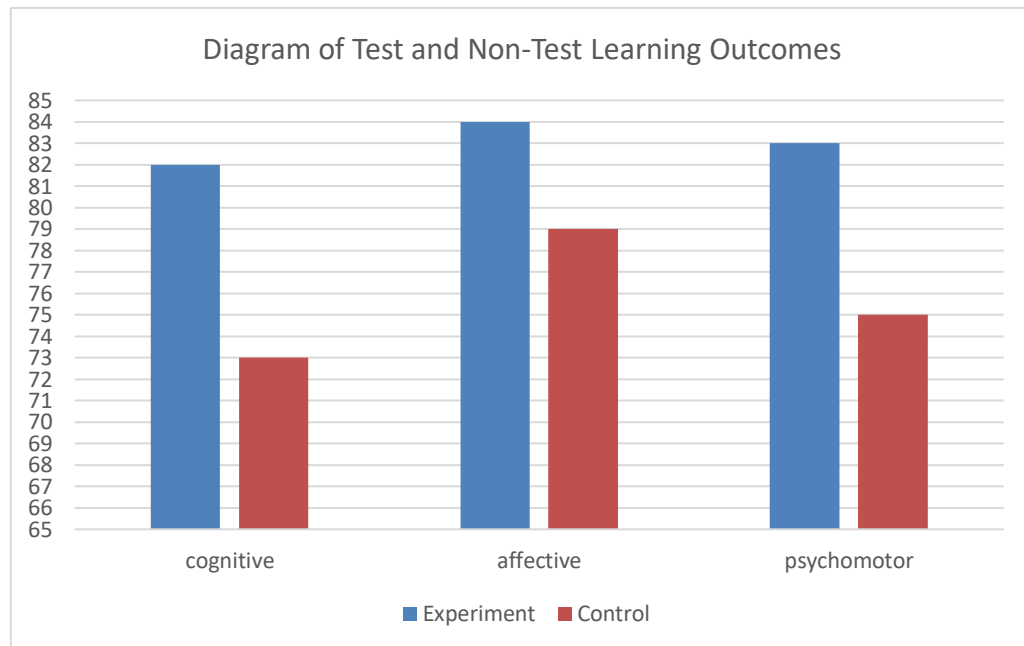


Figure 1. Diagram of Test and Non-Test Learning Outcomes

The data in Figure 1 show clear differences in learning outcomes between students who received Augmented Reality (AR)-supported instruction and those who received conventional instruction. Across all assessed domains, namely cognitive, affective, and psychomotor, the experimental group consistently achieved higher mean scores than the control group.

In the cognitive domain, students in the experimental group obtained an average score of 82, exceeding the control group's average score of 73. Similar patterns were observed in the affective domain, where the experimental group achieved a mean score of 84, compared with 79 in the control group. Likewise, in the psychomotor domain, the experimental group recorded an average score of 83.3, while the control group attained a mean score of 75.7. These findings show that students exposed to AR-enhanced learning performed better across multiple learning dimensions than those who learned through conventional instructional approaches [25].

The experimental group's consistently higher achievement suggests that integrating Augmented Reality positively contributed to students' understanding, engagement, and participation during the learning process [26]. The interactive and visual nature of AR enables learners to explore historical content in a more contextualized and meaningful

6436

<https://doi.org/10.58421/gehu.v5i5.2074>

manner, thereby facilitating deeper cognitive processing and stronger connections between abstract historical narratives and tangible learning experiences [27].

Previous studies have indicated that ineffective instructional media may reduce students' motivation, interest, and active involvement in learning activities, ultimately affecting academic achievement [28]. In contrast, the findings of the present study suggest that AR-supported instruction provides a more engaging learning environment that encourages students to participate actively in the learning process. By transforming historical content into interactive visual experiences, AR helps learners move beyond passive information reception and engage in a more immersive exploration of Islamic historical events and civilizations [29].

To further examine the statistical significance of these differences, we conducted hypothesis tests using the Independent-Samples t-test for the cognitive achievement data and the Mann–Whitney U test for the non-test instruments measuring affective and psychomotor outcomes. The results of these analyses are presented in Tables 1 and 2.

