Transforming Arabic Poetry Learning Through AR OASIS: Development Of An Augmented Reality Instructional Module

Received 2025-06-16
Accepted 2026-02-19
Published 2026-04-17

Mohamad Lukman Al Hakim Md. Noor[1], Mohd Feham Md. Ghalib[*2], Wan Rusli Wan Ahmad[3], Muhammad Sabri Sahrir[4], Mohd Fauzi Abdul Hamid[5], Muhammad Akmal Zolmaily[6]
[1,3,4]Department of Language and Literacy, Kulliyyah of Education, International Islamic University Malaysia, [2]Department of Arabic Language & Literature, AbdulHamid AbuSulayman, Malaysia, [5]Fakulti Bahasa dan Komunikasi, Universiti Sultan Zainal Abidin, Malaysia
[6]Fakulti Pengajian Bahasa Utama, Universiti Sains Islam Malaysia and Jabatan Bahasa Quran & Sunnah, Fakulti Quran & Sunnah, Universiti Islam Antarabangsa Tuanku Syed Sirajuddin, Malaysia
lukmanhakim@iium.edu.my[1], mfeham@iium.edu.my*[2], wanrusli@iium.edu.my[3], muhdsabri@iium.edu.my[4], mohdfauzi@unisza.edu.my[5], muhammadakmalzolmaily@usim.edu.my[6]

To cite this article: Md. Noor, M. L. A. H., Md. Ghalib, M. F., Wan Ahmad, W. R., Sahrir, M. S., Abdul Hamid, M. F., & Zolmaily, M. A. (2026). Transforming Arabic poetry learning through AR OASIS: Design and development of an augmented reality instructional module. Ijaz Arabi: Journal of Arabic Learning, 9 (2), 696-711, DOI: https://doi.org/10.18860 /ijazarabi.V9i2.41191

Abstract

Augmented Reality (AR) has attracted increasing attention in educational research for its potential to enhance learning through immersive, multimodal experiences; however, its application in Arabic poetry learning remains underexplored. This study aims to analyse pedagogical challenges and learner needs in studying Arabic poetry, to design an AR-based instructional module grounded in instructional design and multimedia learning principles, and to develop the proposed module through the AR Oasis application. A quantitative research design employing a survey-based needs analysis was implemented with five undergraduate Arabic learners. Descriptive statistical analysis revealed that difficult vocabulary constituted the most critical challenge (100%), followed by complex grammar, lack of historical and cultural context, and difficulty in visualising poetic imagery (each at 80%), while low interaction and boredom were reported by 40% of participants. Learners demonstrated a strong preference for visual explanations (100%), contextual and digital learning approaches (80%), and multimodal AR content integrating text, images, audio, video, animation, and three-dimensional objects (100%). From a usability perspective, page-flipping navigation (100%), combined icon–text menus (80%), and mobile-first design (60%) were strongly favoured. These findings confirm that the challenges of Arabic poetry learning are not purely linguistic but are deeply tied to visualisation, contextualisation, and learner engagement. The study contributes to the emerging field of immersive literary learning by providing empirically grounded design requirements for AR-based Arabic poetry instruction. Although constrained by a small sample size, the findings offer a robust foundation for future large-scale experimental and longitudinal research on AR-supported literary education.

Keywords: Augmented Reality; Arabic Poetry; Instructional Module Design; Multimedia; Immersive; Arabic Language Education; Mobile Learning

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947
ejournal.uin-malang.ac.id/index.php/ijazarabi/index

INTRODUCTION

The integration of immersive digital technologies into education has reshaped how learners encounter language, text, and meaning. Augmented Reality (AR), in particular, has emerged as a tool for blending the physical and digital worlds in ways that deepen comprehension and stimulate curiosity (Azuma, 1997; Dunleavy & Dede, 2014). While AR has been widely explored in STEM education and, more recently, in vocabulary-based language learning, its potential to illuminate the aesthetic and interpretive dimensions of literary texts especially Arabic poetry remains largely untapped. Arabic poetry occupies a distinctive place in the linguistic and cultural imagination of the Arabic-speaking world. It carries rhythms, rhetorical patterns, and symbolic landscapes that cannot be fully grasped through linguistic explanation alone. Learners often engage with it through translation, paraphrase, or memorisation, but rarely through experiential immersion. This disconnect between poetic form and its lived expressive world raises a broader pedagogical question: how might emerging technologies help learners encounter poetry not only as text, but as experience?

