

The Role of Digital Innovation in Enhancing Hifz Al-Quran Achievement in Tahfiz Education: A Systematic Literature Review

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Abstract

The rapid development of digital technology has created opportunities to support Hifz al-Quran education through digital memorisation applications, interactive multimedia, online learning platforms and emerging artificial intelligence (AI) tools. However, the extent to which these technologies improve measurable Hifz outcomes remains unclear. This systematic literature review examined the roles, forms and reported effects of digital innovation in Tahfiz education. Searches were conducted in Scopus, Web of Science, Google Scholar and MyJurnal for studies published between 2020 and July 2026 in English or Malay. The manuscript records 280 identified records, of which 75 duplicates were removed; 205 records were screened, 50 full texts were assessed, and 24 studies were included in the synthesis. Thematic synthesis organised the literature into four dimensions: digital memorisation applications, interactive multimedia, digital learning platforms and AI. Across the included literature, digital tools were reported to support access to resources, repetition and murajaah, motivation, learner autonomy, monitoring and continuity of learning. Nevertheless, the evidence presented is more consistent for learning support and learner perceptions than for demonstrable improvements in memorisation accuracy, tasmi' fluency, memorisation quantity or retention. Digital tools should therefore complement, rather than replace, teacher-guided talaqqi, musyafahah, tasmi' and murajaah. The review identifies a need for transparent quality appraisal and further empirical studies using clearly defined Hifz outcome measures.

Keywords: Digital Innovation, Hifz Al-Quran, Quran Memorization, Tahfiz Education, Digital Learning

Introduction

Digital technologies are increasingly used across educational settings, including Islamic education and Tahfiz learning. Mobile applications, interactive multimedia, online learning platforms, digital tasmi' systems and emerging artificial intelligence (AI) tools can extend access to Quranic resources beyond scheduled lessons. They may enable learners to listen to recitations repeatedly, practise independently, communicate with teachers and record learning activities. These possibilities are relevant to Hifz al-Quran education, but the presence of technology alone does not establish that memorisation outcomes have improved. Hifz al-Quran education has traditionally depended on teacher-guided practices such as talaqqi, musyafahah, tikkar, tasmi' and murajaah. These practices support accurate oral

transmission, pronunciation, tajwid, makhraj, correction of errors and continued retention. The teacher's role is therefore central to evaluating the accuracy and quality of memorisation. Digital innovation is best considered in relation to these established practices: it may provide additional opportunities for listening, repetition, independent practice and communication, but it cannot automatically replace direct teacher guidance (Nor Azam Abdullah et al., 2021; Noorimah Misnan et al., 2023).

Different technologies may support different parts of the learning process. Digital Quran and memorisation applications provide access to verses and recitations and can facilitate repeated practice. Interactive multimedia offers audio, video and visual materials, while online platforms can support resource sharing, communication and continuity of learning. Digital records may also help teachers and students organise revision and monitor progress. The usefulness of these tools depends on factors such as the accuracy of their content, the quality of instructional design, learners' digital competence, teacher readiness and institutional support. The central educational concern is whether these forms of support translate into Hifz achievement. In this review, achievement is considered in relation to outcomes such as memorisation accuracy, tasmi' fluency, memorisation quantity and retention. Emerging AI systems may offer automated feedback, recitation analysis or personalised recommendations, but such functions should not be treated as evidence of improved Hifz outcomes unless they have been evaluated using appropriate measures and validated against authoritative Quranic recitation and qualified teacher judgement.

Previous studies have investigated digital applications, technology-supported teaching, multimedia resources and online learning in Tahfiz settings. For example, Salamiah Mohammad and Ismail (2023) examined the use of Digital Quran in relation to intrinsic motivation and Quranic memorisation among Tahfiz students. Other work has explored application development, technology-supported learning and the continuity of Quran memorisation during the COVID-19 period. Collectively, this literature suggests that digital tools may support access, engagement and practice; however, the studies differ in their technologies, research designs and outcome measures, making their findings difficult to compare directly. An important distinction is therefore required between process-related outcomes—such as usability, motivation, satisfaction, accessibility and frequency of practice—and direct measures of Hifz achievement. Positive perceptions or increased engagement may be valuable educational outcomes, but they do not independently demonstrate greater accuracy, fluency, quantity or long-term retention of memorised verses. This distinction is especially important when interpreting claims about AI, for which the evidence specific to measurable Hifz outcomes appears limited in the literature summarised here.

