



## The Transformation of Arabic Language Learning through Augmented Reality in the Islamic Religious Education Study Programs

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### **Abstract**

*Arabic language learning in Islamic Religious Education (PAI) study program faces several challenges, particularly low student engagement, the persistence of conventional teaching methods, and limited adoption of educational technologies. This study aims to analyze the transformation of Arabic language learning through the integration of Augmented Reality (AR) in Islamic Religious Education programs at public universities. The study was motivated by the dominance of conventional methods, which have proven ineffective in enhancing student motivation, engagement, and learning outcomes, as well as a research gap regarding the use of AR in the context of Arabic language learning grounded in Islamic values. The research employs a qualitative approach using a case study and phenomenological design, involving 45 students and faculty members as key informants through stratified purposive sampling. Data were collected via interviews, observations, and documentation, and analyzed thematically while ensuring validity through triangulation and member checking. The results indicate that AR significantly enhances students' understanding and engagement, with average grades increasing from 68.4 to 82.7 and active participation rising from 52% to 84%. AR outperforms conventional digital media due to its interactive, immersive, and contextual nature, particularly in Islamic studies content.*

**Keywords:** *Augmented Reality, Arabic Language Learning, Islamic Religious Education, Learning Transformation.*

## **Introduction**

The integration of modern technology in education is becoming increasingly important to meet the evolving learning needs of students. In the context of higher education, especially for students enrolled in Islamic Education (PAI) study program, Arabic language learning plays a crucial role<sup>1</sup>. However, traditional or conventional methods of teaching Arabic are often ineffective in attracting students' interest and fail to utilise the potential of contemporary educational technology<sup>2</sup>. This indicates the need for more interactive and contextual learning innovations. In line with this, *Innovating Pedagogy* introduces the concept of immersive learning as an approach that integrates real-world simulation to enhance learner engagement and understanding<sup>3</sup>. This article explores the transformative potential of technology integration, particularly Augmented Reality (AR), in Arabic language learning for PAI students, as an effort to address modern learning challenges and improve learning outcomes<sup>4</sup>.

Arabic is not merely a means of communication, but also the primary medium for acquiring Islamic knowledge. This language plays an important role in understanding religious texts, performing worship, and interacting with Islamic scientific knowledge<sup>5</sup>. However, in reality, Arabic language teaching in higher education faces various challenges, such as differences in student ability levels, low learning engagement, and the need for innovative teaching methods to maintain student interest and motivation<sup>6</sup>.

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<sup>1</sup> A. Azhar Karim Amrullah and Hisan Mursalin, "Pentingnya Penguasaan Bahasa Arab Bagi Mahasiswa Sekolah Tinggi Ilmu Bahasa Arab Ar Raayah Dalam Berdakwah," *Mauriduna: Journal of Islamic Studies* 4, no. 2 (2023): 204–11, <https://doi.org/10.37274/mauriduna.v4i2.841>.

<sup>2</sup> Nurdin Nurdin and Mukhlis Anshari, "Effective Strategies in Learning Nahwu and Sharaf: A Literature Review Perspective," *Interdisciplinary Explorations in Research Journal* 2, no. 3 (2024): 1578–90, <https://doi.org/10.62976/ierj.v2i3.750>.

<sup>3</sup> Dara Rizki Meilizia et al., "Immersive Learning through Audio-Visual Media: Reconstructing Arabic Language Teaching for the Digital Generation," *Lughawiyāt: Jurnal Pendidikan Bahasa Dan Sastra Arab* 8, no. 2 (2025): 319–35, <https://doi.org/10.38073/lughawiyat.v8i2.2586>.

<sup>4</sup> Ibnu Sani Wijaya et al., "Aplikasi Edukasi Pengenalan Bahasa Arab Berbasis Augmented Reality Studi Kasus : Madrasah Ardhal-Haq," *JTIM : Jurnal Teknologi Informasi Dan Multimedia* 6, no. 3 (2024): 271–82, <https://doi.org/10.35746/jtim.v6i3.523>.

<sup>5</sup> Abd Aziz Rekan et al., "Arabic Language Curriculum as a Foundation for Strengthening Religious Education in Public Higher Education," *Jurnal Pendidikan Agama Islam* 22, no. 1 (2025): 97–121, <https://doi.org/10.14421/jpai.v22i1.11340>.

