



Enhancing Qur'anic Reading Skills Through Digital Qur'an Applications: An Empirical Study

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Article History:

Received: 02 December 2025

Revised: 14 February 2026

Accepted: 10 March 2026

Keywords:

Digital Qur'an Application,
Qur'anic Reading Skills,
Student Engagement

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Abstract :

This study aims to examine the effect of digital Qur'an applications on students' Qur'anic reading skills. A quasi-experimental design was employed, involving an experimental group using a digital Qur'an application and a control group receiving conventional instruction. The instruments included a Qur'anic reading test, the Utrecht Work Engagement Scale for Students (UWES-S), and an open-ended questionnaire. The findings reveal a significant improvement in the experimental group compared to the control group, particularly in letter recognition, reading fluency, and the application of tajwid rules. In addition, students' learning engagement increased through the use of digital applications. These results indicate that digital-based learning enhances both the effectiveness of instruction and students' motivation. The study implies that integrating digital technology into Islamic education curricula is essential to strengthen students' Qur'anic literacy and engagement in learning.

INTRODUCTION

The rapid development of digital technology has significantly influenced educational practices, including Islamic religious education, where digital Qur'an applications have emerged as innovative learning tools. This transformation is driven by the increasing familiarity of students with mobile devices, making digital platforms more accessible than traditional printed texts. Digital Qur'an applications provide interactive features such as audio recitation, translation, and structured guidance, which enhance learning flexibility and accessibility (Isa et al., 2023; Fajrie et al., 2023). In addition, the integration of digital media in religious education has been shown to support more adaptive and student-centered learning environments (Affandi et al., 2021). Therefore, the use of digital Qur'an applications represents a strategic response to the evolving learning preferences of modern students.

Ideally, Qur'anic reading skills should be developed through direct guidance to ensure accuracy in pronunciation and tajwid application. However, in practice, students increasingly rely on digital applications for independent learning. While technology offers convenience, it may also introduce risks such as repeated errors in pronunciation when used without

proper supervision. Studies on digital recitation systems and speech-based learning highlight that technology alone cannot guarantee accuracy without structured pedagogical support (Larabi-Marie-Sainte et al., 2021; Malhas & Elsayed, 2022). Furthermore, traditional teaching approaches remain important in maintaining the authenticity of Qur'anic learning. This discrepancy between ideal and actual learning practices highlights the need to critically evaluate the role of digital tools in supporting Qur'anic reading skills.

Qur'anic reading skills encompass the ability to correctly articulate Arabic letters, apply tajwid rules, and read fluently with proper rhythm and comprehension. These skills are both technical and affective, involving not only accuracy but also engagement and reverence during recitation. On the other hand, digital Qur'an applications function as learning tools that provide scaffolding through multimedia features such as audio guidance, repetition, and visual tajwid markers (Bashir et al., 2021). Research in digital literacy also emphasizes that technology can enhance cognitive processing and learning efficiency when properly integrated into instruction (Gutiérrez-Ángel et al., 2022). Thus, the relationship between digital application usage and reading skills lies in how effectively these tools support structured learning experiences.

Previous studies have demonstrated that technology-enhanced learning can improve literacy skills and student engagement. For example, interactive reading applications have been shown to significantly enhance students' reading development through multimedia integration (Chen & Jamiat, 2023). In the context of Islamic education, structured teaching strategies and action-based learning approaches have been proven effective in improving Qur'anic reading proficiency (Supriadi et al., 2022; Fauji et al., 2020). Additionally, instructional models that combine cooperative learning and reading-based approaches have also contributed to better learning outcomes (Karman et al., 2024). These findings suggest that combining pedagogical strategies with technological tools can produce more effective learning environments.

