



INTEGRATION OF ARABIC LANGUAGE CURRICULUM WITH AUGMENTED REALITY MEDIA: DESIGN, CHALLENGES, AND OPPORTUNITIES

Reza Renaldy^{1*}

¹ Malang State University 1, Indonesia

* rezarenaldy393@gmail.com of the corresponding author

Abstract

This study examines the integration of the Arabic language curriculum with Augmented Reality (AR) media in terms of materials, methods, media, and implementation. Using a qualitative literature study, data were analyzed through reduction, presentation, and conclusion drawing. Results show that AR supports learning mufradāt, qawā'id, and speaking skills through three-dimensional visualization, discovery-based and contextual learning, and mobile or marker-based media. AR enhances motivation, conceptual understanding, and language skills, but faces infrastructure, teacher competence, and 3D asset limitations.

Keywords

Arabic, Augmented Reality, Curriculum Integration, Learning Media, Digital Learning

ملخص البحث

تبحث هذه الدراسة في دمج منهج اللغة العربية مع تقنية الواقع المعزز (AR) من حيث المواد والأساليب والوسائط وآليات التنفيذ. وقد استخدمت منهجية الدراسة النوعية للأدبيات، حيث جرى تحليل البيانات عبر مراحل الاختزال والعرض واستخلاص النتائج. وتُظهر النتائج أن الواقع المعزز يدعم تعلم المفردات والقواعد ومهارات التحدث من خلال التخييل ثلاثي الأبعاد، والتعلم القائم على الاكتشاف والسياق، واستخدام الوسائط المعتمدة على الأجهزة المحمولة أو العلامات. كما يعزز الواقع المعزز الدافعية والفهم المفاهيمي والمهارات اللغوية، إلا أنه يواجه تحديات تتعلق بالبنية التحتية، وكفاءة المعلمين، ومحدودية الموارد ثلاثية الأبعاد.

كلمات اساسية اللغة العربية، الواقع المعزز، دمج المناهج، وسائط التعلم، التعلم الرقمي

The development of information and communication technology has brought significant changes to various aspects of life, including education. Digital transformation is encouraging educational institutions to adapt by utilizing technology as an integrated part of the learning process. In this context, technology functions not only as a tool but also as a primary medium for creating more interactive, contextual, and effective learning experiences (Fatimah et al., 2025). The use of technology in learning today is not only a visual transformation, but has also evolved into a form that is integrated with approaches, methods, media, and even curriculum.

Learning Arabic, as a field of study with unique characteristics, is also not exempt from these demands. Arabic has a high level of linguistic complexity, both in terms of morphology, syntax, and phonology, often presenting challenges for learners (Putra et al., 2026). Students learning Arabic, in particular, face challenges in understanding pronunciation, sentence structure, and real-life usage due to the static nature of textbooks and limited exposure to in-depth conversations (Ali Syed et al., 2025). This situation is exacerbated by learning methods that still tend to be conventional, such as lectures and memorization, which are less able to accommodate (Wijaya et al., 2024). Traditional Arabic learning methods, which are one-way and focus on memorization, are less relevant today and require renewal and improvement to suit the learning needs of today's digital generation (Sahrim et al, 2023). This situation tends to make teaching and learning less engaging and effective (Sahrim. et al, 2023).

One of the rapidly developing innovations in education is the use of Augmented Reality technology. AR is a technology capable of combining virtual objects with the real world in real time, creating a more immersive and interactive learning experience (Solehuddin, 2023). One of the important functions of Augmented Reality in education is to convey complex ideas by presenting information in educational materials in a realistic manner (Daud et al., 2021).

In foreign language learning, Augmented Reality technology has been applied in various languages, such as Malay, English, Chinese, French, Spanish, and Ukrainian (Sahrim et al, 2023). With this technology, students can see three-dimensional visual representations of objects, interact directly, and obtain additional information to support their understanding of the material. Various studies have shown that the use of AR in learning has a positive impact on improving the quality of student learning. AR can increase learning motivation, accelerate conceptual understanding, and enhance information retention by engaging multiple senses in the learning process (Mu'minah et al., 2025). In addition, the use of AR in Arabic language learning has been proven effective in improving students' vocabulary mastery, reading skills, and speaking abilities through contextual simulations (Hidayat et al., 2025).

