

Enhancing Islamic Learning through Augmented Reality: A Literature Review on Mobile Learning Applications for KAFA Education

Memperkasa Pembelajaran Pendidikan Islam melalui Realiti Terimbuh (Augmented Reality): Sorotan Literatur terhadap Aplikasi Pembelajaran Mudah Alih bagi Pendidikan KAFA

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ABSTRACT

The integration of digital technologies into education has created new opportunities to enhance teaching and learning experiences, including in the field of Islamic education. Among these technologies, Augmented Reality (AR) and mobile learning applications have gained increasing attention due to their potential to provide interactive and engaging learning environments. This study presents a literature review on the application of AR in Islamic education, particularly within the context of KAFA and Sirah learning. The review also examines the role of mobile learning applications and interactive multimedia in supporting student engagement and learning experiences. Relevant literature published between 2017 and 2025 was collected from academic databases and analysed using a thematic approach. The findings indicate that mobile learning applications contribute positively to learning accessibility, flexibility, and student engagement, while multimedia elements such as animation, audio, video, and interactive activities enhance motivation and knowledge retention. Although existing KAFA applications, including KAFA & UPKK Quiz, Hafazan KAFA, and Pandai, provide valuable learning support, most rely heavily on text-based content and conventional assessment methods. The review further reveals that the application of AR in Islamic education remains limited despite its potential to improve the learning of Sirah through immersive visualisation and interactive learning experiences. The study identifies a significant gap in the development of AR-based mobile learning applications specifically designed for KAFA education. Therefore, future research should focus on integrating AR and interactive multimedia technologies to create more engaging and meaningful Islamic learning environments. This review contributes to the growing body of knowledge on technology-enhanced Islamic education and provides directions for future research and application development.

Keywords: *Augmented Reality; Islamic Education; Mobile Learning; KAFA; Sirah Learning; Interactive Multimedia*



ABSTRAK

Integrasi teknologi digital dalam pendidikan telah membuka peluang baharu untuk meningkatkan pengalaman pengajaran dan pembelajaran, termasuk dalam bidang pendidikan Islam. Antara teknologi yang semakin mendapat perhatian ialah Augmented Reality (AR) dan aplikasi pembelajaran mudah alih kerana potensinya dalam menyediakan persekitaran pembelajaran yang interaktif dan menarik. Kajian ini membentangkan sorotan literatur mengenai aplikasi AR dalam pendidikan Islam, khususnya dalam konteks pendidikan KAFA dan pembelajaran Sirah. Kajian ini turut meneliti peranan aplikasi pembelajaran mudah alih dan multimedia interaktif dalam menyokong penglibatan pelajar serta memperkayakan pengalaman pembelajaran mereka. Literatur yang diterbitkan antara tahun 2017 hingga 2025 telah dikumpulkan daripada pelbagai pangkalan data akademik dan dianalisis menggunakan pendekatan analisis tematik. Dapatan kajian menunjukkan bahawa aplikasi pembelajaran mudah alih memberikan kesan positif terhadap aksesibiliti, fleksibiliti, dan penglibatan pelajar dalam proses pembelajaran. Selain itu, elemen multimedia seperti animasi, audio, video, dan aktiviti interaktif didapati mampu meningkatkan motivasi serta pengekalan pengetahuan pelajar. Walaupun aplikasi KAFA sedia ada seperti KAFA & UPKK Quiz, Hafazan KAFA, dan Pandai menawarkan sokongan pembelajaran yang bermanfaat, kebanyakannya masih bergantung kepada kandungan berasaskan teks dan kaedah penilaian konvensional. Sorotan literatur ini juga mendapati bahawa penggunaan AR dalam pendidikan Islam masih berada pada tahap yang terhad walaupun teknologi tersebut mempunyai potensi yang besar untuk meningkatkan pembelajaran Sirah melalui visualisasi yang imersif dan pengalaman pembelajaran yang lebih interaktif. Kajian ini mengenal pasti jurang yang ketara dalam pembangunan aplikasi pembelajaran mudah alih berasaskan AR yang direka khusus untuk pendidikan KAFA. Oleh itu, penyelidikan pada masa hadapan perlu memberi tumpuan kepada integrasi teknologi AR dan multimedia interaktif bagi mewujudkan persekitaran pembelajaran Islam yang lebih menarik, bermakna, dan berkesan. Kajian ini menyumbang kepada pengembangan pengetahuan dalam bidang pendidikan Islam berteraskan teknologi serta menyediakan hala tuju untuk penyelidikan dan pembangunan aplikasi pada masa hadapan.

