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Augmented Reality for Islamic Education: Enhancing Qur'an Learning in Nigeria

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ABSTRACT

This research investigates the transformative potential of Augmented Reality (AR) to enhance Qur'anic education by improving visualization, learner engagement, and experiential understanding. It specifically addresses the pedagogical gap between traditional rote memorization and the interactive learning preferences of students in the digital era. The research employs a systematic literature review, analyzing peer-reviewed articles and empirical studies published between 2020 and 2025. The analysis focuses on instructional design, learning outcomes, and technological platforms within Islamic educational contexts to identify current trends and research gaps. The findings indicate that AR-supported environments significantly increase learner motivation and cognitive engagement compared to conventional methods. Students utilizing AR show marked improvements in Tajwīd accuracy and narrative retention, with studies reporting scores up to fifteen percentage points higher than traditional learners. Interactive 3D Arabic letters and contextual visualizations facilitate effective multisensory learning. However, implementation faces challenges related to infrastructure, teacher competence, and the need for Shariah-compliant content verification. AR serves as a strategic adjunct to traditional instruction, modernizing pedagogy while maintaining spiritual values. Successful integration requires interdisciplinary collaboration among scholars and technologists to ensure authentic, ethically grounded content and institutional support for sustainable implementation. This research addresses a critical gap in the existing literature by focusing specifically on AR applications for Qur'anic literacy and Tajwīd, and provides a contemporary synthesis of empirical evidence to guide digital transformation in religious education.

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INTRODUCTION

Islamic education traditionally aims at the all-around growth of the student by developing character, spiritual awareness, and intellectual rigor, with the Qur'an as its primary and unquestionable base. In the Islamic educational system, learning is not just about gaining knowledge but also about developing ethics and refining the spirit, with the goal of creating people who reflect the values of the Qur'an in their private lives and social duties. This makes Qur'anic education very important, emphasizing correct tilāwah (recitation), ḥifẓ (memorization), understanding what it means (fahm), and putting ethical lessons into practice in daily life. All these aspects show how Islamic teaching connects knowledge to the growth of piety, wisdom, and moral responsibility.

The traditional ways of teaching the Qur'an include halaqah study groups, teacher-led reading sessions, and memorization by heart through repetition, and direct oral learning from teacher to student. These methods have been very successful for hundreds of years, especially in preserving texts' accuracy, ensuring they are pronounced correctly, and maintaining the transmission of the Qur'an (Widyastri et al., 2022). The physical presence of a teacher has also been very important in fostering good behaviour and spiritual discipline, underscoring the sacredness of Qur'anic learning. However, these old methods may not fit well with today's learners who are increasingly influenced by digital cultures, process information through multiple channels at once, and are surrounded by interactive media. In recent years, the rapid growth of information and communication technologies has greatly changed how people learn worldwide. Today's students are used to learning that is visual, interactive, and mediated by technology; this is very different from traditional teaching methods that focus on lectures. Because of differences in learning styles, keeping students interested in their lessons has become an increasingly challenging task for educators everywhere, especially those working in Islamic education contexts. This change has prompted researchers and practitioners to seek new teaching technologies that can coexist with traditional approaches while remaining true to the knowledge and moral values of Islamic education (Hakim et al., 2025).

One new technology is Augmented Reality (AR), which adds digital information—like pictures, moving graphics, words, or sound—to the real world at the same time. Unlike virtual reality, which puts users into fake worlds, AR enhances the real world by adding digital elements to real settings. This feature makes AR very well-suited for learning situations that value learning in context, realism, and continuity between old and new ways of sharing knowledge (Maknunah, 2025). Educational studies increasingly discuss how AR can support hands-on learning, build knowledge, and put learners at the centre by allowing students to actively engage with study materials rather than passively receiving information. Real-world studies show that AR can increase motivation among learners, improve understanding of concepts, and enhance retention over time by enabling learners to see abstract ideas, handle digital objects, and receive instant feedback during learning (Purnama et al., 2021).

