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The Effectiveness of Augmented Reality–Based Islamic Education Learning on Students' Learning Motivation at SMA Al Fatih Simpang Rimba, Kepulauan Bangka Belitung

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Abstract

Research Objective– This study aims to examine the effectiveness of Augmented Reality (AR)–based Islamic education learning in enhancing students' learning motivation at SMA Al Fatih Simpang Rimba, Kepulauan Bangka Belitung, addressing the limited empirical evidence on motivational outcomes of AR integration in non-formal educational settings.

Methodology– A quantitative quasi-experimental method employing a pretest–posttest non-equivalent control group design was applied. The sample consisted of 38 students divided into an experimental group receiving AR-based instruction and a control group receiving conventional learning. Students' learning motivation was measured using a validated ARCS-based questionnaire. Data were analyzed using descriptive statistics, assumption testing

Findings– The results indicate a statistically significant improvement in learning motivation among students exposed to AR-based Islamic education learning. The experimental group demonstrated substantially higher posttest motivation scores than the control group. Dimension-level analysis revealed strong effects on attention and relevance, with moderate yet significant effects on confidence and satisfaction.

Research Implications/Limitations– The findings suggest that AR-based learning can effectively enhance motivational engagement in Islamic education, particularly within senior high school contexts. However, the study is limited by its short intervention duration and focus on motivational variables.

Originality/Value– This study contributes novel insights by focusing on learning motivation as the primary outcome and situating AR-based Islamic education learning within a senior high school environment, thereby enriching both motivational theory and digital Islamic pedagogy.

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INTRODUCTION

Islamic education plays a fundamental role in shaping students' moral character, spiritual awareness, and ethical behavior within formal and non-formal educational settings.[1, 2] In the contemporary digital era, the effectiveness of PAI learning is increasingly challenged by students' declining learning motivation, particularly among younger generations who are deeply immersed in digital technology.[3, 4, 5] Learning approaches that rely heavily on conventional lecture-based methods often fail to attract students' attention and engagement, thereby limiting the achievement of instructional objectives in Islamic education.[6, 7,]

Recent developments in educational technology have highlighted Augmented Reality (AR) as a promising interactive medium capable of enhancing students' learning experiences through immersive and visualized content. AR integrates virtual elements with real-world environments, allowing learners to interact directly with abstract concepts in a more concrete and engaging manner.[8] Several studies have demonstrated that AR can improve conceptual understanding, learning outcomes, and student engagement across various educational disciplines, including religious education.[9] In the context of Islamic education, AR has been utilized to support Qur'anic learning, understanding of prayer procedures, and comprehension of Islamic concepts that are traditionally perceived as abstract or text-heavy.[10]

Empirical studies on AR-based PAI learning in Indonesia indicate positive impacts on students' cognitive achievement and meaningful learning experiences. For instance, Nasikhin et al. found that AR-assisted Islamic education learning in pesantren-based schools improved

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[1] Shofiyah Salsabila Siswanto, Asrori Asrori, and Rusman Rusman. "Internalization of Pancasila Students' Profile Values through Al-Qur'an Hadith Materials in Tenth Grade at SMKN 8 Surabaya." *At-Tarbiyah: Jurnal Pendidikan* 8, no. 1 (2023): 47–59. https://doi.org/10.18326/attarbiyah.v8i1.47-59

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[4] Asrori, A., & Rusman, R. *Filsafat Pendidikan Islam: Sebuah Pendekatan Filsafat Islam Klasik*. (Malang: Pustaka Learning Center, 2020). http://repository.um-surabaya.ac.id/4460/.

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[7] Asrori, M. P. I. *Inovasi belajar dan Pembelajaran PAI (Teori & Aplikatif)*. (Surabaya: UMSurabaya Press, 2019). http://repository.um-surabaya.ac.id/id/eprint/4629.