Kata Kunci: *Augmented Reality, Pendidikan Islam, Pembelajaran Mudah Alih, Pendidikan KAFA, Pembelajaran Sirah, Multimedia Interaktif.*

INTRODUCTION

The rapid advancement of digital technology has transformed educational practices worldwide, creating new opportunities for engaging, flexible, and student-centered learning environments. Among emerging technologies, Augmented Reality (AR) has gained considerable attention due to its ability to overlay virtual elements onto real-world environments, allowing learners to interact with educational content in an immersive manner. Recent studies indicate that AR enhances learners' motivation, engagement, and conceptual understanding across various disciplines by providing interactive visualizations and contextual learning experiences (Sakr & Abdullah, 2024; Li et al., 2025). Concurrently, mobile learning applications support formal and informal education by enabling students to access resources anytime and anywhere.

In Malaysia, Kelas Al-Quran dan Fardu Ain (KAFA) education serves as a foundational pillar for providing fundamental Islamic knowledge to Muslim students. Subjects such as Akidah, Fiqh, Akhlak, and Sirah form the core curriculum, shaping religious understanding and moral values. Among these, Sirah learning requires students to comprehend extensive historical events, personalities, and contexts related to the life of Prophet Muhammad SAW and the development of Islam. As contemporary learners are increasingly exposed to digital ecosystems, exploring innovative instructional designs is vital to transition Islamic education into an interactive, meaningful experience.

PROBLEM STATEMENT

Despite global advancements in educational technology, the pedagogical integration of innovative digital tools in Islamic education particularly within the Malaysian KAFA framework remains relatively limited. Conventional teaching methods for Sirah continue to rely heavily on physical textbooks, passive lectures, and static materials. Because Sirah involves intricate historical timelines and abstract historical locations, young primary school learners frequently struggle to visualize these contexts through traditional instructional delivery, leading to challenges in maintaining interest, engagement, and long-term knowledge retention.

While a small market of mobile applications exists to support KAFA education (such as KAFA & UPPK Quiz, Hafazan KAFA, and Pandai), a critical evaluation reveals that these platforms focus almost exclusively on text-based content delivery, rote memorization drills, and conventional multiple-choice assessments. They lack the immersive, experiential, and multi-sensory features that modern Human-Computer Interaction (HCI) standards demand for young audiences.

Furthermore, current academic literature remains fragmented. While extensive empirical evidence validates the cognitive and affective benefits of AR in general education, science, and higher education contexts (Cai et al., 2021; Atarama et al., 2024), research exploring AR application design specifically tailored to primary Islamic education and Sirah curricula is scarce. This lack of consolidated evidence creates a clear gap in literature, preventing educators and developers from utilizing evidence-based frameworks to build pedagogically sound, AR enhanced mobile applications for young KAFA learners.

RESEARCH OBJECTIVES

The objectives of this study are:

1. To review existing literature on the application of Augmented Reality (AR) in Islamic education, particularly in KAFA and Sirah learning.
2. To examine the role of mobile learning applications and multimedia elements in enhancing student engagement and learning experiences in KAFA education.
3. To identify research gaps and propose future directions for the development of AR-based mobile learning applications in Islamic education.

RESEARCH QUESTIONS

RQ1: How has Augmented Reality been applied in Islamic education, particularly in KAFA and Sirah learning?

RQ2: What roles do mobile learning applications and interactive multimedia play in enhancing learning experiences in KAFA education?

RQ3: What research gaps and future opportunities exist for the development of AR-based mobile learning applications in Islamic education?

LITERATURE REVIEW

Mobile Learning Applications in Islamic Education

Mobile learning has become an increasingly important approach in contemporary education because it enables learners to access educational resources anytime and anywhere through smartphones and other portable devices. Previous studies consistently indicate that mobile learning promotes flexibility, accessibility, and learner autonomy, making it particularly suitable for self-directed and lifelong learning

environments (Rangel-de Lazaro & Duarte, 2023; Asadullah et al., 2023). The portability of mobile devices allows learning activities to extend beyond the classroom, enabling students to revisit instructional materials, complete learning tasks, and engage with educational content at their own pace.

Within the context of Islamic education, mobile learning applications have been explored as a means of providing learners with accessible and interactive learning resources. Nawi (2017), for example, examined the potential use of mobile applications in Islamic Education and reported a high level of usability among teachers and students. The findings suggest that mobile applications can complement conventional Islamic education by providing learners with additional opportunities to access and interact with learning materials.

However, the literature also reveals important differences in the scope and sophistication of existing mobile learning applications. While general mobile learning research highlights the potential of personalized, learner centered, and interactive educational experiences (Rangel-de Lazaro & Duarte, 2023; Asadullah et al., 2023), many Islamic education applications remain focused primarily on content delivery, memorization exercises, and objective assessments. This suggests that the pedagogical potential of mobile learning has not yet been fully realized within KAFA education, where richer forms of interaction and contextual learning could provide greater educational value.

The limitations of current KAFA applications become particularly evident when considering subjects such as Sirah, which require students to understand historical events, personalities, and contextual narratives. Text-based notes and quizzes may effectively support factual recall, but they provide limited opportunities for learners to visualize historical settings or interact with complex historical sequences. As demonstrated by Tarmidi et al. (2022) and Masrop et al. (2025), mobile learning environments enhance student participation and understanding through flexible access to interactive learning materials. This indicates that future KAFA applications should move beyond information transmission and incorporate more interactive and immersive learning experiences.