Although a previous systematic review has examined technology-assisted Tahfiz learning in Malaysia (Nor Azam Abdullah et al., 2021), the present review is intended to extend that discussion by organising the more recent literature into four technological dimensions—digital memorisation applications, interactive multimedia, digital learning platforms and AI—and by explicitly distinguishing learning-support mechanisms from measurable Hifz outcomes. Its contribution to the social sciences lies in bringing together educational technology and Tahfiz pedagogy to clarify what the available evidence can and cannot

establish about learning processes and achievement. This distinction provides a more cautious basis for interpreting findings and for designing future empirical studies.

Accordingly, this systematic literature review examines the roles and forms of digital innovation reported in Hifz al-Quran education, synthesises the educational outcomes associated with these technologies, and identifies gaps in the evidence—particularly the limited direct measurement of Hifz achievement. The review considers literature relevant to the Malaysian Tahfiz context alongside relevant international studies published in English or Malay between 2020 and July 2026. The review positions digital innovation as a complementary component of Tahfiz pedagogy. Digital tools may strengthen access, repetition, independent practice, feedback and monitoring, while teacher-guided talaqqi, musyafahah, tasmi' and murajaah remain essential to accurate and sustained Quranic memorisation.

Objectives of the Review

This systematic literature review was guided by three objectives:

1. To identify the role of digital innovation in enhancing Hifz al-Quran achievement in Tahfiz education.
2. To classify the types of digital innovation used in Hifz al-Quran achievement in Tahfiz education.
3. To examine the effects of digital innovation on Hifz al-Quran achievement in Tahfiz education.

Methodology

This study used a systematic literature review (SLR) to identify, screen and synthesise literature concerning digital innovation in Hifz al-Quran and Tahfiz education. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework informed the reporting of identification, screening, eligibility and inclusion (Page et al., 2021). The synthesis was thematic rather than statistical because the included literature comprised different research designs, technologies and outcome measures. The methods and numerical flow reported below reflect the records documented in the manuscript; details that were not recorded, including study-level critical-appraisal judgments, must not be inferred or presented as completed.

Search Strategy

The search covered Scopus, Web of Science (WoS), Google Scholar and MyJurnal and was reported as conducted up to July 2026. Search terms were organised around three concepts: digital innovation, Hifz/Quran memorisation, and learning achievement. Boolean operators AND and OR were used to combine related terms. The database-specific search strings are presented in Table 1. For reproducibility, the authors should retain the exact search date, the date each database was searched, the number of records retrieved from each source, and any export or deduplication log; these details are not fully itemised in the current manuscript.

No	Database	Search strategy
1	Scopus	TITLE-ABS-KEY(("digital technology" OR "digital innovation" OR "digital learning" OR "educational technology" OR "digital application" OR "mobile application*" OR "learning platform*" OR multimedia OR "artificial intelligence" OR AI) AND ("Hifz al-Quran" OR "Quran memorization" OR "Quran memorisation" OR "Quran memorization skills" OR Tahfiz OR "Tahfiz education" OR "Tahfiz school*") AND ("academic achievement" OR "learning achievement" OR "memorization achievement" OR "learning outcome" OR performance))
2	Web of Science	TS=(("digital technology" OR "digital innovation" OR "digital learning" OR "educational technology" OR "digital application" OR "mobile application" OR "learning platform" OR multimedia OR "artificial intelligence" OR AI) AND ("Hifz al-Quran" OR "Quran memorization" OR "Quran memorisation" OR "Quran memorization skills" OR Tahfiz OR "Tahfiz education" OR "Tahfiz school") AND ("academic achievement" OR "learning achievement" OR "memorization achievement" OR "learning outcome" OR performance))
3	Google Scholar	("Digital technology" AND ("Quran memorization" OR Tahfiz OR "Hifz al-Quran") AND ("academic achievement" OR "learning achievement")) OR ("digital learning" AND ("Quran memorization" OR Tahfiz)) OR (("artificial intelligence" OR AI) AND ("Quran memorization" OR Tahfiz))
4	MyJurnal	("digital technology" OR "digital learning" OR "educational technology" OR "digital application" OR multimedia OR "learning platform" OR "artificial intelligence") AND ("Quran memorization" OR "Hifz al-Quran" OR Tahfiz OR "Tahfiz education") AND ("academic achievement" OR "learning achievement" OR "learning outcome")