In Arabic language learning, Augmented Reality has been widely used as a learning medium. Research conducted by Cahyani et al. (2021) shows that the development of Augmented Reality-based applications in Arabic vocabulary learning provides very feasible and effective results (Sahyani & Kholisin, 2021). This finding is supported by research by Ernawati et al. (2024) which states that the use of AR can increase students' interest in learning and facilitate understanding of abstract vocabulary through visualization of three-dimensional objects (Ernawati et al, 2024). Research conducted by Solehudin (2023) also states that the use of Augmented Reality can provide a learning experience that feels more interactive and enjoyable (Sholehudin, 2022). Research on augmented reality media for traffic sign material in Arabic conducted by Mohammad Rozi Syifaudin (2022) states that augmented reality media is appropriate and easy to use by students (Mohammad Rozi et al, 2022).

The integration of technology into the curriculum is a crucial aspect in creating sustainable and relevant learning. This integration extends beyond the use of technological media, but also encompasses the adjustment of materials, methods, strategies, and learning evaluation to align with the characteristics of the technology used (Fatimah et al., 2025). Therefore, the use of AR in Arabic language learning should not be a stand-alone supplementary medium, but should be comprehensively integrated into the curriculum design.

Based on this review, a significant research gap exists. Most previous studies have focused on the effectiveness of using AR as a learning medium or developing specific applications. However, few have addressed how to comprehensively integrate AR into the Arabic language curriculum, encompassing aspects of materials, methods, media, and systematic learning implementation. Without structured integration, the use of AR technology has the potential to be suboptimal in improving the quality of learning. Therefore, this study aims to comprehensively describe the design of an integrated Arabic language curriculum with Augmented Reality-based media. The study focuses on integration of learning materials, learning methods, learning media, and implementation scenarios within the learning process.

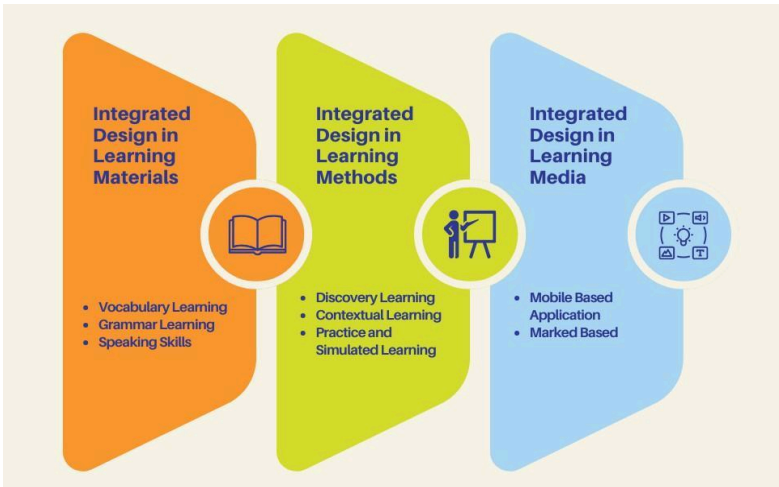
METHODES

This research is a qualitative descriptive study using a literature review method. This approach was chosen to systematically describe the concept of integrating the Arabic language curriculum with Augmented Reality media, presenting it in a simple and easy-to-understand manner. The concept of curriculum integration will be presented through the following classification: (1) Integration Design in Curriculum Material, (2) Integration Design in Learning Methods, (3) Integration Design in Learning Media, (4) Impact on Learning, (5) Learning Stages, (6) Opportunities and Challenges.

The data collection method used in this study is a documentation technique that collects various literature related to the Arabic Language Curriculum and Augmented Reality. The data sources in this study are various literature related to the Arabic Language Curriculum, Augmented Reality, and Curriculum Integration. The data analysis method in this study is descriptive analysis with the following stages: (1) data reduction, (2) data presentation, and (3) drawing conclusions.

RESULT

Based on the results of the analyzed literature review, several findings were obtained regarding the integration of Augmented Reality in Arabic language learning, covering aspects of materials, methods, and learning media. These findings indicate that AR has significant potential to improve the quality of language learning, particularly in vocabulary mastery, rule understanding, and speaking skills. The following presents the results and a systematic discussion based on the predetermined study focus.



DISCUSSION

Integrated Design in Learning Materials

Vocabulary Learning

Vocabulary mastery is the main foundation of language skills, because the more vocabulary mastered, the easier it is for students to understand and use the language (Nadiana et al., 2024). Lack of vocabulary mastery will hinder language proficiency skills and hinder efforts to master the language (Sahrim et al., 2023). One material that can be learned using Augmented Reality media is Arabic vocabulary, which consists of nouns, verbs, and adjectives (Daud et al., 2021). The use of AR in vocabulary learning is carried out through visualization of objects in three-dimensional form displayed directly through digital devices. Students can see objects that represent a word, making it easier to understand the meaning of vocabulary concretely. This approach has been proven effective in improving students' understanding and retention of Arabic vocabulary (Cahyani et al., 2021; Ernawati et al., 2024).