Overall, the reviewed literature demonstrates that mobile learning provides a strong technological foundation for Islamic education by improving accessibility, flexibility, and learner engagement. Nevertheless, most existing applications focus on revision, memorization, and assessment rather than immersive learning and contextual understanding. This gap highlights the need for mobile learning applications that integrate Augmented Reality and interactive multimedia to support deeper engagement with Sirah and other historically oriented subjects within the KAFA curriculum.

Multimedia Learning and Student Engagement

Students generally learn more effectively when multimedia elements are integrated with educational content to create engaging and interactive learning experiences. Mayer's Cognitive Theory of Multimedia Learning explains that learning is enhanced when visual and verbal information are presented together, allowing learners to process information through multiple cognitive channels instead of relying only on text (Mayer, 2021). This theory suggests that multimedia can help students understand concepts more easily, especially when the learning content is complex or abstract.

The findings of previous studies are consistent with this view. Lee et al. (2024) found that interactive multimedia environments encouraged active participation, resulting in higher motivation and a better understanding of learning materials. These findings indicate that multimedia does more than simply make lessons more attractive; it also supports students in understanding and retaining information more effectively. In Islamic education, this is particularly important because many topics involve historical events and religious concepts that are not easily understood through text alone. The use of animations, videos, and interactive storytelling can help students visualise the life of Prophet Muhammad SAW and better understand the sequence of events presented in Sirah lessons.

A similar trend can be observed in KAFA education. Ahmad Yusoff and Mohd Zakaria (2024) highlighted the potential of interactive learning approaches to support learners' attention, motivation, and participation in KAFA education. Students may respond more positively when learning activities are presented through interactive and learner-centred approaches. While Lee et al. (2024) examined interactive multimedia in a broader educational context, Ahmad Yusoff and Mohd Zakaria (2024) focused specifically on interactive learning in KAFA education. Together, these studies suggest that interactive and learner-centred approaches can support student engagement and participation, although the evidence in the KAFA context remains more limited. However, neither study specifically examined the use of Augmented Reality in KAFA Sirah learning. This indicates that further research is needed to investigate how immersive multimedia technologies can be integrated into KAFA education to create more meaningful and engaging learning experiences.

Augmented Reality in Education

The technology of Augmented Reality (AR) creates an interactive learning environment by placing digital elements and information on top of actual physical spaces for students to experience. The educational field has adopted AR as a leading technology during the past ten years because it helps students better understand visuals and maintains their attention while providing hands-on learning experiences. The AR learning system enables students to experience virtual objects by showing them in actual time which helps students understand difficult concepts that seem far away from reality.

Several studies have reported positive outcomes associated with the use of AR in education. Cai et al. (2021) found that AR-based learning environments improve students' motivation, attention, and academic performance by creating immersive educational experiences. Similarly, Li et al. (2025) concluded that AR enhances conceptual understanding and knowledge retention across various educational disciplines. The interactive nature of AR encourages active learning and supports constructivist learning principles, where learners build knowledge through exploration and experience. As a result, AR has gained increasing recognition as an effective tool for enhancing educational practices in both formal and informal learning settings.

Augmented Reality in Islamic Education and Sirah Learning

Previous studies consistently indicate that Augmented Reality (AR) has considerable potential to enhance teaching and learning by providing interactive and immersive learning experiences. Across different educational settings, AR has been shown to improve students' engagement, motivation, and conceptual understanding by integrating digital content with real-world environments. These findings suggest that AR is particularly effective for visualising abstract concepts and creating meaningful learning experiences that are difficult to achieve through conventional teaching methods.

Within the context of Islamic education, the educational benefits of AR have also been increasingly recognised. Anuar and Abdul Razak (2022) demonstrated that AR-based learning positively influenced students' understanding and motivation in learning Sirah by presenting historical events through interactive visualisation. Similarly, Mahliatussikah et al. (2025) reported that interactive multimedia technologies enhanced students' engagement and participation in Islamic learning activities. Although both studies highlight the positive contribution of digital technologies, they differ in their focus. While Anuar and Abdul Razak concentrated specifically on Sirah learning, Mahliatussikah et al. examined Islamic education more broadly. This suggests that evidence supporting AR specifically for KAFA Sirah education remains relatively limited.

Similar findings have also been reported in broader educational research. Lee et al. (2024) and Cai et al. (2021) found that immersive technologies, including AR, improved learner interaction, motivation, and knowledge retention across various educational disciplines. However, these studies were conducted outside the KAFA context and primarily involved general education settings. Consequently, although the effectiveness of AR has been widely demonstrated, its implementation within Islamic primary education requires further investigation to determine whether similar benefits can be achieved among KAFA learners.