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were established to guide selection. The review considered studies published from 2020 to July 2026 in English or Malay. Eligible publication types included peer-reviewed journal articles, conference proceedings, systematic reviews, conceptual papers and relevant scholarly book chapters, provided they made a substantive contribution to digital innovation, Quran memorisation or Tahfiz education. Studies were excluded when they were unrelated to the review questions, did not address digital technology in a relevant Hifz/Tahfiz context, were published in other languages, were duplicate records, or did not provide accessible full text. Because the review includes conceptual papers and reviews as well as empirical studies, findings are interpreted according to each study's design and evidential strength.

Criteria	Inclusion	Exclusion
Publication year	2020–2026	Before 2020
Language	English or Malay	Other languages
Publication type	Peer-reviewed articles, conference proceedings, systematic reviews, conceptual papers and relevant scholarly book chapters	Newspapers, magazines, general websites and non-academic reports
Study focus	Digital innovation/technology and Hifz, Quran memorisation or Tahfiz education	Unrelated digital education or unrelated Quran/Tahfiz studies
Context	Malaysia and relevant international contexts	Contexts with no meaningful relevance to the review
Accessibility	Accessible full text	Abstract-only or inaccessible full text
Duplication	One unique record per study	Duplicate records

Screening and Selection Process

The selection process was organised according to the PRISMA 2020 stages of identification, screening, eligibility and inclusion (Page et al., 2021). The flow diagram should identify the source of the records and report the number removed at each stage, with reasons for full-text exclusions.

The manuscript reports that 280 records were identified across four databases. After 75 duplicate records were removed, 205 records remained for title-and-abstract screening. A total of 155 records were excluded at this stage, leaving 50 full-text reports for eligibility assessment. The full texts were then assessed against the stated criteria; 26 were excluded and 24 studies were included in the final synthesis. These counts are arithmetically consistent ($280 - 75 = 205$; $205 - 155 = 50$; $50 - 26 = 24$). To improve transparency, the authors should add the number of records retrieved from each database and specify the number excluded for each full-text reason, using the screening log rather than reconstructing these figures retrospectively.