Table 1. Hypothesis Test Results of Test Instruments

Learning outcomes	F	t	df	Sig.(2-tailed)
Cognitive	1,086	3,958	59	,000

Table 2. Results of Hypothesis Testing for Non-Test Instruments

Learning outcomes	Mann-Whitney	Wilcoxon	Z	Asymp.Sig.(2-tailed)
Affective	133,500	629,500	-4,816	,000
Psychomotor	249,000	745,00	-3,203	,001

The Independent Samples t-test on cognitive learning outcomes showed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between students who participated in Augmented Reality (AR)-supported learning and those who received conventional instruction. This finding shows that the instructional treatment in the experimental group produced a measurable effect on students' cognitive achievement in Islamic Cultural History.

Similarly, the analysis of affective and psychomotor learning outcomes using the Mann–Whitney U test yielded significance values of 0.000 and 0.001, respectively, both below the established significance threshold of 0.05. These results confirm that meaningful differences existed between the experimental and control groups not only in cognitive achievement but also in students' attitudes, engagement, and learning behaviors. The findings therefore provide empirical evidence that AR-enhanced instruction positively influences multiple dimensions of student learning.

A closer examination of students' mastery achievement further strengthens this conclusion. Before the intervention, only 37% of students in the experimental group met the school's minimum mastery criterion, with an average score of 68.3. After implementing AR-supported learning, the proportion of students meeting the mastery criterion increased substantially to 87%, and the mean score rose to 82. This improvement indicates that integrating AR contributed to a considerable enhancement in students' understanding of Islamic historical content.

Although the control group also improved, the change was smaller. The percentage of students achieving the minimum mastery criterion increased from 32% to 64%, while the mean score rose from 66.3 to 73. In comparison, the experimental group demonstrated greater gains in both achievement levels and mastery attainment, suggesting that AR-supported instruction was more effective than conventional teaching approaches in facilitating student learning.

These findings support the argument that Augmented Reality can transform the teaching of Islamic Cultural History from a predominantly narrative-based approach into a more immersive and interactive learning experience. By visualizing historical events, figures, and cultural artifacts in three-dimensional formats, students can engage more actively with historical content, strengthening comprehension, retention, and meaningful learning. The significant improvements observed across cognitive, affective, and psychomotor domains indicate that AR not only enhances academic performance but also enriches the overall quality of students' learning experiences in Islamic Cultural History classrooms.

The findings indicate that students' academic achievement improved after implementing Augmented Reality (AR)-supported instruction in Islamic Cultural History. This improvement can be attributed to AR technology's ability to enrich learning content beyond what conventional instructional materials provide. Through interactive visualizations and contextual representations, students could access additional historical information, explore prominent historical figures, and view visual depictions of historical contexts not adequately represented in textbooks or student worksheets. As a result, abstract historical narratives became more concrete, accessible, and easier to comprehend.

The improved learning outcomes may also be explained by differences in instructional experiences the two groups received. Although both groups studied the same learning materials and followed comparable instructional procedures, the experimental group engaged with historical content through immersive AR-based learning activities. This experience enabled students to interact more actively with learning resources, facilitating deeper understanding and more meaningful knowledge construction. Consequently, the experimental group's superior performance suggests that integrating AR positively contributed to students' learning achievement.

From a pedagogical perspective, these findings support the proposition that AR serves not merely as a supplementary technological tool but as a transformative learning medium that can enrich the teaching and learning of Islamic Cultural History. By combining textual information with interactive three-dimensional visualizations, AR creates opportunities for students to experience historical content in ways that are difficult to achieve through traditional instructional approaches [30]. This shift aligns with contemporary perspectives that emphasize the importance of experiential and immersive learning environments in fostering meaningful educational experiences [31].

The results of the present study are also consistent with previous research highlighting the educational potential of Augmented Reality. Earlier studies have reported that AR-based learning environments contribute positively to students' academic performance, engagement, and overall learning experiences when compared with

6438

<https://doi.org/10.58421/gehu.v5i5.2074>

conventional teaching methods [32]. These findings reinforce the growing body of evidence suggesting that AR can play a significant role in enhancing the effectiveness of technology-supported learning [33].