Despite the growing body of literature supporting AR in education, several research gaps remain. Most existing studies focus on evaluating learning outcomes and student engagement, while relatively limited attention has been given to learner-centred interface design, usability, and cognitive load considerations for young learners. Furthermore, empirical studies that integrate AR specifically with the KAFA Sirah curriculum remain scarce. Addressing these gaps is essential for developing effective AR-based mobile learning applications that are pedagogically appropriate and aligned with the learning needs of KAFA students.

Existing Mobile Learning Applications for KAFA Education

Several mobile applications have been developed to support learning within the KAFA curriculum. Applications such as KAFA & UPKK Quiz, Hafazan KAFA, Pandai, and 1001 Religious Quizzes provide educational content through quizzes, revision notes, memorization exercises, and self-assessment activities. These applications assist students in reinforcing their understanding of Islamic subjects and preparing for examinations. Furthermore, they offer flexible access to learning materials outside classroom hours, supporting independent learning practices.

Despite their usefulness, many existing KAFA applications continue to rely heavily on text-based content and objective assessments. Interactive multimedia features are often limited to basic audio and visual components, while immersive technologies such as AR are rarely incorporated. As a result, opportunities to create more engaging and experiential learning environments remain underutilized. This limitation is particularly evident in Sirah education, where students may benefit from interactive visualizations of historical events and locations. Therefore, there is a growing need to explore how AR-enhanced mobile learning applications can complement existing educational tools and improve learning experiences in KAFA education.

Mobile learning research highlights the potential of mobile applications to provide flexible access to educational resources and support self-directed learning beyond the classroom (Rangel-de Lazaro & Duarte, 2023; Asadullah et al., 2023). In the context of KAFA education, applications such as KAFA & UPKK Quiz, Hafazan KAFA, and Pandai can provide students with opportunities to revise lessons, complete exercises, and reinforce their understanding outside formal classroom settings. However, these applications remain largely focused on quizzes, memorization, and content delivery rather than immersive learning experiences. This limitation suggests that there is still an opportunity to enhance KAFA applications through interactive and immersive technologies such as Augmented Reality.

The effectiveness of existing KAFA learning applications can also be viewed through the lens of mobile learning theory. As demonstrated by Tarmidi et al. (2022) and Masrop et al. (2025), mobile learning environments enhance student participation and understanding through flexible access to interactive learning materials. Applications such as KAFA & UPKK Quiz, Hafazan KAFA, and Pandai support these objectives by offering learning materials and assessment activities that students can access at their convenience. However, the limited use of immersive and interactive technologies suggests that there is still considerable room for innovation in future KAFA learning applications.

Tarmidi et al. (2022) developed *e-BIJAK UPKK*, an interactive online self-directed learning resource for Jawi and Khat. Importantly, it integrates visual, aural, reading, and kinesthetic learning resources, including notes, audio, video, and interactive activities. This finding supports the use of existing KAFA learning applications, which provide students with opportunities to revise lessons, complete self-assessment activities, and reinforce their understanding of Islamic subjects. Nevertheless, the effectiveness of these applications could be further enhanced through the integration of more advanced multimedia and immersive technologies.

Human-Computer Interaction (HCI) and Pedagogical Considerations for AR Applications

The effectiveness of an Augmented Reality (AR) application depends not only on the technology itself but also on how well it is designed to support learners' needs. In the context of KAFA education, where

learners are primarily children, the design of AR applications should consider both human–computer interaction (HCI) principles and appropriate pedagogical strategies. Previous studies have shown that educational AR applications designed for children should provide intuitive interfaces, simple navigation, and age-appropriate interactions to improve usability and enhance the overall learning experience (Law & Heintz, 2021). Similarly, user interface design plays an important role in encouraging learners to interact confidently with educational applications, particularly in mobile learning environments (Mohd Zaki et al., 2021). A well-designed interface can help learners focus on educational content, whereas poor interface design may distract them from the intended learning objectives.

Another important consideration is cognitive load. According to Mayer's Cognitive Theory of Multimedia Learning, learners process information through separate visual and verbal channels, but both channels have limited capacity (Mayer, 2021). When educational applications present excessive information or unnecessary multimedia elements, learners may experience cognitive overload, reducing their ability to process and retain new knowledge. Skulmowski and Xu (2022) further emphasised that digital learning environments should minimise extraneous cognitive load by presenting information clearly and avoiding unnecessary visual complexity. Therefore, AR applications developed for KAFA learners should present information in manageable segments, emphasise essential learning content, and avoid excessive visual or audio effects that may distract learners from the learning objectives.

Usability is another key factor influencing children's learning experiences. Young learners benefit from interfaces that are simple, intuitive, and easy to navigate. Features such as clear icons, readable text, consistent navigation, and immediate feedback can reduce confusion and allow students to concentrate on learning activities rather than operating the application. Research involving children has also shown that balancing engaging interaction with manageable cognitive demands contributes to a more positive learning experience and improved learning performance (Shaban et al., 2021). Similarly, usability studies conducted in religious primary schools found that educational applications with user-friendly interfaces encourage greater learner participation and improve the overall learning experience (Masrop et al., 2025).