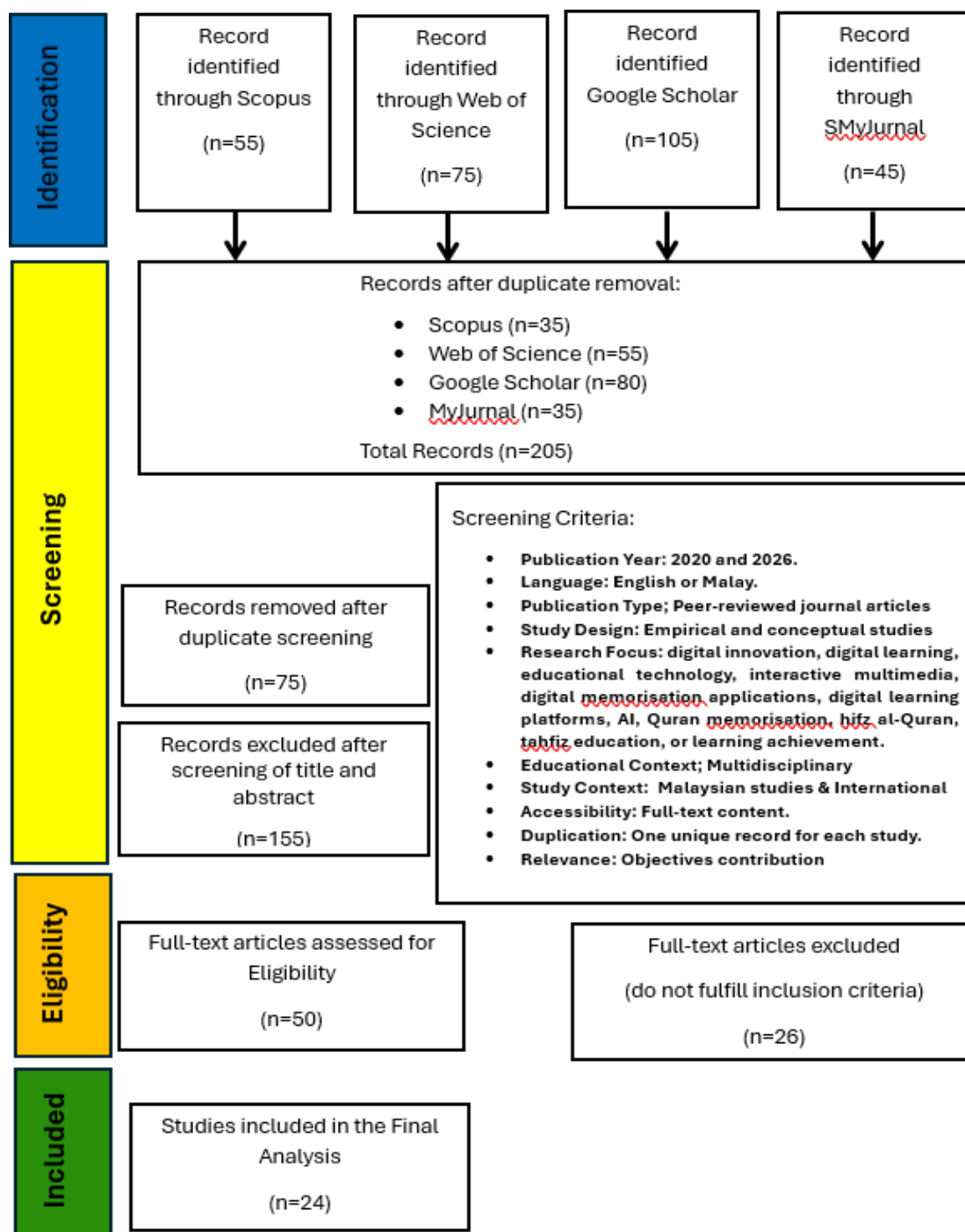


Figure 1. PRISMA 2020 flow diagram for study selection. Source: Adapted from Page et al. (2021)

The 24 included studies were synthesised thematically. The manuscript's screening record reports that studies were assessed for relevance to digital innovation, Hifz al-Quran or Tahfiz education, publication type, methodological contribution and findings related to learning or memorisation. The current version does not document the names of screeners, whether screening was conducted independently, how disagreements were resolved, or the detailed reasons and counts for full-text exclusions. These details should be supplied from the authors' actual review records where available; they should not be invented.

The final set of 24 studies was retained for thematic synthesis. The manuscript does not provide a completed formal critical-appraisal tool, item-level quality ratings or study-level appraisal results. Consequently, it would be inaccurate to claim that a formal quality appraisal has already been completed. Before resubmission, the authors should appraise each included study using a tool appropriate to its design (for example, a suitable JBI checklist), record the judgments and explain how appraisal informed interpretation. If no appraisal was conducted, this limitation must be disclosed and the manuscript must not imply otherwise.

The included studies were organised around four dimensions of digital innovation: digital memorisation applications, interactive multimedia, digital learning platforms and AI. The synthesis considered reported functions and outcomes, including accessibility, repetition and murajaah, motivation, learner autonomy, monitoring, teacher–student interaction and Hifz-related outcomes. These categories were used as an organising framework; they should not be interpreted as proof that each technology independently improves memorisation.

Data Extraction and Thematic Synthesis

Data extracted for the synthesis included author and publication year, study title, research design or methodology, technological focus and reported findings. Findings were grouped thematically under the four dimensions of digital innovation and across the reported educational outcomes. To make the review reproducible, the authors should ensure that the extraction sheet records, for each included study, its setting and sample (where applicable), technology or intervention, comparison condition (if any), outcome measure, main result and limitations.

The analysis was interpretive rather than a statistical meta-analysis because the studies varied in design, population, technological intervention and outcome measures. Findings were therefore compared narratively, with a distinction maintained between empirical results, participant perceptions and conceptual proposals. Where studies did not directly measure Hifz achievement, their findings were treated as evidence about learning support or implementation rather than as evidence of improved memorisation accuracy, fluency, quantity or retention.

Results

Profile of the Selected Studies

The 24 studies listed in Table 2 represent diverse approaches, including reviews, qualitative studies, conceptual analyses, development studies, quantitative surveys and mixed-method research. This diversity offers a broad picture of digital innovation in Tahfiz education, but it also limits direct comparison. In particular, a technology's reported usability or perceived usefulness should not be equated with a measured change in Hifz achievement.