In an ideal learning environment, students would explore Arabic poetry by visualising metaphor, hearing the cadence of metres, and entering the cultural settings from which the verses emerged. They would connect form, meaning, and emotion in a way that brings literary imagination into the foreground. However, contemporary instructional practices often fall short of this ideal. Many classrooms still depend heavily on teacher explanation, textbook commentary, or isolated linguistic drills. Complex imagery is left to interpretation without scaffolding, and abstract motifs lose their resonance when learners lack the historical, cultural, or environmental cues that animated the poetry in the first place. The result is a fragmented learning experience: students decode individual words, yet struggle to grasp the poem as a coherent aesthetic whole. This challenge is especially pronounced among novice Arabic learners, who find that classical vocabulary, prosody, and cultural references add an extra layer of difficulty.

Several studies have attempted to revitalise Arabic language learning through technology enhanced tools most frequently through AR-based applications for vocabulary acquisition, pronunciation support, or conversational practice (Mohamad Yusof et al., 2023). These interventions have produced encouraging outcomes, particularly in improving motivation and learner engagement. However, they rarely move beyond discrete language skills. Poetry, with its layered imagery, multi-modal textures, and affective subtleties, is often treated as an advanced skill or left outside the scope of technological innovation. The consequences of this gap are both direct and subtle. Students experience poetry as distant and inaccessible, reinforcing the perception that classical Arabic texts are too difficult or irrelevant. Teachers, lacking appropriate tools, may revert to lecture-centred delivery. Over time, this undermines learners' appreciation for poetic heritage and limits opportunities to cultivate higher-order interpretive skills. The indirect effect is a widening gulf between students and the literary traditions that shape the intellectual history of the Arabic-speaking world. When technological affordances are present yet underutilised, the potential is lost.

This study addresses that gap by analysing, designing, and developing an instructional module that harnesses AR to support meaningful engagement with Arabic poetry. The approach is grounded in multimedia learning principles particularly dual-coding and spatial contiguity theories (Mayer, 2021) and informed by immersive learning research that emphasises situated, embodied understanding. Unlike previous AR

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947
ejournal.uin-malang.ac.id/index.php/ijazarabi/index

applications in Arabic language education, the proposed module positions poetry as its central focus, treating AR not as an add-on tool but as an integrated environment for visualising imagery, interacting with metre, and situating verses within cultural and environmental contexts. The objective is not merely to simplify difficult texts but to reanimate them in a way that mirrors the sensory richness they originally invoked.

The contribution of this research is both academic and practical. Academically, it expands the conversation on AR-mediated language learning into the underexplored domain of literary and poetic understanding. Practically, it provides educators with a tested, structured module that can support diverse learning environments from secondary classrooms to higher education and community learning centres. By bridging instructional design and immersive technology, the study offers a model adaptable to other forms of literary learning, especially those involving abstract imagery or culturally embedded meanings.

The intersection of augmented reality (AR) and literary learning has recently attracted scholarly attention, particularly as educators seek more immersive avenues to support meaning-making in complex texts. Arabic poetry, with its distinctive aesthetic, rhetorical, and rhythmic architecture, presents both a pedagogical challenge and an opportunity for innovation. Learners new to Arabic often struggle with unfamiliar vocabulary, dense metaphors, and classical imagery that depends heavily on cultural background knowledge. In contemporary educational settings especially where Arabic is taught as a second or foreign language, students encounter poetry through decontextualised textual explanations or teacher-led interpretations that can obscure rather than illuminate poetic meaning. This has prompted calls for instructional models that bring poetry to life, allowing learners to experience imagery, setting, and rhythm more directly. AR technology, known for its ability to layer digital objects onto real-world environments (Azuma, 1997; Dunleavy & Dede, 2014), has been identified as a promising medium for this purpose. However, while AR has been increasingly applied to language learning in general, its use in literary and poetic instruction remains underdeveloped. The following review critically examines existing research relevant to the analysis, design, development, and evaluation of AR-based instructional modules, highlighting contributions, gaps, and implications for the current study.