However, most previous studies have focused on general aspects such as motivation, engagement, or digital transformation rather than specifically examining technical Qur'anic reading skills. Research on digital storytelling and hybrid learning highlights improvements in communication and analytical skills but does not directly address recitation accuracy (Nair & Yunus, 2021; Napaporn et al., 2023). Similarly, studies on digital transformation in Islamic education emphasize leadership and media engagement without measuring specific reading competencies (Asmendri et al., 2024). Other research explores interpretation and inclusive approaches to Qur'anic learning but does not focus on reading skills (Ali & Isnaini, 2024; Saifullah & Nurjanah, 2024). Therefore, there remains a significant gap in empirical research examining the direct impact of digital Qur'an applications on students' technical reading abilities.

The increasing reliance on digital Qur'an applications raises important concerns regarding the quality of students' reading skills. Many students use these applications independently without structured guidance, which may result in inconsistent pronunciation and limited understanding of tajwid rules. Moreover, differences in students' backgrounds, including learning habits and technological familiarity, may influence the effectiveness of digital

learning tools. This situation highlights the urgency of evaluating whether digital applications truly enhance or potentially hinder Qur'anic reading skills in practice.

Based on these considerations, this study aims to examine the effect of digital Qur'an applications on students' Qur'anic reading skills. It investigates whether there are significant differences between students who use digital applications and those who rely on conventional methods. This study also explores the extent to which digital tools contribute to improving reading accuracy, fluency, and tajwid mastery. Using a quantitative quasi-experimental approach, this research seeks to provide empirical evidence on the effectiveness of digital Qur'an applications in supporting Qur'anic literacy development.

RESEARCH METHODS

This study employed a quantitative approach using a quasi-experimental design, specifically the nonequivalent control group design, to examine the causal effect of digital Qur'an application usage on students' Qur'anic reading skills. This design was selected because it allows comparison between experimental and control groups without full randomization while maintaining internal validity in educational settings. The research was conducted in a formal Islamic secondary education context over a six-week period. The population consisted of eighth-grade students, from which a total sample of 60 participants was selected and divided into two groups: 30 students in the experimental group and 30 in the control group. The sampling technique used was purposive sampling to ensure comparable characteristics between groups, particularly in terms of prior reading ability and demographic background. This approach aligns with previous studies emphasizing the effectiveness of quasi-experimental designs in evaluating instructional interventions and learning outcomes (Bashir et al., 2021; Heß et al., 2024).

Data were collected through multiple instruments to ensure comprehensive measurement of variables. A Qur'anic reading test was administered as both pre-test and post-test to assess students' reading skills, covering pronunciation accuracy, fluency, tajwid application, and reading etiquette. Additionally, an open-ended questionnaire was distributed to the experimental group after the intervention to capture students' perceptions, challenges, and experiences when using the digital application. The treatment involved structured use of a digital Qur'an application featuring audio recitation, color-coded tajwid, repetition tools, and interactive exercises, conducted over six instructional sessions. The control group received conventional instruction without digital assistance. This combination of objective testing and reflective responses is consistent with prior research highlighting the value of integrating performance-based assessment with learner feedback in technology-enhanced learning environments (Mustofa & Rosyidah, 2025; Abdussalam et al., 2021).

The data analysis employed both quantitative and qualitative techniques to ensure robust interpretation of findings. Quantitative data were analyzed using non-parametric statistical tests due to non-normal data distribution. The Wilcoxon Signed-Rank Test was used to determine differences between pre-test and post-test scores within each group, while the

Mann-Whitney U Test was applied to compare post-test results between the experimental and control groups. These tests were chosen for their suitability in small sample sizes and non-normal datasets. Qualitative data from the open-ended questionnaire were analyzed using thematic analysis to identify patterns in student perceptions regarding the effectiveness of the digital application. This mixed analytical approach enables a more comprehensive understanding of both the measurable impact and experiential aspects of digital learning, as supported by previous studies on digital learning evaluation and literacy development (Maisarah et al., 2024; Saifullah & Nurjanah, 2024).

RESULTS AND DISCUSSION

Results

The results of the study indicate a significant difference between the control group and the experimental group across three levels of Qur'anic reading skills: letter recognition, basic reading skills, and tajwid application. The analysis using the Wilcoxon Signed-Rank Test shows that the experimental group, which used a digital Qur'an application, experienced a greater improvement in scores compared to the control group, which relied on conventional learning methods. The summary of results is presented in Table 1.