No.	Study	Method	Key finding
1	Nor Azam Abdullah, Temyati & Mohd Nor Mamat (2021)	Systematic literature review	Technology-assisted Tahfiz learning supports memorisation, accessibility and learning support.
2	Shokri, Salihan & Abd Hamid (2021)	Qualitative observation/document analysis	Digital innovation in UNITEN Tahfiz included blended, flipped and technology-aided learning.
3	Mohd Nawawi (2020)	Conceptual/discussion paper	Multimedia can support interactive and flexible Islamic education.
4	Syed Hassan et al. (2022)	Documentary/document analysis	ICT and smartphone-based tools can support Quran memorisation.
5	Hayati Hussin et al. (2022)	Qualitative focus group	Technology supported continuity of Quran memorisation during COVID-19.
6	Safinah Ismail et al. (2023)	Descriptive/content analysis	Digital applications incorporated multiple memorisation techniques.
7	Safinah Ismail et al. (2023)	Qualitative phenomenological study	Teachers identified needs for digital applications supporting memorisation and self-learning.
8	Mardhiah Yahaya et al. (2023)	Qualitative observation/field notes	Fun Q reported a high user satisfaction level and structured learning support.
9	Noorimah Misnan et al. (2023)	Development/innovation study	i-Tasmi' Tahfiz supports memorisation and tasmi' monitoring.
10	Salamiah Mohammad & Ismail (2023)	Quantitative survey; n=150	Digital Quran use was associated with intrinsic motivation and memorisation support.
11	Syarul Azman Shahrudin et al. (2023)	Qualitative document analysis/observation	Nine digital Tahfiz applications were identified as emerging learning facilities.
12	Mohamed Akhiruddin Ibrahim et al. (2024)	ADDIE development; n=40	HiQMA incorporated recitation, video calls, recording and class records.
13	Jamali & Tengku Kasim (2024)	Educational/qualitative study	21st-century learning supports more dynamic Quranic teaching.
14	Sari & Munir (2024)	Literature review	Digital platforms, interactive applications and AI can support motivation and accessibility.
15	Hotimah, Arismunandar & Tola (2024)	Literature/conceptual review	Digital innovation creates opportunities and challenges involving infrastructure and readiness.
16	Naufatti Aufa, Akbar & Rani (2024)	Descriptive qualitative field research	Digital technology increased accessibility and flexibility but internet stability was a challenge.
17	Arina et al. (2025)	Qualitative descriptive study	Teacher management and digital integration were linked with motivation and memorisation support.
18	Nur Muizz Mohamed Salleh et al. (2025)	Mixed-method	Technology provided cognitive support but did not replace talaqqi musyafahah.
19	Mohamed Hamdan Abdullah et al. (2025)	Quantitative survey; n=73	Q-STEAM combined traditional memorisation with creative modern approaches.
20	Wiwik Oktavia et al. (2025)	Literature/conceptual analysis	Digital technology can support adaptive and transformative Islamic education.
21	Mohd Hakim Mothar Rijan et al. (2025)	Preliminary empirical study	Examined memorisation methods among diploma-level Tahfiz students.
22	Mohd Nor Azmil Abdul Kadir & Huda (2025)	Empirical study	Examined murajaah achievement during industrial training.
23	Mohamad Marzuqi Abdul Rahim et al. (2025)	Quantitative survey; n=194	A holistic Tahfiz learning ecosystem supported murajaah and memorisation mastery.
24	Wan Yusuf & Towpek (2024)	Quantitative survey; n=318	Students showed strong preference for tasmi' and talaqqi musyafahah alongside other methods.

Role of Digital Innovation in Hifz al-Quran Learning

Across the included studies, digital innovation was associated with several supporting functions. These functions describe how technology may shape learning conditions and memorisation practices; they should not be interpreted as independent causal effects on Hifz achievement unless the underlying study design and outcome measures support such an inference.