<sup>6</sup> Kamarulzaman Abd. Ghani et al., "Development of a Learning Module on Arabic Language Skills Outside of the Classroom," *Procedia - Social and Behavioral Sciences* 18 (2011): 154–62, <https://doi.org/10.1016/j.sbspro.2011.05.023>.

In addition to these general challenges, preliminary observations at the research site revealed specific obstacles faced by both instructors and students. On the students' side, it was found that the majority of students had diverse educational backgrounds, particularly regarding their foundational proficiency in Arabic. Many students are not yet able to read Arabic texts fluently, understand nahwu-sharaf structures, and have difficulty relating vocabulary to real-world contexts. This results in low confidence in speaking (maharah kalam) and writing (maharah kitabah) skills. Additionally, students also tend to experience boredom in learning because the methods used are repetitive and lack context.

Meanwhile, from the instructors' perspective, the challenges include limited proficiency in innovative learning technologies, particularly in utilizing interactive digital media such as Augmented Reality (AR). Instructors also face difficulties in designing instructional materials that effectively integrate Arabic linguistic aspects with technology. Time constraints, administrative burdens, and a lack of professional training in educational technology also act as barriers to optimizing learning. Furthermore, infrastructure limitations, such as a lack of supporting devices and access to AR applications, pose challenges in implementing technology-based learning in the classroom.

Conventional Arabic language learning methods are generally still oriented towards memorisation and lack interactive and immersive<sup>7</sup> elements<sup>8</sup>. This results in low student engagement and limited practical Arabic language skills. The COVID-19 pandemic has exacerbated these challenges by necessitating a rapid shift to online learning, which has ultimately highlighted the weaknesses of existing teaching approaches and the need for a more dynamic and interactive learning environment<sup>9</sup>. These various obstacles have prompted the need for innovative technology-based approaches, one of which is Augmented Reality (AR). AR technology offers a promising solution to these challenges by providing an immersive and interactive learning experience. AR technology adds virtual elements to the real world, enriching the learning

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<sup>7</sup> The term 'immersive' refers to a state of deep engagement and involvement in an experience, often facilitated by technology. It encompasses various forms of interaction in which users feel as if they are part of a simulated environment, leading to enhanced learning and emotional connection. Immersive experiences can be found in virtual reality (VR), augmented reality (AR), and other digital platforms, which create a sense of presence and participation.

<sup>8</sup> Stylianos Mystakidis and Vangelis Lympouridis, "Immersive Learning," *Encyclopedia* 3, no. 2 (2023): 396–405, <https://doi.org/10.3390/encyclopedia3020026>.

<sup>9</sup> Rekan et al., "Arabic Language Curriculum as a Foundation for Strengthening Religious Education in Public Higher Education."

environment and making it more engaging and effective<sup>10</sup>. Several studies have shown that AR can improve language competencies, including listening, speaking, reading, and writing skills, through contextual and interactive learning experiences<sup>11</sup>.

A several previous studies have also shown the significant potential of AR in the context of language learning. The integration of AR in language learning provides various benefits, including: **Increasing Motivation and Engagement:** AR makes the learning process more enjoyable and interactive, thereby increasing student motivation and participation<sup>12</sup><sup>13</sup>. **Enhancing Cultural Awareness:** AR can present cultural contexts and real-life situations, helping students understand and appreciate the cultural nuances of the Arabic language. **Improving Language Skills:** AR can strengthen language skills, including pronunciation, grammar, and vocabulary, through interactive and immersive activities<sup>14</sup>. **Developing 21st Century Skills:** AR encourages critical thinking, collaboration, and creativity, essential skills for modern learners<sup>15</sup>.

Although it has great potential, the application of AR in language learning also faces a number of obstacles, such as limited technological infrastructure, the need for lecturer training, and the development of effective AR content. To overcome this, a comprehensive approach is needed that includes technological investment, professional development for educators, and the creation of high-quality AR learning materials<sup>16</sup>.

Thus, the integration of AR in Arabic language learning for Islamic Education students offers transformative opportunities to improve educational outcomes and address current learning challenges. By utilising AR technology, educators can create more

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<sup>10</sup> Antigoni Parmaxi et al., "Augmented Reality in Language Learning: Practical Implications for Researchers and Practitioners," in *Learning and Collaboration Technologies*, vol. 14724, ed. Panayiotis Zaphiris and Andri Ioannou, Lecture Notes in Computer Science (Springer Nature Switzerland, 2024), [https://doi.org/10.1007/978-3-031-61691-4\\_10](https://doi.org/10.1007/978-3-031-61691-4_10).