[8] Noureddine Elmqaddem, "Augmented Reality and Virtual Reality in Education. Myth or Reality?" *International Journal of Emerging Technologies in Learning (iJET)* 14, no. 3 (2019): 234–42, https://doi.org/10.3991/ijet.v14i03.9289

[9] Arinal Haq Fauziah, "Augmented Reality (AR) as Interactive Education in Islamic Education to Improve Religious Understanding," *Proceeding of International Conference on Islamic Education (ICIED)* 9, no. 1 (2024): 64–72, https://doi.org/10.18860/icied.v9i1.3124

[10] Nurul Azizah, Ulfa Muna Kamila, dan Rosendah Dwi Maulaya, "Implementing Augmented Reality to Enhance Al-Qur'an Learning Outcomes in Elementary Grade Four," *Proceeding of International Conference on Islamic Boarding School* 2, no. 1 (2025), https://doi.org/10.61159/icop.v2i1.599

students' understanding of religious material.[11] Similarly, Ulul Albab et al. reported that AR integration significantly contributed to meaningful learning in Islamic education at the secondary school level.[12] Other studies have also emphasized the role of AR in strengthening religious understanding, promoting religious moderation, and enhancing interaction in PAI classrooms.[13]

However, despite the growing body of literature on AR in Islamic education, most existing studies focus predominantly on cognitive outcomes, instructional design, or conceptual understanding, while students' learning motivation remains underexplored, particularly within alternative education settings such as senior high school. Furthermore, current research largely concentrates on formal educational institutions—elementary schools, junior high schools, senior high schools, and pesantren—leaving a significant gap in understanding how AR-based PAI learning functions in flexible, learner-centered environments like senior high school.[14] Senior high school contexts differ substantially from conventional schools in terms of curriculum flexibility, learning autonomy, instructional interaction, and parental involvement, which may influence how technological media affect students' motivation and engagement.

In addition, although motivational aspects have been widely discussed in Islamic education literature, they are often examined through pedagogical strategies, teacher motivation, or reward-based methods rather than through the integration of emerging digital technologies such as AR.[15] This indicates a theoretical and empirical gap regarding how immersive digital media can foster intrinsic learning motivation in PAI, especially in non-formal educational environments.

Based on these gaps, this study seeks to examine the effectiveness of Augmented Reality–based Islamic education learning on students' learning motivation at SMA Al Fatih Simpang Rimba, Kepulauan Bangka Belitung. The novelty of this research lies in three main aspects. First, it specifically focuses on learning motivation as the primary outcome variable, rather than cognitive achievement alone. Second, it situates AR-based PAI learning within a senior high school context, which has received limited scholarly attention in Islamic education research. Third, this study contributes to the integration of educational psychology and digital learning technology by analyzing how AR-mediated instruction influences motivational dimensions in Islamic education, thereby enriching both theoretical discourse and practical implementation of PAI learning innovations. By addressing these dimensions, this study is expected to provide empirical evidence that supports the development of more engaging, motivating, and context-sensitive Islamic education learning models in the digital era.

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[11] Nasikhin Nasikhin et al., "Development of Augmented Reality in Islamic Religious Education Learning," *At-Turats* 17, no. 1 (2023): 91–105, https://doi.org/10.24260/at-turats.v17i1.2786

[12] Ulul Albab et al., "Exploring the Impact of Augmented Reality on Meaningful Learning in Islamic Religious Education," *EDUKASI* 23, no. 1 (2025): 1–25, https://doi.org/10.32729/edukasi.v23i1.1944

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[15] Samsudin, Samsudin, Triase Triase, and Ilka Zufria. 2025. "Augmented Reality As an Interactive Medium for Understanding Qur'anic Verses on the Phenomenon of Rain in Islamic Education Learning". *Fitrah: Journal of Islamic Education* 6 (2):454-70. https://doi.org/10.53802/fitrah.v6i2.1445.

METHOD

This study employed a quantitative approach using a quasi-experimental pretest–posttest non-equivalent control group design to examine the effectiveness of Augmented Reality (AR)–based Islamic education learning on students' learning motivation. This design is widely applied in educational technology research when random assignment is not feasible, particularly in authentic school settings such as senior high school institutions.[16] The research was conducted at SMA Al Fatih Simpang Rimba, Kepulauan Bangka Belitung during one academic semester. The selection of this site was based on its implementation of flexible learning models and its readiness to integrate digital learning technologies into Islamic Education instruction.