Beyond cognitive achievement, implementing AR produced notable effects on students' affective development. Students showed greater interest and enthusiasm for learning Islamic Cultural History, stronger motivation to master the learning materials, and more active participation in classroom activities. The interactive nature of AR encouraged learners to engage with historical content not as passive recipients of information but as active participants in the learning process [34]. This engagement is particularly important in history education, where meaningful understanding often emerges when learners can connect historical narratives with authentic, engaging learning experiences [35].

Taken together, these findings suggest that Augmented Reality facilitates a shift from conventional narrative-based instruction toward a more immersive learning environment [36]. By enabling students to visualize, explore, and interact with historical content, AR enhances not only learning outcomes but also the quality of students' learning experiences, thereby supporting the broader goal of making Islamic Cultural History learning more meaningful, engaging, and learner-centered.

In the educational process, teachers play a crucial role in designing learning environments that are engaging, meaningful, and responsive to students' learning needs [37]. One way to do this is by integrating creative, innovative, and diverse instructional media that can stimulate students' attention, increase participation, and enhance learning motivation [38]. Effective use of learning media not only supports the delivery of instructional content but also helps optimize learning processes and improve student achievement [39]. From an Islamic educational perspective, educators' responsibility to facilitate meaningful learning aligns closely with religious principles that encourage disseminating knowledge through appropriate methods and guidance. This perspective is reflected in the teachings of the Qur'an, including Allah's command in Surah An-Nahl verse 44, which emphasizes conveying knowledge and providing clear explanations to learners.

بِالْبَيِّنَاتِ وَالزُّبُرِ وَأَنْزَلْنَا إِلَيْكَ الذِّكْرَ لِتُبَيِّنَ لِلنَّاسِ مَا نُزِّلَ إِلَيْهِمْ وَلَعَلَّهُمْ يَتَفَكَّرُونَ

“...And We revealed to you the Reminder (the Qur'an) so that you may explain to people what has been sent down to them, and so that they may reflect.”

Integrating instructional media in educational settings should be carefully aligned with students' cognitive, emotional, and developmental characteristics. In Islamic education, educators are expected to consider learners' developmental readiness and religious understanding when selecting and implementing learning resources. Instructional media are not merely tools for delivering information; they also shape students' learning experiences and influence how knowledge is perceived and internalized [40]. Consequently, without adequate consideration of students' developmental stages and learning capacities, instructional strategies may be less effective in achieving intended learning outcomes [41].

Based on this study's findings and the data analysis results, it can be concluded that implementing Augmented Reality (AR)-supported learning positively influences students' learning outcomes in Islamic Cultural History (ICH). AR enables students to develop a clearer, more comprehensive understanding of historical content through interactive, visually rich learning experiences. Furthermore, AR-supported instruction promotes a more engaging, enjoyable, efficient, and meaningful learning process by encouraging active participation and facilitating deeper interaction with learning materials [42].

The findings also indicate that Augmented Reality contributes not only to improvements in academic achievement but also to transforming students' learning experiences from passive reception of historical narratives to more immersive, learner-centered engagement with historical content. Therefore, it can be concluded that the use of Augmented Reality (AR) has a significant positive effect on students' learning outcomes in Islamic Cultural History learning, demonstrating its potential as an innovative instructional approach for enhancing the quality and effectiveness of history education

4. CONCLUSION

The findings show that students' learning outcomes in Islamic Cultural History (ICH) were relatively low before implementing Augmented Reality (AR)-supported instruction. In both the experimental and control groups, a substantial proportion of students had not yet achieved the minimum mastery criterion, indicating challenges in understanding historical content when learning was conducted through conventional instructional approaches.