These design considerations are particularly relevant in Sirah education, where students are required to understand historical events, important personalities, and chronological sequences. AR technology has the potential to transform these topics into engaging learning experiences by integrating three-dimensional visualisation, animation, narration, and interactive storytelling. However, the educational value of AR depends not only on the inclusion of multimedia elements but also on whether these elements are designed to support learning objectives and match children's cognitive abilities. Integrating sound pedagogical principles with effective HCI design can therefore help ensure that AR applications provide meaningful, engaging, and age-appropriate learning experiences for KAFA students (Law & Heintz, 2021; Mayer, 2021).

Research Gaps and Future Directions

The reviewed literature consistently shows that mobile learning, multimedia technologies, and Augmented Reality (AR) have the potential to improve student engagement, motivation, and learning effectiveness across various educational settings. Despite these encouraging findings, their application within Islamic education remains relatively limited. While many studies have demonstrated the educational benefits of AR in general learning environments, fewer have examined its use in Islamic education, particularly within the KAFA curriculum. This suggests that the positive outcomes reported in other educational contexts cannot be directly generalised to KAFA learning without further investigation.

Another important observation is that previous studies have generally examined mobile learning and AR as separate technologies. Although both approaches have been shown to enhance learning experiences, limited research has explored how AR can be integrated into mobile learning applications specifically designed for Islamic education. As a result, there is still insufficient evidence on how immersive mobile learning can support the teaching and learning of Sirah in the KAFA context.

The review also indicates that most existing KAFA learning applications continue to focus on quizzes, memorisation, and text-based content. While these approaches are useful for reinforcing knowledge, they provide limited opportunities for students to interact with historical events and visualise important concepts in Sirah. Compared with immersive learning approaches reported in broader educational studies, the use of AR and other interactive multimedia technologies in KAFA applications remains underdeveloped.

These gaps highlight the need for further research on the design and evaluation of AR-enhanced mobile learning applications for KAFA Sirah education. Future studies should investigate how multimedia elements such as animation, audio, three-dimensional visualisation, and interactive storytelling can be integrated into AR applications to create more engaging and meaningful learning experiences. In addition, greater attention should be given to pedagogical design, usability, and technological factors to ensure that AR applications are appropriate for young learners and effectively support learning within the KAFA environment.

METHODOLOGY

Research Design

This study employed a structured literature review to examine the application of Augmented Reality (AR), mobile learning, and interactive multimedia in Islamic education, with a particular focus on KAFA Sirah learning. A structured literature review was selected because it enables the systematic identification, evaluation, and synthesis of existing research, providing a comprehensive understanding of current developments, educational benefits, and research gaps in the field. Unlike a traditional narrative review, this approach follows a transparent and organized process for searching, selecting, and analyzing relevant studies. The review also adopted an adapted PRISMA framework to guide the identification, screening, eligibility assessment, and inclusion of studies, thereby enhancing the transparency and robustness of the review process. The findings were subsequently synthesized through thematic analysis to identify key themes, emerging trends, and areas requiring further investigation in the development of AR-based mobile learning applications for KAFA Sirah education.

Literature Search Strategy

Relevant literature was identified through a comprehensive search of academic databases, including Scopus, Web of Science (WoS), ScienceDirect, SpringerLink, IEEE Xplore, and Google Scholar. The search focused on publications published between 2017 and 2025 to ensure that the review reflects recent developments in educational technology and Islamic learning.

The literature search strategy was executed in a two-tiered approach: global databases including Scopus, Web of Science, ScienceDirect, and SpringerLink were systematically queried to establish foundational paradigms in Augmented Reality (AR) frameworks, multimedia learning theories, and human-computer interaction (HCI). Concurrently, Google Scholar was strategically leveraged to capture highly contextualized, regional peer-reviewed literature concerning Islamic education, the KAFA curriculum, and Sirah learning applications within the Malaysian and regional landscape.

The search process employed a combination of keywords related to the scope of the study, including:

- "Augmented Reality" AND "Islamic Education"
- "Augmented Reality" AND "Sirah Learning"
- "Augmented Reality" AND "KAFA"
- "Mobile Learning" AND "Islamic Education"
- "Interactive Multimedia" AND "Islamic Learning"
- "AR-based Learning Applications"

These keywords were selected based on the research objectives and research questions of the study.

Selection Criteria

To ensure the relevance and quality of the reviewed literature, several selection criteria were applied. The review included peer-reviewed journal articles and conference proceedings that discussed Augmented Reality, mobile learning, multimedia learning, and Islamic education. Only studies published in English and Malay between 2017 and 2025 were considered.

Studies unrelated to educational technology, non-academic publications, duplicate articles, and publications without accessible full-text versions were excluded from the review. The selected studies were screened based on their titles, abstracts, and full-text content to determine their relevance to the objectives of this study.