<sup>11</sup> Prasetyo Yuli Kurniawan et al., "Revolutionizing Language Learning: Exploring the Efficacy of Augmented Reality Technology Through Assemblr Studio," *E3S Web of Conferences* 500 (2024): 01020, <https://doi.org/10.1051/e3sconf/202450001020>.

<sup>12</sup> Sin Yee Lau and Yun Wen, "A Systematic Literature Review of Augmented Reality Used in Language Learning," in *Contextual Language Learning*, ed. Yu-Ju Lan and Scott Grant, Chinese Language Learning Sciences (Springer Singapore, 2021), [https://doi.org/10.1007/978-981-16-3416-1\\_8](https://doi.org/10.1007/978-981-16-3416-1_8).

<sup>13</sup> Parmaxi et al., "Augmented Reality in Language Learning."

<sup>14</sup> Umar Umar et al., "Integration of Augmented Reality Technology to Enhance English Speaking Skills for Tourism Industry Employees in Sumbawa Regency," *Edelweiss Applied Science and Technology* 8, no. 6 (2024), <https://doi.org/10.55214/25768484.v8i6.3812>.

<sup>15</sup> Parmaxi et al., "Augmented Reality in Language Learning."

<sup>16</sup> Yun Wen and Sin Yee Lau, "Investigating Pupils' Cognitive Engagement in Augmented Reality-Supported Second Language Learning Classrooms," in *Expanding Global Horizons Through Technology Enhanced Language Learning*, ed. Yun Wen et al., Lecture Notes in Educational Technology (Springer Singapore, 2021), [https://doi.org/10.1007/978-981-15-7579-2\\_1](https://doi.org/10.1007/978-981-15-7579-2_1).

engaging, interactive, and effective learning experiences. Not only does this improve language skills, but it also fosters a deeper connection with Islamic knowledge and culture. This approach is in line with the broader goal of modernising Islamic education and preparing students to face the demands of the contemporary world.

Although various studies have examined the use of technology in language learning, including the use of Augmented Reality (AR) in an educational context in general, there remains a significant research gap, particularly in the context of Arabic language learning in Islamic Religious Education (IRE) programs at public universities. Most previous studies have focused more on foreign language learning, such as English, or on the elementary and secondary education levels, and thus have not specifically examined the integration of AR in Arabic language learning, which possesses unique linguistic and cultural characteristics and is closely intertwined with Islamic values.

Moreover, existing research tends to emphasize the general effectiveness of the technology without deeply exploring how student learning experiences, teacher readiness, and the pedagogical context within Islamic education influence the success of AR implementation. Thus, research is needed that specifically examines the integration of Augmented Reality in Arabic language learning within the Islamic Education (PAI) context, not only from a technological perspective but also from pedagogical, cultural, and spiritual perspectives. This study aims to fill this gap by providing a comprehensive analysis of the transformation of AR-based Arabic language learning in general higher education institutions.<sup>17</sup>

## **Method**

This study uses a qualitative approach with case study and phenomenology types, developed based on empirical data obtained directly from the field. This approach was chosen because it allows researchers to deeply understand the experiences, perceptions, and meanings experienced by research subjects in a particular context. The main objective of this study is to build a comprehensive understanding of the transformation of Arabic language learning through the integration of Augmented Reality (AR) technology for students of Islamic Education (PAI) study programmes at public universities (PTU).

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<sup>17</sup> Ibid.

According to Husserl, the phenomenological approach is used to reveal the subjective experiences of individuals<sup>18</sup> and the essential meaning of how language is understood and experienced by those individuals<sup>19</sup>. This approach also prioritises qualitative exploration and avoids quantitative generalisation<sup>20</sup>. By combining these two approaches, the research seeks to examine both the subjective experience of students and the contextual reality of applying AR technology in Arabic language learning.

The population of this study consists of students in the Islamic Education Program who are taking Arabic language courses at the public university serving as the research site. The sampling technique employed was purposive sampling combined with stratified purposive sampling to ensure a more comprehensive representation of the participants' characteristics.

Participants were selected based on several criteria, namely: (1) students currently taking or having taken the Arabic language course; (2) having experience in digital-based learning; and (3) representing a range of Arabic language proficiency levels (beginner, intermediate, and advanced). Additionally, stratification was conducted based on semester levels to capture differences in students' learning experiences. With this approach, the sample of 45 students was considered to represent the diversity of the population's characteristics more proportionally.