The population of this study consisted of all students enrolled in Islamic Education classes at SMA Al Fatih Simpang Rimba, Kepulauan Bangka Belitung. Using purposive sampling, a total of 38 students were selected and divided into two groups: an experimental group (n = 19) receiving AR-based instruction and a control group (n = 19) receiving conventional instruction. The use of purposive sampling in quasi-experimental studies is considered appropriate when researchers aim to ensure comparable learning characteristics between groups.[17]

The independent variable was AR-based Islamic education learning, while the dependent variable was students' learning motivation. Learning motivation was conceptualized as a multidimensional construct encompassing attention, relevance, confidence, and satisfaction, following Keller's ARCS motivational model, which has been extensively used in technology-enhanced learning research.[18]

Data on students' learning motivation were collected using a self-report questionnaire developed based on the ARCS framework. Prior to data collection, the instrument underwent content validation by experts in Islamic education and educational technology. Reliability testing using Cronbach's Alpha indicated a coefficient above 0.70, confirming acceptable internal consistency, in line with standard quantitative research criteria.[19]

The research procedure involved several stages. First, both groups completed a pretest to measure baseline motivation levels. Next, the experimental group participated in AR-based Islamic Education learning for eight instructional sessions, while the control group received conventional instruction using textbooks and teacher explanations. The integration of AR followed established instructional design principles to ensure alignment with learning objectives and curriculum standards.[20] After the intervention, a posttest was administered to both groups to identify changes in learning motivation.

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[16] John W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, 5th ed. (Boston: Pearson, 2015), 297–300.
[17] Louis Cohen, Lawrence Manion, and Keith Morrison, *Research Methods in Education*, 8th ed. (London: Routledge, 2018), 219–221
[18] John M. Keller, *Motivational Design for Learning and Performance: The ARCS Model Approach* (New York: Springer, 2010), 43–67
[19] Joseph F. Hair et al., *Multivariate Data Analysis*, 7th ed. (Harlow: Pearson Education, 2014), 123–125.
[20] Nurul Azizah et al., "Development of Augmented Reality in Islamic Religious Education Learning: Case Study in Islamic Boarding School-Based Schools," *At-Turats* 17, no. 1 (2023): 91–105, https://doi.org/10.24260/at-turats.v17i1.2786

Data analysis was conducted using inferential statistics with SPSS software. Normality was examined using the Shapiro–Wilk test, followed by homogeneity testing. To determine the effect of AR-based learning, an independent samples t-test was applied to compare posttest scores between groups, while a paired samples t-test was used to assess changes within each group. These statistical procedures are consistent with prior studies evaluating the motivational impact of AR in educational contexts.[21]

Ethical considerations were observed throughout the study. Permission was obtained from the institution, informed consent was secured from students and parents, and data confidentiality was strictly maintained in accordance with educational research ethics.[22]

RESULTS AND DISCUSSION

Results

Descriptive Statistics of Students' Learning Motivation

The descriptive statistics indicate that, prior to the intervention, students in both the experimental and control groups exhibited relatively similar levels of learning motivation. The experimental group obtained a mean pretest score of 68.47 (SD = 6.82), while the control group recorded a mean score of 67.93 (SD = 7.01). The minimal difference between these scores suggests that the two groups were equivalent in terms of baseline motivation before the implementation of the Augmented Reality (AR)–based learning intervention.

Following the intervention, a substantial increase in learning motivation was observed in the experimental group. The posttest results reveal that students who participated in AR-based Islamic education learning achieved a mean score of 82.36 (SD = 5.94), indicating a notable improvement in motivation levels. In contrast, the control group, which received conventional instruction, demonstrated a comparatively modest gain, with a posttest mean score of 72.18 (SD = 6.75).

Table 1. Descriptive Statistics of Students' Learning Motivation Scores

Group	Test Phase	N	Mean (M)	Standard Deviation (SD)
Experimental	Pretest	19	68.47	6.82
Control	Pretest	19	67.93	7.01
Experimental	Posttest	19	82.36	5.94
Control	Posttest	19	72.18	6.75

Overall, the descriptive findings demonstrate a clear divergence in motivation gains between the two groups after the intervention. While both groups experienced improvements, the experimental group showed a considerably greater increase in learning motivation. This pattern suggests that the use of AR-based learning may provide a more engaging and motivating learning environment than traditional instructional methods, thereby supporting the potential effectiveness of AR integration in Islamic education learning contexts.