No.	Role	Synthesis	Supporting studies
1	Accessibility and flexibility	Digital resources allow access to Quranic materials, recitations and learning activities beyond the physical classroom. Online continuity was especially relevant during COVID-19.	Nor Azam Abdullah et al. (2021); Shokri et al. (2021); Hayati Hussin et al. (2022); Naufatti Aufa et al. (2024)
2	Memorisation support	Audio, visual and interactive resources support listening, reading, repetition, recitation and other memorisation activities.	Mohd Nawawi (2020); Safinah Ismail et al. (2023); Syarul Azman Shahrudin et al. (2023)
3	Repetition, murajaah and retention	Repeated access to verses and recitations facilitates continued practice and revision.	Syed Hassan et al. (2022); Salamiah Mohammad & Ismail (2023); Mohamad Marzuqi Abdul Rahim et al. (2025); Nur Muizz Mohamed Salleh et al. (2025)
4	Motivation and engagement	Interactive and multimedia-based learning can make Hifz activities more attractive and engaging.	Salamiah Mohammad & Ismail (2023); Mardhiah Yahaya et al. (2023); Sari & Munir (2024); Mohamed Hamdan Abdullah et al. (2025)
5	Self-directed learning	Applications enable students to control the pace, frequency and timing of practice, subject to digital literacy and self-discipline.	Safinah Ismail et al. (2023); Sari & Munir (2024); Arina et al. (2025)
6	Monitoring and assessment	Digital records and communication functions can support tasmi', learning records and monitoring of progress.	Noorimah Misnan et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024); Arina et al. (2025)
7	Pedagogical transformation	Technology supports blended, flipped, problem-based and learner-centred approaches.	Shokri et al. (2021); Mohd Nawawi (2020); Jamali & Tengku Kasim (2024); Hotimah et al. (2024)
8	Adaptive learning environment	Digital tools can align learning with contemporary students' technology-rich environments, provided infrastructure and teacher readiness are adequate.	Nor Azam Abdullah et al. (2021); Sari & Munir (2024); Hotimah et al. (2024); Wiwik Oktavia et al. (2025)

Types of Digital Innovation

No.	Type	Description	Supporting studies
1	Mobile Quran and Hifz applications	Portable access to verses, recitations and structured memorisation activities.	Safinah Ismail et al. (2023); Mardhiah Yahaya et al. (2023); Syarul Azman Shahrudin et al. (2023)
2	Digital Quran applications	Digital Quran text and recitation resources supporting repeated listening, reading and memorisation.	Salamiah Mohammad & Ismail (2023); Syed Hassan et al. (2022)
3	Interactive multimedia	Audio, video, visual materials and interactive resources supporting repeated exposure and engagement.	Mohd Nawi (2020); Safinah Ismail et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024)
4	Online/web-based learning platforms	Remote lessons, communication and learning activities beyond the physical classroom.	Shokri et al. (2021); Hayati Hussin et al. (2022); Naufatti Aufa et al. (2024)
5	Blended and flipped learning	Integration of digital materials with face-to-face teacher-guided instruction.	Shokri et al. (2021); Nor Azam Abdullah et al. (2021)
6	Digital tasmi' and monitoring systems	Digital support for recitation, communication, learning records and progress monitoring.	Noorimah Misnan et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024)
7	Interactive and gamified learning	Creative digital activities that can increase attention and participation, especially among younger learners.	Mardhiah Yahaya et al. (2023); Mohamed Hamdan Abdullah et al. (2025)
8	Digital self-learning/personalised tools	Control over pace, timing and repeated practice according to learning needs.	Safinah Ismail et al. (2023); Sari & Munir (2024); Arina et al. (2025)
9	Video conferencing and communication tools	Remote teacher–student interaction and recitation support when physical attendance is limited.	Hayati Hussin et al. (2022); Mohamed Akhiruddin Ibrahim et al. (2024); Naufatti Aufa et al. (2024)
10	Emerging technologies and AI	Potential for adaptive learning, personalised support and automated feedback; evidence specific to Hifz outcomes remains limited.	Sari & Munir (2024); Nur Muizz Mohamed Salleh et al. (2025)