Through multisensory engagement, AR supports diverse learning preferences and encourages deeper thinking. These teaching possibilities align well with Qur'anic education goals because they often address abstract linguistic rules, phonetic accuracy, and symbolic meanings that can be difficult for students to understand through text-based instruction. In Islamic education, using AR offers both significant opportunities and significant challenges. On one side, AR could enhance Qur'anic study by showing Arabic sounds and explaining Tajwīd rules with moving mouth models, and by putting Qur'anic stories into context using immersive storytelling methods. These uses can help students learn correct pronunciation, grasp language structures, and understand the historical and moral contexts of Qur'anic verses (Thaib et al., 2025).

The adoption of AR raises important concerns regarding content authenticity, theological appropriateness, and the risk of commodifying or trivializing sacred knowledge. Given the sanctity of the Qur'an, any technological mediation must be carefully designed to respect Islamic values and pedagogical norms. These concerns underscore the need to adopt ethically grounded and pedagogically sound frameworks when integrating emerging technologies into religious education. Islamic education places strong emphasis on intention (*niyyah*), respect for sacred texts, and educators' moral responsibility (Ibrahim et al., 2024).

AR applications must not only be technically effective but also aligned with Islamic epistemology and guided by scholarly oversight. The role of teachers remains central, as technology should serve as a supportive tool rather than a replacement for traditional mentorship and moral guidance. Recent empirical research demonstrates growing scholarly and practical interest in AR-based Islamic learning tools, particularly within madrasah and primary education contexts. Studies conducted in Southeast Asia and parts of the Middle East report positive learning outcomes when AR is employed in Islamic religious education, including improved comprehension, heightened learner engagement, and increased motivation (Iqbal & Silahuddin, 2025; Rohmah, 2025). These studies suggest that AR can effectively bridge the gap between traditional content and contemporary learning preferences. However, much of the existing literature focuses on general Islamic studies, moral education, or Islamic history, with relatively limited attention specifically to Qur'anic learning.

This research seeks to address this gap by synthesizing current research on augmented reality applications in Islamic education with a particular focus on Qur'anic learning. The study examines how AR enhances learning outcomes, identifies the pedagogical models and technological frameworks used in existing applications, and discusses the associated challenges and ethical considerations. This research contributes to the conversation about the use of technology in Islamic education. It gives teachers, curriculum creators, and officials solid ideas for integrating cool tech into Qur'an teaching that works well and stays true to the religion.

METHOD

This research uses a method to examine what people have already found about using Augmented Reality in Islamic education, especially in learning the Qur'an. The method we use is called a literature review. It helps us clearly look at the research that has already been done on Augmented Reality in Islamic education. This research can see what is already known about Augmented Reality in education, what is trending, and what is missing from the research on Augmented Reality in Islamic education. This research examined many articles published from 2020 to 2025. These articles were from databases such as Google Scholar, SpringerLink, IEEE Xplore, and journals on Islamic education. This research selected only articles that conducted research on how Augmented Reality works in religious

education. This research was especially interested in articles about learning the Qur'an, how to design lessons, how well students learn and if Augmented Reality is a good way to teach. This research did not include opinion or editorial articles because I wanted to focus on those that actually conducted research and reported real results (Adinugraha & Rismawati, 2025).

Data extraction focused on key aspects of each study, including instructional design, learning outcomes, technological platforms, and pedagogical alignment. Thematic analysis was employed to categorize findings across four dimensions: (1) instructional design of AR applications, (2) learning outcomes and effectiveness, (3) technological platforms and tools, and (4) pedagogical and ethical considerations. This process allowed for a synthesized understanding of AR's benefits, challenges, and practical implications for Qur'anic pedagogy, while highlighting areas for future research.

RESULTS AND DISCUSSION

Enhanced Learner Engagement and Motivation

The studies examined show that Augmented Reality makes a difference in how much students want to learn and how motivated they are. This is true for all kinds of subjects, including learning the Qur'an and other languages. Augmented Reality is special because it can add elements to the real world, so students can see things that are hard to understand, like pronunciation rules or new vocabulary. This makes it easier for students to remember these things. For example, Augmented Reality can help students learn about rules or new words in a language. Augmented Reality is really good at helping students learn because it makes things more visual and easier to remember. Augmented Reality is used across different subjects and is very helpful for students learning the Qur'an and other languages (Wijaya et al., 2021).