[21] Burhanuddin Annail, Adib Alim Aminullah, and Abdul Ghafur, "The Impact of Using Augmented Reality-Based Interactive Media on Students' Learning Motivation," *Journal of Education and Social Science* 2, no. 1 (2025).

[22] American Educational Research Association (AERA), *Ethical Standards of the American Educational Research Association* (Washington, DC: AERA, 2011).

Assumption Testing

Prior to conducting inferential statistical analysis, assumption testing was performed to verify the suitability of parametric procedures. The normality of students' learning motivation scores was assessed using the Shapiro–Wilk test.

Table 2. Results of Assumption Testing (Shapiro–Wilk Normality Test and Levene's Homogeneity Test)

Test	Group	Statistic	df	Sig. (p-value)	Decision
Shapiro–Wilk (Normality)	Experimental	W = 0.973	19	0.214	Normal
	Control	W = 0.968	19	0.187	Normal
Levene's Test (Homogeneity of Variance)	Experimental–Control	F = 1.284	1,36	0.261	Homogeneous

As shown in table 2, the Shapiro–Wilk test results indicate that the learning motivation scores for both the experimental group (W = 0.973, p = 0.214) and the control group (W = 0.968, p = 0.187) were normally distributed, as the p-values exceeded the 0.05 significance threshold. These findings suggest that the assumption of normality was satisfied for both groups.

In addition, Levene's Test was conducted to examine the homogeneity of variance between the experimental and control groups. The analysis produced an F value of 1.284 with degrees of freedom (1, 36) and a significance level of p = 0.261, indicating no statistically significant difference in variances between the two groups. Overall, the results confirm that the assumptions of normality and homogeneity of variance were adequately met. Therefore, the application of parametric inferential statistical techniques, particularly the independent samples t-test, was considered appropriate for analyzing the effect of Augmented Reality–based Islamic Education learning on students' learning motivation.

Effect of AR-Based Learning on Students' Learning Motivation

To examine the effect of Augmented Reality (AR)–based Islamic education learning on students' learning motivation, an independent samples t-test was conducted using posttest scores from the experimental and control groups.

Table 3. Results of t-Test Analysis on Students' Learning Motivation

Test Type	Group Comparison	t-value	df	Sig. (p-value)	Mean Difference
Independent Samples t-test	Experimental vs. Control (Posttest)	6.21	36	< 0.001	10.18
Paired Samples t-test	Experimental (Pretest–Posttest)	9.47	18	< 0.001	—
Paired Samples t-test	Control (Pretest–Posttest)	2.84	18	< 0.01	—

As presented in table 3, the independent samples t-test revealed a statistically significant difference in posttest learning motivation scores between the experimental and control groups, t(36) = 6.21, p < 0.001. The mean difference of 10.18 points indicates that

students who participated in AR-based Islamic education learning demonstrated substantially higher motivation levels compared to those who received conventional instruction.

Furthermore, the paired samples t-test results show a significant increase in learning motivation within the experimental group following the implementation of AR-based learning, $t(18) = 9.47$, $p < 0.001$. This finding indicates a strong positive effect of AR integration on students' motivational outcomes.

In contrast, although the control group also exhibited a statistically significant improvement in learning motivation from pretest to posttest, the magnitude of this increase was considerably smaller, $t(18) = 2.84$, $p < 0.01$. This suggests that while conventional instructional methods may foster limited motivational gains, their impact is markedly weaker than that of AR-based learning.

Overall, these findings provide robust empirical evidence that AR-based Islamic Education learning is significantly more effective in enhancing students' learning motivation than traditional instructional approaches. The pronounced between-group difference and the substantial within-group improvement observed in the experimental group underscore the pedagogical potential of Augmented Reality technology in creating more engaging, immersive, and motivating learning environments.