To enhance the depth of the data, this study also involved Arabic course instructors as key informants, selected based on their teaching experience and involvement in the use of learning technologies. Through this combination of methods, the data obtained is not only in-depth but also offers a higher level of representativeness in describing the phenomena under investigation.

The steps of this research included several stages: (1) identification of problems and formulation of research titles; (2) literature review related to Arabic language learning and the integration of Augmented Reality technology; (3) determination of

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<sup>18</sup> Epos Sister Krismon Selan Dakhi et al., "Kajian Fenomenologi Pada Penelitian Bahasa," *DIALEKTIKA: Jurnal Bahasa, Sastra Dan Budaya* 11, no. 2 (January 2025): 213–35, <https://doi.org/10.33541/dia.v11i2.6440>.

<sup>19</sup> Alireza Bonyadi, "Phenomenology as a Research Methodology in Teaching English as a Foreign Language," *Asian-Pacific Journal of Second and Foreign Language Education* 8, no. 1 (2023): 11, <https://doi.org/10.1186/s40862-022-00184-z>.

<sup>20</sup> R. Ritunnano et al., "Phenomenology as a Resource for Translational Research in Mental Health: Methodological Trends, Challenges and New Directions," *Epidemiology and Psychiatric Sciences* 32 (2023): e5, <https://doi.org/10.1017/S2045796022000762>.

research design and methods; (4) data collection; (5) data analysis and interpretation; and (6) drawing conclusions and compiling research recommendations.

Data collection techniques included in-depth interviews, participatory observation, and document analysis. Interviews were used to explore the experiences, perceptions, and input of students and lecturers regarding the use of AR in Arabic language learning<sup>21</sup>. Observations were conducted to identify learning practices, classroom interactions, and student responses to the AR media used. Document analysis was conducted on the Semester Learning Plan (RPS) and learning notes to obtain relevant supporting data.

To ensure the validity and reliability of the data, this study employed several strategies of research rigor in qualitative research. First, data and method triangulation was conducted by comparing the results of interviews, observations, and document analysis to ensure the consistency of the findings. Second, the researcher applied member checking, which involves reconfirming interview results and data interpretations with participants to ensure the intended meaning is accurately captured. Third, peer debriefing was conducted, involving discussions with colleagues or experts in the fields of Arabic language education and learning technology to obtain critical feedback on the analysis results.

Additionally, to maintain reliability, the researcher compiled an audit trail consisting of comprehensive documentation of the research process, from data collection and coding to drawing conclusions. The researcher also employed a systematic thematic coding technique to ensure consistency in data categorization. Meanwhile, to ensure confirmability, the researcher sought to minimize subjective bias by grounding interpretations in the empirical data collected in the field. With this approach, the research findings are expected to possess a high level of validity (trustworthiness).

Data analysis was conducted through thematic analysis with three main stages, namely data reduction, data presentation, and conclusion drawing. Within a phenomenological framework, the researcher sought to understand the deeper meaning of participants' experiences with the use of AR in Arabic language learning, while in the

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<sup>21</sup> Aunur Shabur Maajid Amadi and Khizanatul Hikmah, "Persepsi Mahasiswa Tentang Pemanfaatan Teknologi AI Dalam Pembelajaran Bahasa Arab Di Perguruan Tinggi Islam Indonesia," *Journal of Education Research* 6, no. 2 (2025): 291–301, <https://doi.org/10.37985/jer.v6i2.2343>.

context of a case study, the researcher described the actual conditions and learning practices at the institution where the research was conducted.

Thus, the results of this study are expected to contribute theoretically and practically to understanding the role of Augmented Reality technology as an innovation in responding to the challenges of Arabic language learning in the modern era, particularly in the context of general higher education.

## **Results and Discussions**

Based on literature analysis and observational data, the application of Augmented Reality (AR) in Arabic language learning shows several important results.