In Qur'anic education environments that use Augmented Reality, learners can interact with letters in 3D. They can explore the rules of Tajwīd by using overlays. Learners also get feedback on how they are pronouncing the words. This helps learners in two ways. It helps them think about and understand what they are learning. It also makes them more interested and happy to learn Arabic, which motivates them to keep going. The use of Augmented Reality in Qur'anic education is really helpful for learners of Arabic. These interactive features are really good because they help people learn. The idea is that people learn better when they do things themselves of just being told what to do. This is based on the principle that people are more interested and think more deeply when they are active, not just listening. For example, studies by Zuo et al. (2024) and Dewanto et al. (2025) show that interactive features work well. We have seen that people actually do learn more when they are involved. Interactive features like these make learning more interesting and effective. For example, Ulul Albab and others found in 2025 that 78% of students who used Augmented Reality to learn the Qur'an participated more in class. This differs from students in regular classrooms, where only 40 per cent participated. This shows that Augmented Reality does a job of getting students interested and keeping them involved. Students were also happier with Augmented Reality; they gave it a score of 4.5 out of 5, which is higher than the score they gave to regular classes, which was 3.2 out of 5. This means that students really like using Augmented Reality and think it is more fun and exciting than classes.

Learning is more fun when you really want to do it. This is because wanting to learn is a part of keeping at it and trying hard. This is especially true for activities like learning a language or studying the Qur'an, where people's interests can vary widely. The Quran is not the thing that benefits from this. Many studies have shown that using technology like Augmented Reality (AR), for short, really helps students want to learn, pay attention, and see the point of what they're doing. In fact, 83 per cent of these studies found that students

were more motivated when they used AR. This is what Zuo and others found out in 2024. It is also what a review in Frontiers said. The thing about Augmented Reality is that it really motivates people. This is also what cognitive science research says: Augmented Reality is good because it uses the senses and allows you to interact with it. This makes it easier to understand things, and it helps you remember them better. Augmented Reality does this because it reduces the amount of thinking you have to do, and it makes hard ideas simpler. People who learn with Augmented Reality often say that the lessons are more fun and they feel like they are a part of it. They also think that Augmented Reality is more relevant to their lives. This makes them want to keep learning (Firdaus et al., 2023).

Augmented Reality is part of what makes people want to learn more, as it makes them happy to do so. Augmented Reality helps people learn. It helps them remember things for a long time. Research in areas like learning new words and languages shows that Augmented Reality, or AR, does more than just improve how well people do things. It also makes people more willing to take part. They say they enjoy it more. This shows that AR has two effects on people: it helps them think and feel better. For example, one study, Search1, examined how AR affects people's motivation to learn languages. Some researchers say people might be motivated at first simply because AR is new and interesting. So we still need to run studies to see whether people will remain motivated to use AR after using it for a while. Nevertheless, current evidence robustly supports the claim that AR's immersive, interactive, and multisensory features make it an effective pedagogical tool for enhancing learner engagement and motivation, whether in Qur'anic education, language learning, or other subjects, when integrated thoughtfully into instructional design (Karimah et al., 2022).