Effects Reported in the Literature

No.	Reported effect	Synthesis	Supporting studies
1	Memorisation performance	Repeated access to verses and recitations can support memorisation practice.	Salamiah Mohammad & Ismail (2023); Syed Hassan et al. (2022); Mohamed Akhiruddin Ibrahim et al. (2024)
2	Retention through murajaah	Digital resources facilitate repeated listening, reading and revision of memorised content.	Syed Hassan et al. (2022); Salamiah Mohammad & Ismail (2023); Mohamad Marzuqi Abdul Rahim et al. (2025)
3	Motivation and engagement	Interactive digital learning may increase enjoyment, satisfaction and participation.	Salamiah Mohammad & Ismail (2023); Mardhiah Yahaya et al. (2023); Mohamed Hamdan Abdullah et al. (2025)
4	Accessibility and continuity	Learning resources remain accessible across time and location and during disruption of face-to-face teaching.	Shokri et al. (2021); Hayati Hussin et al. (2022); Naufatti Aufa et al. (2024)

5	Learner autonomy	Students can practise according to their own pace and schedule.	Safinah Ismail et al. (2023); Sari & Munir (2024); Arina et al. (2025)
6	Learning experience and satisfaction	Application-based and multimedia learning can improve perceptions of the learning experience.	Mardhiah Yahaya et al. (2023); Salamiah Mohammad & Ismail (2023); Syarul Azman Shahrudin et al. (2023)
7	Recitation practice	Audio, video and tasmī'-related applications provide additional practice opportunities.	Safinah Ismail et al. (2023); Noorimah Misnan et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024)
8	Monitoring	Digital records and communication support organisation and tracking of learning activities.	Noorimah Misnan et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024); Arina et al. (2025)
9	Flexibility and adaptability	Blended, flipped and online learning can respond to different learning circumstances.	Shokri et al. (2021); Nor Azam Abdullah et al. (2021); Wiwik Oktavia et al. (2025)
10	Personalised learning	Digital resources allow repeated practice of difficult verses and control of learning pace; adaptive AI remains an emerging possibility.	Sari & Munir (2024); Arina et al. (2025); Wiwik Oktavia et al. (2025)
11	Teacher–student interaction	Communication and digital tasmī' can sustain interaction when physical contact is limited, but direct teacher guidance remains essential.	Hayati Hussin et al. (2022); Noorimah Misnan et al. (2023); Mohamed Akhiruddin Ibrahim et al. (2024); Nur Muizz Mohamed Salleh et al. (2025)

Discussion

The synthesis suggests that digital innovation can support Hifz al-Quran education through technological functionality, learner engagement, pedagogical integration and teacher support. The four dimensions identified in this review—digital memorisation applications, interactive multimedia, digital learning platforms and AI—serve different functions and should not be treated as a single intervention with a uniform effect. The strength of the evidence also varies by outcome: reports of access, usability, motivation and continuity are more common in the reviewed literature than rigorous measurements of Hifz achievement.

Digital memorisation applications can facilitate listening, reading, repetition, self-practice, monitoring and revision. Safinah Ismail et al. (2023) discussed memorisation techniques incorporated into digital applications, while Salamiah Mohammad and Ismail (2023) examined learner motivation and Quranic memorisation in relation to Digital Quran use. Such findings suggest potential value for practice and engagement, but the extent of any achievement effect depends on the measures and design used in each study. The Technology Acceptance Model (TAM) may help explain adoption through perceived usefulness and ease of use (Davis, 1989); acceptance, however, is not itself proof of improved memorisation outcomes.

Digital learning platforms may support communication, resource sharing, feedback, monitoring and continuity of learning. Studies of technology-supported Tahfiz programmes and online learning during COVID-19 describe how learning activities could continue when face-to-face attendance was disrupted (Shokri et al., 2021; Hayati Hussin et al., 2022). These findings support the role of platforms in facilitating access and organisation, but they do not necessarily establish a direct improvement in memorisation accuracy or retention. Because accurate Quranic recitation requires expert correction, blended approaches that retain teacher-guided practice are particularly relevant.

AI may offer opportunities for personalised practice, automated feedback, recitation assistance and revision recommendations. Nevertheless, the evidence presented in this review is insufficient to conclude that AI improves measurable Hifz achievement. Any automated assessment should be validated for Quranic text and recitation accuracy and checked against qualified teacher judgement, especially for makhraj, tajwid and pronunciation. Until robust outcome studies are available, AI should be described as an emerging support mechanism rather than an established means of improving Hifz outcomes.

Implementation may be constrained by unstable internet access, inadequate infrastructure, teacher readiness, learner self-discipline and the quality of digital content. Institutions should therefore consider training, technical support, reliable resources and clear learning objectives alongside the provision of devices or applications. Importantly, increased accessibility, motivation or engagement should not be presented as equivalent to improved Hifz achievement. The latter requires direct, clearly defined and appropriately assessed outcomes.