### **Pedagogical and Technological Approaches Used in Arabic Language Learning**

Based on the research conducted, Arabic language learning in Islamic Education study programmes has been using traditional/conventional methods such as monotonous lectures, reading textbooks aloud, writing down what is not understood on the blackboard, memorising vocabulary, and grammar exercises. The general use of digital media, such as PowerPoint presentations or educational videos, has indeed added variety to the delivery of course material; however, it remains one-way communication and is not yet fully interactive. These media tend to merely transfer the lecture method into a digital format without significantly altering the pedagogical approach. Consequently, student engagement remains limited to visual and auditory aspects, without directly involving kinesthetic and exploratory experiences. These findings indicate a gap between conventional pedagogical approaches and the characteristics of the digital generation of students, who are more visually oriented and interactive<sup>22</sup>.

However, when Augmented Reality (AR) is integrated to offer a more interactive approach to learning, it demonstrates significant advantages over conventional digital media. AR not only presents information visually but also integrates interactive, immersive, and contextual elements that allow students to interact directly with learning objects in an environment that resembles real-world situations. Through AR, students do not merely see or hear but actively experience the learning process (experiential learning).

The primary advantage of AR lies in its ability to simultaneously blend the real and virtual worlds, thereby creating a more authentic learning experience. For example, when

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<sup>22</sup> Early Ni'mah Hayati, "Karakteristik Belajar Generasi Z Dan Implikasinya Terhadap Desain Pembelajaran IPS," *Jurnal Pembelajaran, Bimbingan, Dan Pengelolaan Pendidikan* 4, no. 8 (June 2024): 8, <https://doi.org/10.17977/um065.v4.i8.2024.8>.

studying a specific topic, students can interact with 3D object simulations, practice dialogues in real time, and understand vocabulary within its contextual usage. This cannot be optimally achieved through conventional digital media such as PowerPoint or video.

Furthermore, AR is also capable of accommodating various student learning styles (visual, auditory, and kinesthetic) simultaneously, thereby enhancing holistic learning engagement. From a pedagogical perspective, the use of AR promotes a shift from teacher-centered learning toward student-centered learning, where students play an active role in constructing knowledge through exploration and direct experience. Thus, AR functions not merely as a visual aid but as a transformational medium capable of enhancing motivation, engagement, and the quality of student learning outcomes in Arabic language instruction.

### **The Potential of AR in Improving the Effectiveness of Arabic Language Learning**

Based on observations and interviews, the implementation of AR in Arabic language classes shows that the integration of Augmented Reality (AR) in Arabic language learning significantly improves vocabulary and sentence structure comprehension. Students appear more focused, enthusiastic, and active when interacting with three-dimensional objects displayed on their devices. For example, in learning the theme of 'shopping at the market,' the AR application displays a buying and selling simulation so that students can practise speaking realistically.

This type of learning experience creates an immersive and contextual atmosphere that cannot be obtained through conventional methods. These findings show that AR provides a combination of visual, auditory, and kinesthetic experiences<sup>23</sup> that support more comprehensive Arabic language learning. This is in line with constructivism theory, which emphasises that knowledge is formed through direct experience and active involvement of learners<sup>24</sup>.

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<sup>23</sup> Tara Januar Abwina Tassa and Hindarto Hindarto, "Augmented Reality Mengubah Pendidikan Dasar: Era Baru Pembelajaran Interaktif," *Indonesian Journal of Applied Technology* 1, no. 3 (2024): 17, <https://doi.org/10.47134/ijat.v1i3.3069>.

<sup>24</sup> M. Dzikrul Hakim Al-Ghozali and Diki Cahyo Ramadhan, "Efektivitas Penggunaan Model Pembelajaran Maharah Kalam Berbasis Teori Konstruktivesme Dalam Meningkatkan Motivasi Belajar Siswa," *DINAMIKA : Jurnal Kajian Pendidikan Dan Keislaman* 6, no. 1 (June 2021): 19–40, <https://doi.org/10.32764/dinamika.v6i1.1261>.

This finding is also reinforced by various previous studies that show the effectiveness of AR in increasing student engagement<sup>25</sup>. Research by Solehuddin (2023) found that students who used AR applications in Arabic language learning showed higher levels of engagement<sup>26</sup> and learning retention compared to traditional methods. In this context, the visual, auditory, and kinesthetic interactions presented by AR strengthen the relationship between the form, meaning, and pronunciation of Arabic vocabulary. According to Sintiya (2024), the use of two channels of visual and auditory information processing can strengthen memory and conceptual understanding<sup>27</sup>. Thus, AR not only increases students' emotional participation, but also helps them understand the structure of the Arabic language more deeply.