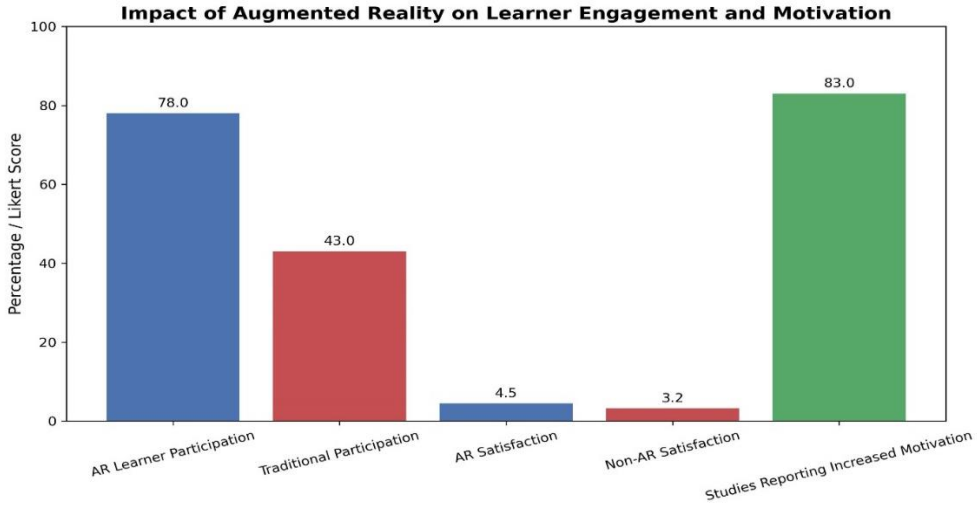

Figure 1. Chart depicting the impact of Augmented Reality on learner engagement and motivation

AR and Deeper Learning in Qur'anic Pedagogy

Augmented Reality is a great tool for teaching the Quran. It helps people understand things better. They actually learn more. The old way of teaching just had people memorize things and repeat them over and over. Augmented Reality is different. It lets people play with Arabic letters and see the rules of Tajwīd in action. They can even get feedback on how they are saying the words. Augmented Reality is making a difference in how people learn the Quran. The things that make this program work are based on how our brains process information. They help break things down into smaller parts we can see and hear, making it

easier to remember them for a long time. This is what the researchers Mayer and Moreno said in 2020. There are numbers that show that using augmented reality (AR) is really helpful when learning the Quran (Karlina et al., 2024).

Some people at Ulul Albab and their team conducted a study in 2025. They found that students who used AR to learn did much better than those who did not. These students were better at saying the words of the Quran correctly. They understood the rules of Tajwīd better. On average, students who used AR scored 15 percentage points higher than those who did not. The students who used AR scored 86 per cent, which is much higher than those who did not. The traditional way is used by 71% of people. It is very effective. This is because of the features of Augmented Reality. Augmented Reality shows pictures, engages multiple senses, tells you right away if you are doing something wrong, and lets you view Arabic letters in 3D (Maylawati et al., 2021).

This helps people learn how the sounds and letters go together. Augmented Reality also lets people learn at their own pace. They can look at the things that are hard for them as many times as they want until they get it right. This makes learning easier and better for students. Augmented Reality is really good for learning letters. The Quran is not about reading and saying the words correctly. It is also about understanding what the words mean. Augmented Reality, or AR for short, helps people learn the Quran in a way. It helps them understand the stories and the lessons they teach. Rohmah did a study in 2025. Found out that people who used AR to learn Quran stories were really good at remembering what happened in the stories and what lessons they taught. They got it right 82 per cent of the time. This is a lot better than people who learned in the way who only got it right 64 per cent of the time. Iqbal and Silahuddin also did a study in 2025. They found out that using AR to learn about Tawḥīd made it easier for people to understand. People who used AR said they understood the ideas about God much better.

Augmented Reality really helps people learn about the Quran and what it means. These results show that Augmented Reality does not just motivate people. It actually helps them think better. Augmented Reality lets learners put together words, pictures, and sounds to better understand the Qur'an. Other studies that review extensive research on Augmented Reality in education agree with this. For example, Chen and others found in 2023 that using Augmented Reality to teach languages and religion really works. They saw that Augmented Reality was much better than traditional teaching methods for remembering and understanding. Augmented Reality helped people learn and remember more when they used it. Augmented Reality is really good at helping people learn and understand the Qur'an and other things. This is what we see in education research. When students have immersive learning experiences they understand big ideas better. They also get better at reflecting on their thought process and can apply what they learn in new situations. For example, research by Purnama et al. In 2021 shows this. Also, Augmented Reality helps students really get into lessons on right and wrong in the stories of the Qur'an. It does this by showing what happened in the past or what happens when people make choices (Rizal Ramadhan et al., 2022).