Furthermore, the use of AR also allows vocabulary to be presented in specific contexts, such as objects in the classroom or home environment. This helps students understand vocabulary usage in real-life situations, so that learning is not merely rote but also practical (Solehuddin, 2023). The relationship between virtual objects and Arabic vocabulary in Augmented Reality media also helps students strengthen vocabulary understanding (Sahrim et al., 2023). Other research shows that the use of vocabulary-based AR media can increase learning interest (Putra et al., 2026). Augmented reality media can also help provide a fun and engaging vocabulary learning environment (Daud et al., 2021).

Arabic Grammar Learning

Learning Arabic grammar is often considered one of the most challenging aspects for students. This is due to the abstract nature of the material, the numerous syntactic rules that must be memorized, and the limited ability to understand the application of these rules in real-life contexts. As a result, students not only struggle to master the basic concepts of grammar and syntax, but also to apply them to text comprehension and communication.

In this context, Augmented Reality can be an innovative alternative learning medium to help understand Arabic grammar more contextually. Augmented reality allows for the presentation of material in the form of interactive visualizations of situations or sentences, allowing students to see the relationship between language structure and its meaning. Through real-time descriptions of sentences or scenarios, students can more easily grasp the context in which a grammatical rule is used. As Wan Abu Dawud noted, the use of visual and contextual media such as AR can help clarify the meaning of sentence structures and enhance students' understanding of the qawā'id material in a more concrete and applicable way. (Daud et al., 2021)

Speaking Skills

In addition to vocabulary mastery, several studies also show that Augmented Reality (AR) can contribute to the development of speaking skills in Arabic language learning. This is possible because AR provides visual and interactive simulations that help students understand communication contexts in a more realistic and situational way. With this approach, the learning process focuses not only on theory but also on

practicing language use in situations that resemble everyday life, so students can more easily connect language expressions with the context in which they are used.

In practice, AR can be used to provide students with opportunities to practice Arabic conversation through interactive scenarios. This helps improve oral communication skills while strengthening students' confidence in speaking. As noted by Mus'ab Sahrim, the use of AR can create a more lively and contextual conversational learning experience. Furthermore, Hidayat et al. (2025) also emphasized that the use of AR can increase students' active participation and strengthen their confidence in using Arabic orally.

Integration Design in Learning

Methods Discovery Learning Method

Implementing an Arabic language curriculum using augmented reality can help students discover concepts independently through independent exploration of 3D objects (Amrulloh, 2024). This is possible because the use of augmented reality allows students to explore vocabulary meanings through various stages of augmented reality, such as interactive 3D images, vocabulary audio, and quizzes or simple questions.

Contextual learning method

Augmented Reality is used to simulate real-world situations so students can understand language use in everyday contexts (Hidayat et al., 2025). Augmented reality provides students with contextual learning experiences by overlaying digital information on top of the real world. This helps students understand how concepts and theories are applied in practical situations, making learning more relevant and meaningful (Sahrim et al., 2023..

Practice and simulation based learning methods

Students learn through hands-on practice using Augmented Reality (AR), which displays experience-based visualizations and interactions, making the learning process more concrete and less theoretical (Putra et al., 2026). Other research has linked the use of AR in Arabic language learning to exploratory activities, such as object recognition, vocabulary labeling, and simulations of specific situations relevant to the context of language use (Solehuddin, 2023).

Integrated Design in Learning Media

Mobile-Based Applications

One form of media that is being widely developed is mobile-based AR applications, which allow students to access learning materials flexibly. This media utilizes smartphones to display virtual objects integrated with the real world, providing a more interactive and engaging learning experience (Syifa'uddin et al., 2021). Furthermore, Augmented Reality applications are also designed to help students understand vocabulary through direct object visualization, making learning more concrete and less abstract (Hafitria & Asrofi, 2023).

Marker-Based Augmented Reality

Another form of AR media found in the literature is marker-based Augmented Reality, which uses cards, images, or another media as markers to display 3D objects. This technology allows students to view virtual objects by scanning the markers using the device's camera, creating a direct interaction between them and the learning material (Solehuddin, 2023). This medium is widely used in vocabulary learning and object

recognition because it can clarify word meanings through visualization.