Following the intervention, students who participated in AR-enhanced learning achieved significantly better outcomes than those in the control group. The experimental group not only demonstrated higher cognitive achievement but also exhibited stronger affective and behavioral engagement during the learning process. Integrating AR increased learning interest, improved understanding of historical concepts, and encouraged more active participation in classroom activities. These findings suggest that immersive, interactive learning experiences can deepen engagement with Islamic historical content and promote more meaningful learning.

The statistical analyses further confirmed the intervention's effectiveness. The Independent Samples t-test revealed a statistically significant difference in cognitive learning outcomes between the experimental and control groups ($p = 0.000 < 0.05$). Similarly, the Mann-Whitney U test conducted on the non-test data indicated significant differences in both affective and psychomotor dimensions, with significance values of 0.000 and 0.001, respectively. These results provide strong empirical evidence that Augmented Reality had a significant positive effect on students' learning outcomes.

Overall, this study concludes that Augmented Reality represents an effective instructional approach for Islamic Cultural History education. Beyond improving academic achievement, AR supports a shift from traditional narrative-based instruction to more immersive, interactive, and learner-centered learning experiences. By enabling students to

visualize and engage directly with historical content, AR enhances not only what students learn but also how they experience the learning process, thereby contributing to more meaningful and effective history education.

REFERENCES

- [1] H. Abuhassna, S. Alnawajha, F. Awae, M. Adnan, and B. I. Edwards, "Synthesizing technology integration within the Addie model for instructional design: A comprehensive systematic literature review," *Journal of Autonomous Intelligence*, vol. 7, no. 5, pp. 1–28, 2024.
- [2] M. A. Alam, "From teacher-centered to student-centered learning: The role of constructivism and connectivism in pedagogical transformation," *Journal of Education*, vol. 11, no. 2, pp. 154–167, 2023.
- [3] M. A. AlGerafi, Y. Zhou, M. Oubibi, and T. T. Wijaya, "Unlocking the potential: A comprehensive evaluation of augmented reality and virtual reality in education," *Electronics*, vol. 12, no. 18, p. 3953, 2023.
- [4] A. Amores-Valencia, D. Burgos, and J. W. Branch-Bedoya, "Influence of motivation and academic performance in the use of augmented reality in education: A systematic review," *Frontiers in Psychology*, vol. 13, p. 1011409, 2022.
- [5] A. Askar, N. Nurdin, A. Pettalongi, S. S. Pettalongi, and J. H. I. T. Basire, "Online Islamic knowledge sources and their authority in Islamic learning: A case study of Indonesian Muslim universities," *Cogent Education*, vol. 12, no. 1, p. 2504236, 2025.
- [6] M. Aziz, D. S. Napitupulu, and S. K. Siregar, "Learning media in early childhood education curriculum in instilling religious character from the perspective of the Qur'an," *Fikroh: Jurnal Pemikiran dan Pendidikan Islam*, vol. 18, no. 1, pp. 99–113, 2025.
- [7] K. N. Azizah, M. Ibrahim, and W. Widodo, "Process skill assessment instrument: Innovation to measure student's learning result holistically," *Journal of Physics: Conference Series*, vol. 947, no. 1, p. 012026, 2018.
- [8] C. Baker, "Quantitative research designs: Experimental, quasi-experimental, and descriptive," in *Evidence-Based Practice: An Integrative Approach to Research, Administration, and Practice*, 2nd ed., 2017, pp. 155–183.
- [9] A. R. Balcha, H.-L. Chen, and R. Ramadhana A. B., "The impact of augmented reality-assisted structured learning on environmental education for preschool children," *Education and Information Technologies*, vol. 30, no. 17, pp. 25467–25503, 2025.
- [10] A. Basit, A. Ahmad, D. S. Azhari, R. Ingriza, and A. Qurba, "Fundamental human resource management concepts for Islamic educational institutions: Fostering character and religious values through strategic workforce development," *Abjadia: International Journal of Education*, vol. 9, no. 3, pp. 737–744, 2024.
- [11] A. Basit, A. Remiswal, S. Nelwati, M. Zalnur, and A. Ahmad, "Embedding Islamic spiritual values in thematic teaching for primary Islamic schools," *Ta'dibuna: Jurnal Pendidikan Islam*, vol. 14, no. 5, pp. 605–616, 2025.
- [12] T. Booyoesen, "Exploring the impact of augmented reality on student engagement and learning outcomes in science education," *Journal Educational Verkenning*, vol. 4, no. 4, pp. 25–32, 2023.
- [13] G. Bozzelli, A. Raia, S. Ricciardi, M. De Nino, N. Barile, M. Perrella, M. Tramontano, A. Pagano, and A. Palombini, "An integrated VR/AR framework for