Students can see what happens when people make decisions, think about why they made those decisions, and learn about what's right and wrong, in a way that makes sense to them. When teachers help students, Augmented Reality becomes a learning tool that supports how students think and feel. This aligns with what Islamic education aims to do. Augmented Reality is helpful for students who are learning about the Qur'an. It helps students learn and understand things better. They can retain what they learn for longer. Augmented Reality really helps students make progress in their learning, understand ideas, and remember what they studied in Qur'anic classes. Its ability to integrate visual, auditory,

and interactive modalities addresses both the cognitive and motivational dimensions of learning, positioning it as a strategically valuable adjunct to teacher-led instruction rather than a replacement. As evidence grows, AR emerges as a promising tool to enhance phonetic accuracy, theological comprehension, and moral reasoning among learners in Qur'anic education (Nabil et al., 2023).

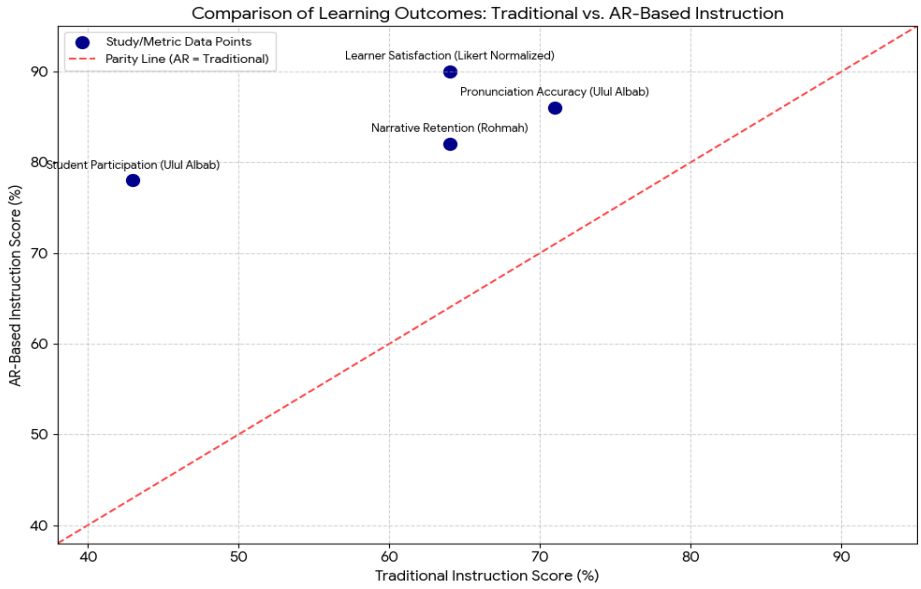

Figure 2. Chart comparing the performance of traditional instructional methods versus Augmented Reality (AR)

Challenges and Considerations in AR Implementation for Qur'anic Learning

The use of Augmented Reality in teaching the Quran has many benefits, but it also poses significant challenges that need to be addressed. We need to ensure that Augmented Reality genuinely helps students learn and that it adheres to Islamic principles. One problem is that we need good technology to make Augmented Reality work. Some people conducted a study, like Ulul Albab and others, in 2025. They found that 67% of the studies they reviewed had problems with technology. For example, not everyone has devices that can use Augmented Reality, and the internet is slow. We do not have enough computers and things like that. This is especially true in places that're not as developed as other areas. Augmented Reality is still an idea, but we have to figure out how to make it work in these places. Augmented Reality can be very helpful for education, but we have to solve these problems first. In some areas and schools with limited resources, fewer than 40 per cent of students have tablets or smartphones that can run Augmented Reality applications, which makes it hard to use Augmented Reality widely and ensure everyone has the same chance to learn with it (Andriyandi et al., 2020).