Research Gap, Novelty and Integrated Synthesis

The principal gap identified in this review is the difference between studies of technology acceptance, usability and learner perceptions and studies that directly measure Hifz outcomes. Many studies summarised in the manuscript focus on motivation, satisfaction, accessibility, application development or perceived usefulness. These outcomes are relevant, but they do not independently demonstrate gains in memorisation accuracy, tasmi' fluency, memorisation quantity or retention. A second gap concerns the limited basis for making technology-specific comparisons because study designs and outcome measures differ.

The intended novelty of this review is its four-part organisation of digital innovation alongside an explicit distinction between learning-support processes and measurable Hifz achievement. This framework can help researchers avoid treating technology adoption or engagement as a proxy for memorisation outcomes. Its contribution to the social sciences is a more precise synthesis of how educational technologies intersect with learner behaviour, pedagogical practice and assessment in Tahfiz settings. This contribution should be presented as an organising and interpretive contribution, not as proof that the four dimensions have been experimentally validated.

Future research should use clearly defined outcome measures and, where feasible, longitudinal, quasi-experimental or mixed-method designs to examine whether and under what conditions specific technologies are associated with changes in Hifz achievement. Studies should report baseline performance, intervention duration, comparison conditions, teacher involvement and retention follow-up where applicable. Digital memorisation applications may support repetition, multimedia may increase exposure and engagement, platforms may facilitate communication and organisation, and AI may offer adaptive feedback; these are plausible mechanisms that require direct testing rather than assumed effects.

Implications

Implications for Tahfiz Teaching

Teachers may use digital applications and multimedia to extend repetition and murajaah beyond scheduled lessons while retaining teacher-guided tasmi', talaqqi and musyafahah.

Digital records can help organise revision and identify portions requiring further practice, provided that the records are accurate and are interpreted alongside direct listening and teacher assessment.

Implications for Tahfiz Institutions

Tahfiz institutions should consider infrastructure, teacher digital competence, content accuracy, student access and implementation procedures rather than focusing solely on acquiring devices or applications. Digital tools should be integrated into pedagogical and assessment plans, with clear safeguards for the accuracy of Quranic text and recitation feedback.

Implications for Future Research

Future studies should distinguish perceived usefulness and engagement from actual achievement and should report transparent methods, suitable quality appraisal, validated outcome measures and sufficient detail to support replication. Quantitative, longitudinal and quasi-experimental research may help establish whether observed changes are sustained. AI-focused studies should validate automated feedback against authoritative Quranic sources and qualified reciters.

Conclusion

This systematic literature review examined the roles, forms and reported effects of digital innovation in Hifz al-Quran and Tahfiz education. The 24 studies listed in the manuscript cover digital memorisation applications, Quran resources, interactive multimedia, online platforms, blended and flipped learning, digital tasmi' and monitoring systems, and emerging AI-supported technologies. Overall, the literature describes potential support for access, repetition and murajaah, motivation, learner autonomy, monitoring and continuity of learning.

The evidence summarised is more consistent for learning support, usability, engagement and accessibility than for direct and causal improvements in measurable Hifz achievement. Claims about memorisation accuracy, tasmi' fluency, quantity and retention should therefore be made only where these outcomes were explicitly measured. Similarly, AI should be treated as an emerging area requiring validation and stronger empirical evaluation, rather than as a proven means of improving Hifz.

Digital innovation should complement rather than replace established Tahfiz pedagogy. Talaqqi, musyafahah, tasmi', tiktirar and murajaah remain central to accurate recitation, teacher-guided correction and sustained Quranic learning. Digital tools may extend opportunities for repetition, independent practice, communication and monitoring, while qualified teachers remain responsible for evaluating recitation and correcting errors.

The review's main contribution is a four-dimensional framework that separates the types of digital innovation from the outcomes reported in the literature and highlights the need to distinguish learning processes from achievement evidence. Further empirical studies should test the relationship between specific technologies and clearly measured Hifz outcomes. The interpretation of this review is limited by the methodological details not documented in the supplied manuscript, particularly the absence of a reported formal quality appraisal and

detailed study-level screening records; these should be completed or transparently acknowledged before publication.

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