Learning Stages

The use of AR in Arabic language learning generally begins with the use of digital devices such as smartphones to display virtual objects based on learning materials. Students use an AR application to scan specific markers or objects, which then displays three-dimensional visualizations along with supporting information such as text and audio. This process allows students to interact directly with the learning materials, thereby increasing engagement in the learning process (Solehuddin, 2023; Hafitria & Asrofi, 2023).

Furthermore, in several studies, AR use is implemented as part of classroom learning activities, with the teacher acting as a facilitator, directing the use of the media. The teacher provides instructions on how to use the AR application, and then students explore the material independently or in groups. This activity creates a more interactive and student-centered learning environment and reduces the dominance of the lecture method previously often used (Suharsono, 2025).

In the next stage, the results of AR use in learning are usually followed by evaluation activities, either through direct observation of student engagement or through assessment instruments such as questionnaires and tests. Several studies have shown that the use of AR in Arabic language learning provides positive responses from students and increases their motivation and understanding of the material (Putra et al., 2026)

Influence on Learning Outcomes

One of the most consistent results found is an increase in student learning motivation. The use of AR, which presents three-dimensional object visualizations and direct interaction with the material, makes learning more engaging and less monotonous. Students become more active in participating (Suharsono, 2025). Augmented Reality has a positive impact on learning by increasing enthusiasm, engagement, and enjoyment (Daud et al., 2021).

Furthermore, the use of AR also contributes to improved conceptual understanding. With the help of concrete visualizations, students can more easily grasp previously abstract material. Research shows that AR can improve student understanding and accelerate information retention because it incorporates visual and interactive elements into learning (Mu'minah et al., 2025). This is particularly relevant in Arabic language learning, which often requires a deep understanding of context and meaning.

The implementation of Augmented Reality (AR)-based media also provides an interactive and immersive learning experience, creating a more engaging and less monotonous learning environment (Ahmad Yussof et al., 2024). Through this approach, students are not merely recipients of information but actively engaged in the learning process, providing a more immersive visual experience and learning space. When students use Augmented Reality, they experience a more realistic learning experience through the virtual appearance of three-dimensional (3D) objects that can be observed from various angles (Sahrim et al., 2023).

Opportunities and Challenges

The implementation of Augmented Reality (AR) in Arabic language learning is not without its limitations. One of the main obstacles frequently encountered is the limited technological infrastructure in educational settings. Some schools face challenges such as a lack of IT equipment, a lack of IT expertise, and difficulties transitioning to modern

technology (Daud et al., 2021). Not all schools have adequate facilities, such as compatible smartphones, a stable internet connection, and adequate digital learning system support. These conditions hinder the optimal implementation of AR in learning (Suharsono, 2025). Furthermore, teacher competence in using AR technology is also a crucial factor influencing successful implementation. Many teachers still lack the skills to operate and integrate AR-based media into learning. This results in suboptimal utilization of the technology and tends to be limited to simple applications (Mu'minah et al., 2025). Another limitation is the availability of 3D assets for creating Augmented Reality-based media. Some Augmented Reality systems are dependent on the availability of the required 3D assets. This will affect the time and energy required in the process of creating Augmented Reality-based media, especially when creating new materials or new concepts that require new 3D objects (Ali Syed et al., 2025)

However, despite these limitations, there are various opportunities for AR-based Arabic language learning. One key opportunity is the development of more innovative and interactive learning media, capable of improving the quality of learning and adapting to the characteristics of the digital generation. AR has great potential to create a more contextual learning experience, enabling students to understand Arabic in more realistic situations. Furthermore, the integration of AR into learning also opens up opportunities for the development of a technology-based curriculum that is more adaptive and relevant to current developments. The use of AR can be combined with various modern learning approaches, creating a more flexible and student-centered learning system. This aligns with the needs of education in the digital era, which demands innovation in the learning process (Fatimah et al., 2025).

CONCLUSIONS

This research shows that the integration of Augmented Reality (AR) into the Arabic language curriculum has the potential to improve learning quality through more interactive, contextual, and immersive experiences. AR not only increases student motivation but also contributes to conceptual understanding, vocabulary mastery, and speaking skills. However, based on a literature review, AR integration is still partial and has not been comprehensively structured within the curriculum design.

This research has limitations because it uses a library study approach without involving empirical data from direct implementation in the field. Technical aspects such as media development, infrastructure readiness, and teacher competency have also not been examined in depth. Therefore, further research is recommended to conduct empirical studies to test the effectiveness of AR implementation in Arabic language learning. Furthermore, the development of a more systematic AR-based curriculum integration model that encompasses all language skills is needed.

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