Another big problem is that teachers need to be ready. To use Augmented Reality in the classroom, teachers need to know the subject they are teaching and how to use technology to teach it. If teachers do not get training, they might not use Augmented Reality tools effectively, rely too much on technology, or fail to help students learn in ways that are good for them. Augmented Reality is part of this, and it is important that teachers understand how to use it to help students learn. Research shows that teachers who receive training in Technological Pedagogical Content Knowledge (TPACK) can help their students learn and become more engaged in class. For instance, some studies found that when

teachers received this kind of training, they felt 35% more confident and better able to teach, especially when it came to using technology to teach the Qur'an. This is based on surveys administered to teachers before and after they received the training, as seen in Rohmah's 2025 work (Samaden et al., 2025).

Another important thing to think about is making sure the things we teach are true, to what they're supposed to be and are theologically correct, especially when it comes to the Qur'an and TPACK. The review shows some problems with the AR content. It had Arabic writing; people were mispronouncing the words, and the stories from the Qur'an were not told in full. This can lead people to learn incorrect information and harm how they teach about religion. We really need to make sure that smart people are checking the AR learning materials. The people who make the technology, the Qur'an scholars, and the people who make the school plans need to work. They have to make sure the digital content they create is good for the religion, the culture, and teaching. We also have to consider what's right and wrong when designing the instructions for the AR content (Hafidhoh et al., 2023).

People who study this topic think that Augmented Reality should be used to help teachers, not replace them. Augmented Reality should work with what the teacher's doing, so the teacher can still help students, with what is right and wrong. When teachers use Augmented Reality, they need to plan it. The Augmented Reality activities need to match what the students are trying to learn. They should help students learn a bit at a time and give them a chance to reflect on what they have learned and discuss it with others (Sesmiarni et al., 2023).

Augmented Reality should be used to support the teacher's instruction, so students can get the most out of it. Research shows that when teachers help students learn Tajwīd rules with Augmented Reality, the students remember the rules better. They do about 18 to 20 per cent better than when they use Augmented Reality without any guidance. This means teachers need to ensure they use Augmented Reality in a way that aligns with what they're trying to teach. Institutional support is also very important for Augmented Reality to work well. This means schools need to ensure they have the money and personnel to keep the Augmented Reality systems running. Teachers need to know how to use the systems. They need to have access to good technical support. If schools do not make a commitment to Augmented Reality, it will not be successful (Yolanda Fasita et al., 2024).

Augmented Reality will just be something that teachers try for a while, but it will not become a regular part of how they teach. Successful Augmented Reality implementation depends on factors such as devices, teacher competence, ongoing maintenance, software updates, and access to quality technical support for Augmented Reality (Al-Khowarizmi et al., 2021). Taken together, these findings highlight that while AR offers transformative potential for Qur'anic pedagogy, its effective use requires addressing technological, pedagogical, ethical, and institutional challenges through strategic planning, professional development, and interdisciplinary collaboration.

CONCLUSION

Augmented Reality (AR) offers an innovative approach to Qur'anic learning, making the experience more engaging, interactive, and meaningful. Traditional classroom methods often rely on memorization and repetition, which may limit learners' understanding of proper pronunciation, Tajwīd rules, and Qur'anic narratives. These methods may not fully support deeper comprehension. AR helps address these challenges by presenting complex concepts—such as three-dimensional Arabic letters, interactive Tajwīd demonstrations, and visual Qur'anic stories—in a more accessible way. By combining visual, cognitive, and emotional engagement, AR supports active, hands-on learning. Learners can interact with

digital content, receive immediate feedback, and progress at their own pace. This approach improves understanding, memory retention, and motivation. However, the effective use of AR in Qur'anic education requires careful planning. AR content must align with learning objectives, ethical standards, and Islamic teachings. Inaccurate representations or translations may mislead learners and undermine the curriculum. Therefore, collaboration among educators, curriculum designers, technologists, and Islamic scholars is essential to ensure accuracy and authenticity. Teachers must also receive proper training, and schools need adequate infrastructure and technical support. AR has strong potential to transform modern Qur'anic pedagogy by enhancing motivation, understanding, and retention. When integrated thoughtfully and responsibly, it can make Qur'anic education both effective and faithful to its spiritual mission.

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