- user-centric interactive experience of cultural heritage: The ArkaeVision project,” *Digital Applications in Archaeology and Cultural Heritage*, vol. 15, p. e00124, 2019.
- [14] F. Caena and C. Redecker, “Aligning teacher competence frameworks to 21st century challenges: The case for the European Digital Competence Framework for Educators (DigCompEdu),” *European Journal of Education*, vol. 54, no. 3, pp. 356–369, 2019.
- [15] Y. Cai, Z. Pan, and M. Liu, “Augmented reality technology in language learning: A meta-analysis,” *Journal of Computer Assisted Learning*, vol. 38, no. 4, pp. 929–945, 2022.
- [16] M. Cents-Boonstra, A. Lichtwarck-Aschoff, E. Denessen, N. Aelterman, and L. Haerens, “Fostering student engagement with motivating teaching: An observation study of teacher and student behaviours,” *Research Papers in Education*, vol. 36, no. 6, pp. 754–779, 2021.
- [17] J. Challenor and M. Ma, “A review of augmented reality applications for history education and heritage visualisation,” *Multimodal Technologies and Interaction*, vol. 3, no. 2, p. 39, 2019.
- [18] J. I. Chisunum and C. Nwadiokwu, “Enhancing student engagement through practical production and utilization of instructional materials in an educational technology class: A multifaceted approach,” *NIU Journal of Educational Research*, vol. 10, no. 2, pp. 81–89, 2024.
- [19] E. Christou *et al.*, “Augmented reality for story-related activities in primary and secondary education: A systematic review,” *Universal Access in the Information Society*, vol. 25, no. 1, p. 27, 2026.
- [20] M. Cukurova, “The interplay of learning, analytics and artificial intelligence in education: A vision for hybrid intelligence,” *British Journal of Educational Technology*, vol. 56, no. 2, pp. 469–488, 2025.
- [21] K. Daniel, M. M. Msambwa, F. Antony, and X. Wan, “Motivate students for better academic achievement: A systematic review of blended innovative teaching and its impact on learning,” *Computer Applications in Engineering Education*, vol. 32, no. 4, p. e22733, 2024.
- [22] S. Dargan, S. Bansal, M. Kumar, A. Mittal, and K. Kumar, “Augmented reality: A comprehensive review,” *Archives of Computational Methods in Engineering*, vol. 30, no. 2, pp. 1057–1080, 2023.
- [23] L. Darling-Hammond, L. Flook, C. Cook-Harvey, B. Barron, and D. Osher, “Implications for educational practice of the science of learning and development,” *Applied Developmental Science*, vol. 24, no. 2, pp. 97–140, 2020.
- [24] S. S. Hamzah, H. Mohamed, and N. Aziz, “Critical analysis of informal learning and affective design components in AR for developing a conceptual AR model in tourism,” in *Proc. 2025 7th International Congress on Human-Computer Interaction, Optimization and Robotic Applications (ICHORA)*, 2025, pp. 1–11.
- [25] I. J. Kabilito, “The influence of instructional materials on students’ academic achievement,” *Research Invention Journal of Law, Communication and Languages*, vol. 3, no. 2, pp. 30–33, 2024.
- [26] I. W. Kandia, N. M. Suarningsih, W. Wahdah, A. Arifin, J. Jenuri, and D. M. Suwarma, “The strategic role of learning media in optimizing student learning outcomes,” *Journal of Education Research*, vol. 4, no. 2, pp. 508–514, 2023.
- [27] J. Kang, X. Xu, and L. Yan, “Leveraging affordances of immersive technology-supported collaborative learning (ITCL): A systematic review,” *Education and Information Technologies*, vol. 30, no. 1, pp. 607–647, 2025.