Analysis of Motivational Dimensions (ARCS Model)

To further examine the differential effects of AR-based Islamic education learning across specific motivational dimensions, independent samples t-tests were conducted for each component of the ARCS model, namely attention, relevance, confidence, and satisfaction. The results of these analyses are presented in table 5.

Table 5. Independent Samples t-Test Results for ARCS Motivational Dimensions

ARCS Dimension	Group	Mean (M)	SD	t-value	df	Sig. (p-value)	Effect Interpretation
Attention	Experimental	4.32	0.48	5.87	36	< 0.001	Strong
	Control	3.61	0.52				
Relevance	Experimental	4.25	0.50	5.42	36	< 0.001	Strong
	Control	3.58	0.55				
Confidence	Experimental	4.11	0.46	3.18	36	0.002	Moderate
	Control	3.74	0.49				
Satisfaction	Experimental	4.18	0.44	3.96	36	< 0.001	Moderate–Strong
	Control	3.69	0.51				

The findings indicate that the attention dimension exhibited the most substantial difference between groups. Students in the experimental group reported significantly higher levels of attention than those in the control group, $t(36) = 5.87$, $p < 0.001$. This result suggests that the immersive and interactive features of AR effectively captured and sustained students' attention during the learning process.

Similarly, a statistically significant difference was observed in the relevance dimension, with the experimental group achieving higher mean scores than the control group, $t(36) = 5.42$, $p < 0.001$. This finding indicates that AR-based instruction enhanced students'

perceptions of the relevance and meaningfulness of Islamic education content by connecting abstract concepts to real-life contexts.

In terms of confidence, the experimental group also demonstrated significantly higher motivational levels compared to the control group, $t(36) = 3.18$, $p = 0.002$. Although the magnitude of this effect was moderate, it suggests that AR-based learning contributed positively to students' self-efficacy and confidence in understanding the learning materials.

Furthermore, the satisfaction dimension showed a statistically significant difference in favor of the experimental group, $t(36) = 3.96$, $p < 0.001$. This result reflects higher levels of learning satisfaction and more positive emotional responses among students who experienced AR-based instruction than among those who received conventional teaching.

Overall, the dimension-level analysis confirms that AR-based Islamic education learning has a significant positive impact across all components of the ARCS motivational model, with particularly strong effects on attention and relevance. These findings provide robust empirical support for the motivational advantages of AR integration over traditional instructional approaches and reinforce the explanatory power of the ARCS framework in understanding motivation within technology-enhanced learning environments.

Discussion

The results of this study demonstrate that Augmented Reality (AR)–based Islamic Education learning has a statistically significant and pedagogically meaningful effect on students' learning motivation. The equivalence of pretest motivation scores between the experimental and control groups confirms that both groups began the intervention with comparable motivational baselines. This finding strengthens the internal validity of the study and supports the conclusion that the observed post-intervention differences are attributable to the AR-based instructional treatment rather than pre-existing motivational disparities.

The substantial increase in posttest motivation scores among students exposed to AR-based learning indicates that immersive and interactive digital environments play a crucial role in enhancing motivational engagement in Islamic education. This finding is consistent with prior empirical studies showing that AR transforms abstract religious concepts into concrete, experiential learning representations, thereby fostering deeper student involvement. Such learning environments align with contemporary educational psychology perspectives, which emphasize that motivation is strongly influenced by learners' active participation, sensory engagement, and perceived meaningfulness of instructional content.[23]

The significant between-group difference revealed by the independent samples t-test further reinforces the superiority of AR-based learning over conventional instructional approaches. While the control group also exhibited a modest improvement in motivation, the magnitude of this gain was considerably smaller. This suggests that traditional instruction, although capable of producing incremental motivational growth, may be limited in addressing the motivational needs of learners in digitally oriented educational contexts. Similar patterns

[23] Ridlwan, M., and Asrori, A. "Problems of Implementation of Islamic Religious Education at Muhammadiyah Junior High School 4 Gadung Surabaya." In *International Conference on Islamic and Muhammadiyah Studies (ICIMS 2022)*, 312–18. Atlantis Press, 2022. https://doi.org/10.2991/assehr.k.220708.039.

have been reported in studies on Islamic education classrooms, where conventional pedagogies often struggle to sustain students' attention and engagement over time.[24, 25]

Interpretation of Findings through the ARCS Motivational Model

A major contribution of this study lies in its use of the ARCS motivational framework to explain how AR-based learning influences specific motivational dimensions. The findings reveal that AR exerts a strong positive effect across all four ARCS components—attention, relevance, confidence, and satisfaction—with particularly pronounced effects on attention and relevance.