Quantitatively, the results of the data analysis indicate a significant improvement in students' comprehension and motivation to learn following the use of AR. Based on the learning evaluation results, the average scores for vocabulary comprehension and sentence structure among students increased from 68.4 (pre-intervention) to 82.7 (post-intervention). Additionally, survey results indicate that 87% of students reported finding it easier to understand the material when using AR compared to conventional methods, and 91% of students reported an increase in learning motivation because the learning experience became more engaging and interactive.

Furthermore, student engagement levels also increased, as evidenced by active participation in class. A total of 84% of students actively participated in AR-based discussions and simulations, compared to only about 52% in conventional learning. This data indicates that AR not only enhances cognitive aspects but also has a positive impact on students' affective and participatory aspects. To clarify the comparison of the impact of using Augmented Reality on student learning outcomes, the following Table 1 is presented.

Table 1. Comparison of Learning Outcomes Before and After the Use of Augmented Reality (AR)

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<sup>25</sup> Muhammad Ansarullah S Tabbu et al., "Efektivitas Augmented Reality Geography Games (ARGG) Dalam Meningkatkan Kemampuan Berpikir Spasial Pada Siswa Sekolah Menengah Atas," *LaGeografia* 22, no. 1 (2023): 64, <https://doi.org/10.35580/lageografia.v22i1.53175>.

<sup>26</sup> Solehuddin, "Sistem Media Pembelajaran Pengenalan Benda Ruang Sekolah Berbahasa Arab Dengan Augmented Reality," *Riau Jurnal Teknik Informatika* 2, no. 3 (2023): 72–76, <https://doi.org/10.61876/rjti.v2i3.2905>.

<sup>27</sup> Soffia Sintiya et al., "Efektifitas Penggunaan Media Visual Dalam Pembelajaran Pendidikan Agama Islam Terhadap Siswa Sma Negeri 4 Kota Sungai Penuh," *Edu Global : Jurnal Pendidikan Islam* 5, no. 1 (July 2024): 9–17, <https://doi.org/10.56874/eduglobal.v5i1.1595>.

<b>Aspect</b>	<b>Before (Conventional)</b>	<b>AR After Based)</b>	<b>(AR- Improvement</b>
<b>Average score</b>	68.4	82.7	+14.3
<b>Active participation</b>	52%	84%	+32%
<b>Vocabulary comprehension</b>	48%	85%	+37%
<b>Learning motivation</b>	65% (moderate)	91% (high)	+26%
<b>Emotional engagement</b>	Low moderate	High	Significant
<b>intellectual engagement</b>	Limited	Active & critical	Significant

These findings reinforce the notion that the use of AR in Arabic language learning can create a more contextual, immersive, and meaningful learning experience. By integrating visual, auditory, and kinesthetic elements, AR helps students develop a deeper understanding and significantly boosts their motivation to learn. In the context of Islamic education, this is particularly important because learning is not only focused on language proficiency but also on the holistic understanding of Islamic values and practices.

### **Challenges Faced by Lecturers in Integrating AR**

Despite its great potential, the application of AR in Arabic language learning faces a number of challenges from educators (lecturers). Interviews with lecturers revealed that the main obstacles lie in limited digital literacy, lack of technical training, and limited time to design AR-based content. Some lecturers stated that they were not confident in using AR applications due to their lack of technical experience, while others did not have the necessary devices.

These findings are in line with the research by Rahmat et al. (2023), which highlights that lecturers' readiness or knowledge of educational technology, especially AR, is still limited<sup>28</sup>.

From a pedagogical perspective, instructors face challenges in designing instructional approaches that effectively integrate AR technology with Arabic language learning objectives. Not all Arabic language materials can be easily visualized in AR form, particularly abstract concepts such as the rules of nahwu and sharaf. Additionally, instructors must adapt their teaching approaches to align with the characteristics of experiential learning, which requires a shift from lecture-based methods toward facilitating students' active exploration.

From a technical perspective, emerging challenges include hardware limitations such as inconsistent device specifications among students, limited access to stable internet, and compatibility issues between AR applications and the devices used. Furthermore, developing high-quality AR content still requires specialized expertise in multimedia design and programming, skills that many Arabic instructors currently lack.

Additionally, there are cultural and psychological challenges, as some faculty members still resist technological change because they feel comfortable with the conventional methods they have long used. On the other hand, there is concern that excessive use of technology could diminish the depth of understanding of Islamic values if not designed appropriately.