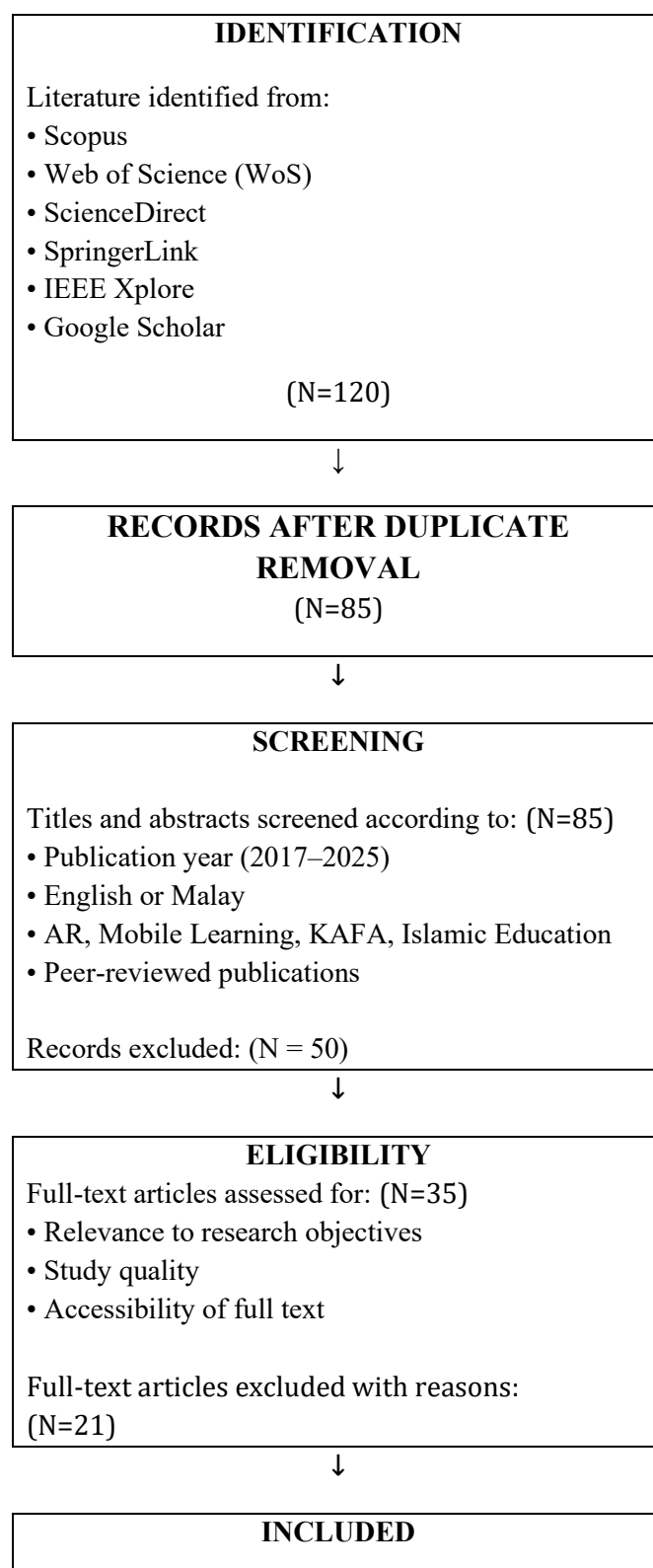
Table 1: Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Publication Year	2017–2025	Before 2017
Language	English and Malay	Other languages
Publication Type	Peer-reviewed journals and conference proceedings	Books, theses, reports, blogs
Research Area	AR, Mobile Learning, Interactive Multimedia, Islamic Education, KAFA, Sirah Learning	Unrelated disciplines
Full Text	Available	Unavailable

Retrieved articles were evaluated using predefined inclusion and exclusion criteria to ensure that only relevant and high-quality studies addressing Augmented Reality, mobile learning, multimedia, and Islamic education were included in the review.

Study Selection Process

The study selection process followed an adapted PRISMA framework comprising four stages (identification, screening, eligibility assessment, and inclusion). This framework provides a transparent overview of the article selection procedure employed in this review.



Final studies included for thematic analysis:

(N=14)

Figure 1: Adapted PRISMA Flow Diagram of the Literature Selection Process

Data Exclusion Rationale:

As illustrated in the adapted PRISMA flow diagram (Figure 1), a total of 35 full-text articles were evaluated for eligibility, resulting in the exclusion of 21 articles based on strict, predefined parameters.

The primary reasons for exclusion were:

Contextual Irrelevance (n = 9): Studies that focused broadly on advanced immersive technologies (AR/VR/MR) but were exclusively situated within secondary or tertiary STEM (Science, Technology, Engineering, and Mathematics) education, making their findings inapplicable to primary-level religious learning environments.

Lack of Empirical Design Frameworks (n = 7): Conceptual papers, short position reviews, or speculative tech reports that did not provide empirical data or concrete evaluation methodologies regarding human computer interaction (HCI) or instructional design for young users.