- [28] S. Labhane, T. Keerthika, V. T. Dahiya, K. Ateeq, and D. Bawane, "Virtual reality and augmented reality: Future trends in technology and education," *Acta Scientiae*, vol. 7, no. 1, pp. 538–550, 2024.
- [29] W. B. Latif, I. M. Y. Yasin, M. A. Rahaman, M. S. Forid, M. N. Islam, and M. Z. Hossain, "Impact of augmented reality (AR) and virtual reality (VR) on interactive learning systems," *Pacific Journal of Advanced Engineering Innovations*, vol. 1, no. 1, pp. 23–32, 2024.
- [30] W. M. Lim, "A typology of validity: Content, face, convergent, discriminant, nomological and predictive validity," *Journal of Trade Science*, vol. 12, no. 3, pp. 155–179, 2024.
- [31] Q. Liu, J. Liu, J. Cai, and Z. Zhang, "The relationship between domain- and task-specific self-efficacy and mathematical problem posing: A large-scale study of eighth-grade students in China," *Educational Studies in Mathematics*, vol. 105, no. 3, pp. 407–431, 2020.
- [32] N. Mansour, C. Aras, J. K. Staarman, and S. B. M. Alotaibi, "Embodied learning of science concepts through augmented reality technology," *Education and Information Technologies*, vol. 30, no. 6, pp. 8245–8275, 2025.
- [33] A. Mas'ud, A. Z. Fuad, and A. Zaini, "Evolution and orientation of Islamic education in Indonesia and Malaysia," *Journal of Indonesian Islam*, vol. 13, no. 1, pp. 21–49, 2019.
- [34] N. A. M. Mokmin, S. Hanjun, C. Jing, and S. Qi, "Impact of an AR-based learning approach on the learning achievement, motivation, and cognitive load of students on a design course," *Journal of Computers in Education*, vol. 11, no. 2, pp. 557–574, 2024.
- [35] T. D. Nguyen, M. Cannata, and J. Miller, "Understanding student behavioral engagement: Importance of student interaction with peers and teachers," *The Journal of Educational Research*, vol. 111, no. 2, pp. 163–174, 2018.
- [36] G. Papanastasiou, A. Drigas, C. Skianis, M. Lytras, and E. Papanastasiou, "Virtual and augmented reality effects on K-12, higher and tertiary education students' twenty-first century skills," *Virtual Reality*, vol. 23, no. 4, pp. 425–436, 2019.
- [37] W. Park and H. Cho, "The interaction of history and STEM learning goals in teacher-developed curriculum materials: Opportunities and challenges for STEAM education," *Asia Pacific Education Review*, vol. 23, no. 3, pp. 457–474, 2022.
- [38] N. Popa, "Operationalizing historical consciousness: A review and synthesis of the literature on meaning making in historical learning," *Review of Educational Research*, vol. 92, no. 2, pp. 171–208, 2022.
- [39] R. A. Rahimi and G. S. Oh, "Rethinking the role of educators in the 21st century: Navigating globalization, technology, and pandemics," *Journal of Marketing Analytics*, vol. 12, no. 2, pp. 182–197, 2024.
- [40] M. A. Sattar, M. U. Maqbool, F. Zakir, and M. Billah, "Enhancing student engagement through augmented reality in secondary biology education," *Frontiers in Education*, vol. 10, p. 1628004, 2025.
- [41] R. Setyaningsih, N. Khodijah, and M. Munir, "The effect of single-parent parenting, peer conformity, and self-concept on adolescent religiosity," *Al-Ishlah: Jurnal Pendidikan*, vol. 13, no. 3, pp. 2951–2964, 2021.
- [42] J. G. Sharp, J. C. Sharp, and E. Young, "Academic boredom, engagement and the achievement of undergraduate students at university: A review and synthesis of relevant literature," *Research Papers in Education*, vol. 35, no. 2, pp. 144–184, 2020.