To address these various challenges, practical and systematic solutions are required. One strategic step is the implementation of a continuous training program for faculty members. This training program could include workshops on developing simple AR content, training on the use of educational AR platforms, and guidance in designing technology-based Semester Learning Plans (RPS).

Another solution that can be implemented is the development of an AR content bank based on the Islamic Education curriculum, which can be accessed and used collaboratively by faculty members. With this repository, faculty members do not always have to start from scratch when developing learning materials. Furthermore, institutional policy support is necessary, such as providing incentives for faculty members who

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<sup>28</sup> Anggi Datiatur Rahmat et al., "Teachers' Perspectives toward Using Augmented Reality Technology in Science Learning," *Cypriot Journal of Educational Sciences* 18, no. 1 (2023): 215–27, <https://doi.org/10.18844/cjes.v18i1.8191>.

develop learning innovations, strengthening digital infrastructure, and systematically integrating AR technology into the curriculum.

With this comprehensive approach, the challenges in implementing AR can not only be minimized but also transformed into opportunities to improve the quality of Arabic language learning in higher education, particularly within the context of Islamic Religious Education.

### **The Effect of AR on Student Motivation, Engagement, and Learning Outcomes**

Based on the research findings, the use of Augmented Reality (AR) in Arabic language learning demonstrates significant improvements in student learning outcomes, in terms of cognitive, affective, and participatory aspects. These findings are supported by observational data, interviews, and learning evaluation results conducted before and after the implementation of AR.

As a case study, in one class studying the theme “interactions at the market (في السوق),” a comparison was made between conventional learning and AR-based learning. In the initial stage (pre-intervention), students tended to be passive and relied solely on memorizing vocabulary without understanding the context of its use. This was reflected in the initial evaluation results, which showed that only 48% of students were able to use vocabulary correctly in simple sentences.

However, following the implementation of AR—which presented interactive simulations of buying and selling activities through visualizations—a significant improvement occurred. In the post-intervention phase, 85% of students were able to use vocabulary in the appropriate conversational context and demonstrated improved fluency (maharah kalam). Additionally, the average learning outcome score increased from 70.2 to 84.6, indicating a positive impact of AR on students’ conceptual understanding and practical skills.

In terms of emotional engagement, the use of AR has proven to significantly increase students’ interest and enthusiasm. Students displayed positive expressions such as curiosity, excitement, and confidence when interacting with AR media. This was evident in students’ more active responses, as they asked questions, experimented, and participated in learning simulations. A total of 89% of students stated that learning with AR is more enjoyable than conventional methods, and they feel more confident using Arabic in real-life situations.

Meanwhile, from the perspective of intellectual engagement, AR encourages students to think more critically and contextually. Students do not merely memorize vocabulary but also understand the relationship between linguistic forms, meaning, and their application in specific contexts. Interaction with AR objects enables students to engage in self-directed exploration, test their understanding, and actively construct knowledge (active knowledge construction). This demonstrates that AR supports deep learning, rather than merely surface level learning.

Furthermore, AR integration also enhances student engagement in collaborative learning. In some activities, students work in groups to complete AR simulation-based tasks, such as creating dialogues or solving communication problems in specific contexts. These activities not only improve language skills but also develop critical thinking, communication, and collaboration skills..

These findings are in line with the research by Sari et al. (2025), which shows that the use of AR increases learners' intrinsic motivation because it provides a fun and challenging learning experience<sup>29</sup>. Psychologically, this aligns with Self-Determination Theory, which emphasises the importance of autonomy and active engagement in enhancing learning motivation<sup>30</sup>. Thus, it can be concluded that the use of AR in Arabic language learning not only leads to improved learning outcomes in quantitative terms but also strengthens students' emotional and intellectual engagement. This approach makes learning more meaningful, interactive, and relevant to students' needs in the digital age, while also supporting the holistic goals of Islamic education.

### **Student Engagement in AR-Based Arabic Language Learning Experiences**

Most students responded positively to the use of AR in Arabic language learning. They felt that this technology made the learning process more interesting, interactive, and relevant to modern life. In addition, students also felt that AR helped them understand the Islamic context in Arabic language materials, such as the history of holy places or the cultural meaning of classical Arabic expressions. These findings show that AR can bridge the gap between linguistic aspects and Islamic values in learning.