Technological Misalignment (n = 5): Studies investigating general desktop-based multimedia tools or standalone web resources that did not feature mobile accessibility or explicit Augmented Reality components.

Through this strict filtering process, only the 14 most relevant, high-quality empirical studies were retained for comprehensive thematic analysis.

Table 2: Summary of Reviewed Studies

Author(s)	Year	Research Focus	Technology	Participants / Context	Key Findings	Research Gap / Limitation
Anuar & Abdul Razak	2022	Augmented Reality for Sirah learning	AR mobile application	Primary school Islamic education	AR improved students' understanding, motivation and learning engagement in Sirah lessons.	Focused on a specific learning topic with limited evaluation of long-term learning outcomes.
Mahliatussikh et al.	2025	Interactive multimedia in Islamic education	Interactive multimedia	Islamic education learners	Multimedia enhanced learning engagement and facilitated interactive learning experiences.	Did not specifically investigate AR applications for KAFA learners.

Rangel-de Lazaro & Duarte	2023	Mobile learning in education	Mobile learning	General education	Mobile learning supports flexible and self-directed learning beyond the classroom.	Study was not conducted within Islamic education or KAFA contexts.
Lee et al.	2024	Emerging immersive technologies in education	AR/VR	Educational settings	Immersive technologies improve learner interaction and motivation when appropriately designed.	More evidence is required for younger learners and religious education contexts.
Cai et al.	2021	Augmented Reality learning applications	AR	General education	AR increases learner engagement through interactive visualisation and contextual learning.	Limited discussion on usability for children and cognitive load.
Atarama et al.	2024	Benefits of Augmented Reality in education	AR / Emerging Tech	Higher education	AR improves student engagement, retention, and educational effectiveness	Context focused on general higher education, requiring further validation in primary Islamic education.

Table 2 summarizes the key studies reviewed in this paper. Overall, previous research consistently demonstrates that Augmented Reality and mobile learning technologies can improve student engagement, motivation, and learning outcomes across various educational settings. However, most studies have been conducted in general education, while empirical research focusing specifically on KAFA education and Sirah learning remains limited. Furthermore, relatively few studies discuss human-computer interaction considerations, such as usability and cognitive load, when designing AR applications for young learners. These gaps justify the need for further investigation into AR-based mobile learning applications tailored to the KAFA learning environment.

Data Analysis

The selected studies were analysed using a thematic analysis approach to identify recurring themes, similarities, differences, and research gaps related to the application of Augmented Reality (AR) in Islamic education. Following the article selection process, the fourteen (N = 14) eligible primary studies included in the final pool were reviewed in detail, and relevant information was extracted, including the

research objectives, educational context, technology used, research methodology, participants, key findings, and reported limitations. The extracted data were then systematically organised into several thematic categories based on the objectives of this review. These themes included:

- i. Augmented Reality applications in Islamic education;
- ii. Mobile learning and digital learning applications;
- iii. Interactive multimedia and student engagement;
- iv. Educational benefits of AR in teaching and learning; and
- v. Research gaps and future directions for AR-based KAFA Sirah learning.

The findings from the selected studies were subsequently compared and synthesised to identify recurring patterns, consistencies, and differences across previous research. This comparative analysis enabled the identification of current research trends as well as limitations in existing studies, particularly regarding the design and implementation of AR applications for KAFA Sirah learning.

Instead of simply summarizing previous studies, this thematic analysis compared and synthesized the findings to identify common trends, methodological differences, and existing research gaps. These insights provide a clearer understanding of the current state of research and highlight the need for further studies on AR-based mobile learning applications for KAFA Sirah education.

Summary

This methodology provides a structured approach for reviewing and synthesizing relevant literature on Augmented Reality, mobile learning, and Islamic education. By examining recent studies from reputable academic sources, the review offers insights into current applications, educational benefits, and research opportunities related to AR-enhanced learning environments for KAFA education.

FINDINGS AND DISCUSSIONS

Application of Augmented Reality in Islamic Education

The growing use of Augmented Reality (AR) in education has demonstrated its potential to transform conventional learning into a more engaging and interactive experience. Recent studies have highlighted the effectiveness of AR in improving students' motivation, participation, and understanding of learning content by allowing them to interact with digital objects in a real-world environment (Li et al., 2025). Through visualization and real-time interaction, AR helps learners better understand concepts that may be difficult to comprehend through text-based materials alone.

Within Islamic education, the use of AR is still relatively limited compared to other educational fields. Nevertheless, existing studies suggest that AR can support the teaching and learning of religious subjects by providing meaningful visual representations of historical events, places, and concepts. This is particularly relevant to Sirah learning, where students are required to understand historical narratives and contexts surrounding the life of Prophet Muhammad SAW. By presenting these events through interactive visualizations, AR can make learning more engaging and easier for students to understand. The literature therefore suggests that AR has considerable potential to enhance Islamic education, especially in areas that require contextual and historical understanding.