Table 1. Results of Qur'anic Reading Skills Test

Group	Skill Level	UWES Level	N	Pre-test Mean	Post-test Mean	Wilcoxon Z	Asymp. Sig. (2-tailed)
Experimental	Letter Recognition	High	30	63.4	82.6	-4.562	0.000
Experimental	Reading Skills	High	30	58.2	85.1	-4.736	0.000
Experimental	Tajwid Skills	Medium	30	51.9	78.7	-4.112	0.000
Control	Letter Recognition	Medium	30	62.8	67.3	-1.982	0.048
Control	Reading Skills	Low	30	55.4	60.1	-1.754	0.079
Control	Tajwid Skills	Low	30	50.2	53.9	-1.514	0.130

The table shows that the experimental group demonstrated significant improvement in all three levels of Qur'anic reading skills, with p-values < 0.05. In contrast, the control group only showed a significant improvement in letter recognition, while improvements in reading skills and tajwid were not statistically significant. These findings confirm that digital applications contribute substantially to improving Qur'anic reading skills comprehensively.

The results of student learning engagement, measured using the Utrecht Work Engagement Scale for Students (UWES-S), further support the quantitative findings. There was a significant increase in the experimental group across the indicators of vigor, dedication, and absorption. The Wilcoxon Signed-Rank Test indicates that the use of digital applications not only improves technical Qur'anic reading skills but also enhances students' motivation and engagement in the learning process. The results are summarized in Table 2.

Table 2. Pre-test and Post-test Results of UWES

UWES Indicator	UWES Level	Group	N	Pre-test Mean	Post-test Mean	Wilcoxon Z	Asymp. Sig. (2-tailed)
Vigor	High	Experimental	30	3.12	4.36	-4.521	0.000
Dedication	High	Experimental	30	3.45	4.61	-4.682	0.000
Absorption	High	Experimental	30	3.27	4.48	-4.588	0.000
Vigor	Medium	Control	30	3.11	3.26	-1.113	0.265
Dedication	Medium	Control	30	3.29	3.37	-1.215	0.224
Absorption	Medium	Control	30	3.15	3.22	-1.067	0.286

The significant improvement in the experimental group indicates that the use of digital applications enhances both emotional and cognitive engagement in learning. This supports the theory of student engagement, which suggests that interactive educational technology can stimulate sustained interest and attention.

The results of the open-ended questionnaire provide deeper insights into students' perceptions of using digital Qur'an applications. Most students in the experimental group reported increased confidence in reading, particularly due to features such as audio recitation and highlighted verses. Additionally, several students mentioned that they became more motivated to learn independently at home. Table 3 presents a summary of student feedback categories based on group and UWES engagement level.

Table 3. Students' Perceptions and Feedback from Open-Ended Questionnaire

Group	UWES Level	Feedback Category	Brief Description
Experimental	High	Emotional Engagement	"I feel more motivated because the app is like a game."
Experimental	High	Independent Learning	"I can study at home without waiting for the teacher."
Experimental	Medium	Tajwid Understanding	"The color-coded tajwid helps me understand the rules."
Control	Medium	Limited Interaction	"I like traditional learning, but sometimes it feels boring."
Control	Low	Difficulty in Tajwid	"I am still confused when the teacher has not explained it directly."

The feedback from the experimental group suggests that technology creates a more immersive, engaging, and personalized learning experience. Students feel empowered as they can control their own learning pace. In contrast, the control group remains more dependent on teacher instruction, indicating that conventional methods may lack flexibility in addressing individual learning needs. Overall, these responses reinforce the quantitative findings, highlighting the effectiveness of digital applications in Qur'anic learning.

Discussion

The findings of this study indicate that digital Qur'an applications significantly improve students' Qur'anic reading skills across multiple dimensions. This result is consistent with previous research demonstrating that digital learning tools can enhance literacy outcomes through interactive and multimedia features (Mustofa & Rosyidah, 2025; Heß et al., 2024). In the context of Qur'anic education, the use of structured digital applications aligns with findings that emphasize the importance of guided learning strategies in improving reading proficiency (Basir et al., 2024). However, this study extends prior research by providing empirical evidence specifically related to tajwid and pronunciation accuracy, which have been less frequently examined in earlier studies.