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<sup>29</sup> Juwita Sari et al., "Potensi Augmented Reality Dalam Meningkatkan Motivasi Belajar Pendidikan Agama," *Jurnal Teknologi Pendidikan* 5, no. 1 (January 2025), <https://doi.org/10.37304/jtekipend.v5i1.17217>.

<sup>30</sup> Yocki Yuanti et al., "Pengaruh Teknologi Pembelajaran Terhadap Keterlibatan Dan Motivasi Belajar Siswa Dari Perspektif Psikologi Pendidikan," *Jurnal Psikologi Dan Konseling West Science* 2, no. 02 (2024): 100–106, <https://doi.org/10.58812/jpkws.v2i02.1328>.

These results indicate that the integration of AR in Arabic language learning in higher education helps students understand religious texts more deeply. From an Islamic education perspective, this supports the principle of ta'dib, which is education that not only imparts knowledge but also shapes spiritual and moral awareness. Thus, AR can be seen as an integrative learning medium that strengthens the religious and humanistic dimensions of students in learning Arabic<sup>31</sup>. To clarify the impact of using Augmented Reality on various aspects of Arabic language learning, the following table summarises the main findings of the study:

**Table 2. Summary of the Impact of AR on Arabic Language Learning in the PAI Programme**

<b>Aspect</b>	<b>Impact of AR</b>
<b>Interactive Learning</b>	Increases student engagement through immersive and contextual learning experiences.
<b>Motivation</b>	Fosters intrinsic motivation in students by providing a fun and challenging learning environment.
<b>Lecturer Readiness</b>	Readiness is still moderate; there is a need to improve competence and training in AR-based learning technology.
<b>Quality of Implementation</b>	Success is influenced by content design, digital infrastructure, and institutional support.
<b>Student Interaction</b>	Encourages active and collaborative learning through digital visual exploration and discussion.
<b>Learning Engagement</b>	AR has a significant impact on increasing student focus and participation compared to conventional methods.

### Synthesis of Results

<sup>31</sup> Ahmad Calam et al., "Penerapan Learning Cycle 5E Menggunakan LKS Berbantuan AR Dalam Optimalisasi Manajemen Pembelajaran PAI," *Journal of Instructional and Development Researches* 5, no. 3 (2025): 268–76, <https://doi.org/10.53621/jider.v5i3.528>.

Based on the results of the study, it can be concluded that the integration of Augmented Reality in Arabic language learning in the PAI programme has a positive impact on four main aspects:

1. Pedagogical aspect, in the form of a shift from lecturer-centred learning to student-centred learning;
2. Cognitive aspect, in the form of improved understanding of vocabulary and sentence structure through three-dimensional visualisation;
3. Affective aspect, in the form of increased motivation, curiosity, and emotional involvement of students; and
4. Spiritual aspect, in the form of strengthening Islamic values through contextual learning experiences.

Thus, AR is not only a technological instrument, but also a pedagogical innovation that is in line with the objectives of Islamic education, namely to develop knowledgeable and characterful individuals. To that end, synergy between lecturers, technology developers, and educational institutions is essential in order to optimise the potential of AR in the context of modern Arabic language learning.

## **Conclusion**

This study confirms that Augmented Reality (AR) is a transformational tool in Arabic language learning in Islamic Religious Education Study Programmes. AR not only enhances pedagogical effectiveness, motivation, and student engagement, but also transforms the learning environment from a traditional lecturer centred model to an interactive, contextual, and student-centred learning experience. Through the integration of visual, auditory, and kinesthetic elements, AR enables a more concrete understanding of Arabic vocabulary and sentence structure. However, the effectiveness of AR is not universal across all aspects of Arabic language learning. Certain competencies, such as understanding grammatical rules (*nahwu* and *sharaf*) and text analysis, still require additional, more analytical approaches. Therefore, the integration of AR should be implemented selectively and combined with other learning methods within a blended learning framework.

As practical implications, this study recommends several strategic steps for implementing AR in Arabic language learning. First, regarding content development, instructors should design AR content based on real-world contexts and relevant to students' lives, such as themes of worship, social interaction, and Islamic culture.

Second, regarding faculty capacity building, there is a need for ongoing training programs that focus not only on the use of AR technology but also on the integration of technology, pedagogy, and language content.

Thus, Augmented Reality serves not only as a technological innovation but also as a strategic pedagogical approach capable of bridging the needs of Arabic language learning in the digital age, while simultaneously maintaining the integration of Islamic values within the educational process.

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