The attention dimension emerged as the most strongly affected component. Students in the experimental group reported significantly higher attention levels, indicating that AR's visual interactivity and immersive features effectively captured and maintained learners' focus. This finding corroborates previous research suggesting that AR reduces instructional monotony and cognitive fatigue by presenting learning materials in dynamic and multisensory formats.[26] In Islamic Education, where abstract theological and moral concepts are often conveyed through textual explanations, AR provides an alternative mode of representation that stimulates curiosity and sustained engagement.[27]

Similarly, the strong effect on the relevance dimension suggests that AR-based instruction enhances students' perceptions of the applicability and meaningfulness of Islamic Education content. By contextualizing religious teachings within simulated real-life situations, AR enables learners to connect doctrinal knowledge with everyday experiences. This supports earlier findings that AR facilitates meaningful learning by bridging the gap between religious theory and practice, while also encouraging reflective understanding of Islamic values in contemporary contexts.[28]

Confidence and Satisfaction as Complementary Motivational Outcomes

Although the effects on confidence and satisfaction were comparatively moderate, they remain statistically significant and educationally important. The increase in confidence indicates that AR-based learning supports students' self-efficacy and belief in their learning capabilities. Interactive features such as guided exploration, immediate feedback, and visual scaffolding may reduce learners' anxiety when engaging with complex Islamic materials. This

[24] Mutaqorribain, Asrori, and Rusman, "The Effect of Teacher's Motivation on Student Learning Activities in Islamic Education Lessons," *Nazhruna* 5, no. 3 (2022): 887–907, https://doi.org/10.31538/nzh.v5i3.2101

[25] Huda, Miftachul, Koen Irianto Uripan, Asrori Asrori, Mochamad Mochklas, Ma'ruf Sya'ban, Rifa'atul Maftuhah, Luluk Latifah, Poniman Poniman, and Suhartono Suhartono. "Trust for Communication System: Insights into Digital-Oriented Organizational Sustainability." In *Research Perspectives on Software Engineering and Systems Design. CoMeSySo 2024*, edited by R. Silhavy and P. Silhavy, Lecture Notes in Networks and Systems, vol. 1491, 1–14. Cham: Springer, 2025. https://doi.org/10.1007/978-3-031-96380-3_29

[26] Elmqaddem, "Augmented Reality and Virtual Reality in Education," *iJET* 14, no. 3 (2019): 234–42, https://doi.org/10.3991/ijet.v14i03.9289

[27] Fauziah, "Augmented Reality (AR) as Interactive Education in Islamic Education," *ICIED Proceedings* 9, no. 1 (2024): 64–72, https://doi.org/10.18860/icied.v9i1.3124

[28] Ahmad Ta'rifin et al., "Design of Augmented Reality Learning Media for Islamic Religious Education," *Al-Ishlah* 17, no. 2 (2025), https://doi.org/10.35445/alishlah.v17i2.5788

finding aligns with studies reporting that AR enhances students' perceived competence and learning control in religious education settings.[29]

The satisfaction dimension reflects learners' emotional responses and overall learning enjoyment. Higher satisfaction scores among students in the experimental group suggest that AR-based instruction fosters a more enjoyable and rewarding learning experience. Motivation research in Islamic education consistently emphasizes that positive emotional engagement is a critical factor in sustaining long-term learning motivation and promoting active participation.[30] In this regard, AR not only enhances cognitive engagement but also contributes to affective learning outcomes that are essential for holistic Islamic education.