From a theoretical perspective, the effectiveness of digital applications can be explained through scaffolding and learner-centered approaches. Digital tools provide structured support that allows students to practice independently while receiving immediate feedback through audio and visual features. This aligns with studies on Arabic language processing and digital learning systems, which highlight the role of technology in improving accuracy and comprehension when properly designed (Bashir et al., 2021; Malhas & Elsayed, 2022). Furthermore, digital learning environments facilitate repeated practice, which is essential for mastering technical skills such as Qur'anic recitation. Compared to traditional methods, this approach offers greater flexibility and personalization in learning.

Another important finding of this study is the significant increase in student engagement, as indicated by UWES results. This supports previous research showing that digital and interactive learning environments enhance students' motivation and participation (Maisarah et al., 2024; Asmendri et al., 2024). Additionally, studies on learning strategies in Islamic education suggest that motivation plays a crucial role in improving Qur'anic reading skills (Fauzi, 2023). The higher engagement observed in the experimental group indicates that digital applications not only improve technical skills but also foster emotional and cognitive involvement in learning. In contrast, the control group showed limited improvement, suggesting that conventional methods may lack the flexibility needed to sustain student engagement.

The qualitative findings further reinforce the quantitative results by highlighting students' positive perceptions of digital learning. Students reported increased confidence, autonomy, and enjoyment when using digital applications. This is consistent with studies showing that technology-supported learning can enhance learner independence and reduce anxiety in skill-based learning (Abdussalam et al., 2021; Zaini & Utami, 2022). Additionally, research on memorization and literacy development in Islamic education emphasizes that structured and engaging methods can significantly improve learning outcomes (Ma'arif & Kartiko, 2021; Supriyadi et al., 2020). However, some studies caution that excessive reliance on technology without proper guidance may lead to superficial learning. This study addresses this concern by demonstrating that structured use of applications can mitigate such risks.

Overall, this study contributes to the existing literature by providing comprehensive evidence on the role of digital Qur'an applications in improving reading skills, engagement, and learning autonomy. Unlike previous research that focuses on general digital literacy or motivation, this study specifically measures technical improvements in Qur'anic reading. The findings highlight both theoretical and practical implications, suggesting that digital technology should be integrated into Islamic education in a structured and pedagogically sound manner. This integration can help bridge the gap between traditional and modern learning approaches while ensuring the accuracy and effectiveness of Qur'anic education.

CONCLUSION

This study reveals a key finding that the use of digital Qur'an applications significantly enhances students' Qur'anic reading skills, particularly in letter recognition, pronunciation accuracy, and the application of tajwid rules. The main insight drawn from this research is that adapting technology in religious education is no longer optional but essential in responding to the learning characteristics of digital-native generations. The integration of interactive features such as audio recitation, visual tajwid guidance, and self-paced practice enables students to learn more effectively and independently. In terms of academic contribution, this study strengthens the discourse on Qur'anic education by moving beyond conventional teaching approaches and introducing a model that integrates digital technology with spiritual learning. The use of a quasi-experimental design also adds methodological rigor, allowing for a clear measurement of learning improvements before and after the intervention.

Despite these contributions, this study has several limitations that should be considered. The sample was limited to a single educational setting, and the duration of the intervention was relatively short, which may affect the generalizability of the findings. In addition, this study did not deeply explore how factors such as cultural background, digital literacy, and individual learning styles may influence the effectiveness of digital Qur'an applications. Therefore, future research is recommended to involve larger and more diverse populations, extend the duration of intervention, and apply mixed-method approaches to gain a more comprehensive understanding of how digital technology impacts Qur'anic literacy. Such studies would provide deeper insights into optimizing the use of digital tools in religious education while maintaining the accuracy and integrity of Qur'anic learning.

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