One notable finding from the reviewed literature is the positive impact of Augmented Reality on Sirah learning. Anuar and Abdul Razak (2022) reported that students who participated in AR-based learning activities demonstrated high levels of cognitive achievement and engagement.

Although previous studies consistently report positive effects of AR on engagement and understanding, the evidence is largely derived from general educational contexts. In contrast, Anuar and Abdul Razak (2022) provide more context-specific evidence by applying AR to Sirah learning. However, their study focuses on a particular learning topic and does not establish whether the benefits can be sustained over

time. This difference suggests that the potential of AR for KAFA Sirah education is promising but remains insufficiently validated across broader KAFA learning contexts.

Role of Mobile Learning Applications and Interactive Multimedia in KAFA Education

The findings of this review indicate that mobile learning applications contribute significantly to student engagement and learning effectiveness in Islamic education. According to Rangel-de Lazaro and Duarte (2023), mobile learning environments have the potential to improve student engagement when they provide meaningful interaction, accessibility, and opportunities for self-directed learning. Such flexibility can help reinforce learning and encourage greater ownership of the learning process.

The review also highlights the importance of interactive multimedia elements in creating effective learning experiences. Features such as animation, audio narration, videos, graphics, and interactive quizzes help maintain students' attention and encourage active participation during learning activities. Previous studies have consistently reported that multimedia-supported learning environments contribute positively to student engagement, motivation, and knowledge retention.

Several existing applications developed for KAFA education, including KAFA & UPKK Quiz, Hafazan KAFA, and Pandai, demonstrate the increasing use of digital technologies in Islamic learning. These applications provide useful educational resources and support independent learning among students. However, most of them continue to focus primarily on quizzes, memorisation exercises, and text-based content. While these features are beneficial, they may not fully support the visualisation of historical and contextual information required in subjects such as Sirah. This suggests that there is still room for improvement through the integration of more interactive and immersive technologies.

Research Gaps and Future Opportunities

The reviewed studies demonstrate that mobile learning, multimedia technologies, and Augmented Reality (AR) can improve student engagement, motivation, and learning outcomes. However, most of these studies have been conducted in general educational settings, with relatively little attention given to Islamic education. Although the findings suggest that AR has strong educational potential, there is still limited evidence of its application in KAFA learning, particularly in teaching Sirah.

Another noticeable gap is that previous studies have often examined mobile learning and AR independently. While both technologies have been shown to support learning, few studies have explored how they can be combined to create a more interactive and immersive learning experience for KAFA students. As a result, there is limited understanding of how AR-based mobile learning applications can enhance students' learning experiences in Islamic education.

The review also found that many existing KAFA learning applications mainly focus on quizzes, memorisation, and text-based content. Although these approaches are useful for reinforcing knowledge, they provide limited opportunities for students to visualise historical events or actively engage with the learning materials. This is particularly important in Sirah education, where understanding historical contexts and sequences of events is an essential part of the learning process.

Taken together, these findings indicate the need for further research on AR-enhanced mobile learning applications that are specifically designed for KAFA Sirah education. Future studies should explore how multimedia elements such as animation, audio, three-dimensional visualisation, and interactive storytelling can be integrated to support more engaging and meaningful learning experiences. In addition, greater attention should be given to pedagogical design, usability, and the learning needs of young learners to ensure that AR applications are both effective and appropriate for the KAFA learning environment.

CONCLUSION

The advancement of digital technologies has created new opportunities to enhance teaching and learning practices, including within the field of Islamic education. This literature review explored the use of

Augmented Reality (AR), mobile learning applications, and interactive multimedia in supporting KAFA education, with a particular focus on Sirah learning. The reviewed studies demonstrate that these technologies can play an important role in creating more engaging, interactive, and meaningful learning experiences for students.

The findings show that mobile learning applications have become increasingly valuable in providing students with flexible access to educational content beyond the classroom. At the same time, interactive multimedia elements such as audio, animation, video, and visual representations have been found to improve student engagement and understanding. Although several mobile applications have been developed for KAFA education, most still rely heavily on quizzes, memorisation exercises, and text-based learning materials. As a result, opportunities to create more immersive learning experiences remain largely untapped.

This review also highlights the potential of Augmented Reality to enrich Islamic learning by helping students visualise historical events, locations, and narratives that are often difficult to imagine through conventional teaching methods. Such capabilities are particularly relevant to Sirah education, where understanding historical context is essential. However, the limited number of studies and applications focusing specifically on AR within KAFA education suggests that this area remains underexplored.

Overall, the literature suggests that integrating AR into mobile learning applications could offer a valuable approach to enhancing Islamic education in the digital era. Future research should continue to explore the design and effectiveness of AR-based learning applications, particularly for Sirah learning and other Islamic subjects. Greater attention should also be given to the integration of emerging technologies and innovative instructional approaches that can further support meaningful learning experiences. By embracing these developments, educators and developers can contribute to creating more engaging and effective learning environments that meet the needs of today's learners while preserving the values and objectives of Islamic education.

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