Pedagogical Implications for Islamic Education

The findings of this study have important implications for Islamic education pedagogy. First, they demonstrate that AR-based learning can function as an effective motivational strategy that complements Islamic values rather than undermining them. When designed appropriately, AR can integrate technological innovation with ethical, spiritual, and moral dimensions of learning.[31] Second, the strong effects observed in attention and relevance suggest that AR is particularly well suited for addressing motivational challenges among digitally native learners who are accustomed to interactive media environments.

Moreover, the results support broader arguments advocating for the strategic integration of emerging technologies in Islamic education to enhance learning quality and relevance in the digital era.[32, 33] AR-based instruction, therefore, should not be viewed merely as a technological enhancement but as a pedagogical tool capable of transforming learning experiences and strengthening students' motivational engagement.

Limitations and Directions for Future Research

Despite its robust statistical findings, this study is limited by its relatively short intervention period and focus on motivational outcomes alone. Future research could adopt longitudinal designs to examine the sustainability of motivational gains and explore additional variables such as learning achievement, religious attitudes, and moral behavior. Qualitative approaches may also provide deeper insights into students' lived experiences and perceptions of AR-based Islamic education learning.

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[29] Azizah, Kamila, and Maulaya, "Implementing Augmented Reality to Enhance Al-Qur'an Learning Outcomes," *ICOP Proceedings* 2, no. 1 (2025), https://doi.org/10.61159/icop.v2i1.599

[30] Muzaiyanah, Hayumuti, and Asrori, "Implementasi Metode Wafa Dengan Pemberian Reward," *JIIP* 6, no. 4 (2023): 2292–2299, https://doi.org/10.54371/jiip.v6i4.1589

[31] Hidayat et al., "Integration Science Technology with Islamic Values," Atlantis Press (2020), https://doi.org/10.2991/assehr.k.200529.202

[32] Huda, Miftachul, Asrori Asrori, Nur Iftitahul Husniyah, Thoat Stiawan, Gandhung Fajar Panjalu, Muhammad Wahid Nur Tualeka, Imtihanatul Ma'isyatuts Tsalitsah, and Munawir Munawir. "Big Data Emerging Technology for Instruction: Insights into Learning Material Support." In *Research Perspectives on Software Engineering and Systems Design. CoMeSySo 2024*, edited by R. Silhavy and P. Silhavy, Lecture Notes in Networks and Systems, vol. 1491, 1–14. Cham: Springer, 2025. https://doi.org/10.1007/978-3-031-96380-3_28

[33] Ulul Albab et al., "Exploring the Impact of Augmented Reality on Meaningful Learning," *EDUKASI* 23, no. 1 (2025): 1–25, https://doi.org/10.32729/edukasi.v23i1.1944

CONCLUSION

This study provides robust empirical evidence that Augmented Reality (AR)–based Islamic education learning is significantly more effective in enhancing students' learning motivation than conventional instructional approaches. The statistical findings demonstrate that students who engaged in AR-based instruction experienced substantially higher motivational gains, both in overall scores and across specific motivational dimensions. These results confirm that immersive and interactive learning environments supported by AR offer clear pedagogical advantages in addressing motivational challenges commonly found in Islamic Education classrooms.

From a theoretical perspective, this study extends the application of the ARCS motivational framework within the context of technology-enhanced Islamic Education. The findings reveal that AR-based learning positively influences all ARCS dimensions—attention, relevance, confidence, and satisfaction—with particularly strong effects on attention and relevance. This indicates that AR is especially effective in capturing students' focus and enhancing the perceived meaningfulness of Islamic Education content by contextualizing abstract religious concepts into experiential and real-life learning scenarios. Accordingly, this study strengthens the explanatory power of the ARCS model in understanding learning motivation in digitally mediated religious education settings.

From a practical standpoint, the findings highlight the potential of AR as a transformative pedagogical medium rather than merely a supplementary technological tool. AR-based Islamic education learning supports student-centered instruction, enhances learners' self-confidence, and promotes positive emotional engagement, thereby contributing to the holistic goals of Islamic education. Nevertheless, this study is limited by its short intervention period and focus on motivational outcomes. Future research is recommended to employ longitudinal and mixed-methods designs to examine the sustainability of these motivational effects and to explore the broader impact of AR integration on learning achievement, religious attitudes, and moral development within Islamic Education.

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