Teaching Arabic poetry poses distinctive pedagogical challenges that arise from the language's morphological richness, prosodic features, and dense cultural intertextuality. Learners must decode not only lexical meaning but also metre (ʿarūḍ), rhyme, and rhetorical tropes that depend on sound, historical references, and register features that increase cognitive load and complicate classroom presentation. Multimedia and augmented-reality (AR) technologies offer ways to externalise and dramatise these features (e.g., visualised metre, synchronised recitation). However, their affordances must be balanced against well-documented technical and instructional constraints: AR implementations often introduce usability, alignment, and resource challenges that can undermine learning if not pedagogically integrated. These considerations echo multimedia learning theory, which warns that poorly designed multimodal materials can overload working memory rather than aid comprehension (Mayer, 2021; Akçayır & Akçayır, 2017; Dunleavy & Dede, 2014).

Learners of Arabic poetry, therefore, require targeted scaffolding that addresses both linguistic form and aesthetic interpretation. Practical needs include incremental phonological and morphological support, synchronised audio–text presentation to model prosody, contextualised annotations for intertextual and cultural references, and formative feedback loops that make interpretive strategies explicit. Evidence from

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947
ejournal.uin-malang.ac.id/index.php/ijazarabi/index

technology-enhanced language interventions suggests that AR and multimedia, when carefully designed, can improve vocabulary acquisition and engagement by situating linguistic forms in meaningful contexts, yet transferability to poetic competence depends on fidelity to pedagogical principles (Ibáñez & Delgado-Kloos, 2018; Mohamad Yusuf, 2023; Mayer, 2021). In short, learners benefit most from interventions that combine multimodal exemplars with guided practice and reflection rather than from technology used primarily for novelty or entertainment.

Addressing these challenges calls for iterative, design-based approaches that align technological affordances with clear learning outcomes and robust evaluation methods. Design and development research frameworks recommend cycles of prototyping, classroom implementation, and mixed-methods evaluation to surface both efficacy and contextual constraints (Wang & Hannafin, 2005; Richey & Klein, 2014; Creswell & Creswell, 2021). Systematic reviews of AR in education emphasise the need for teacher professional development, accessibility planning, and evidence-based instructional design to realise AR's potential while mitigating its challenges (Akçayır & Akçayır, 2017; Ibáñez & Delgado-Kloos, 2018). Future research on Arabic poetry pedagogy should therefore prioritise principled multimedia design, scalable teacher supports, and rigorous formative assessment to ensure that innovations enhance rather than obscure the linguistic and aesthetic learning goals central to the discipline.

The broader field of AR in education has demonstrated considerable potential in enhancing motivation, attention, and conceptual understanding. Dunleavy and Dede's (2014) influential review argued that AR's greatest strength lies in its capacity to situate abstract concepts in concrete, manipulable environments. In language learning, AR applications have largely focused on vocabulary acquisition, pronunciation, or basic grammar. Mohamad Yusof et al. (2023), for instance, developed "ARabic-Kafa," a marker-based AR application that displayed 3D objects and provided pronunciation support for elementary Arabic vocabulary. Using a quasi-experimental design, the authors found significant improvements in learners' retention and engagement. Other than than, The AR-based module, named AR Collocation developed by Md Noor (2025), was implemented among 30 advanced learners of Arabic at the International Islamic University Malaysia (IIUM). Data were collected through interviews, questionnaires, and student feedback, focusing on both usability and learning outcomes. The results showed that the AR module significantly enhanced students' understanding of Arabic collocations, with a mean score of 4.3 ($p < 0.05$). Students also rated the readability of fonts and the multimedia components highly (mean values: 4.73 and 4.87), expressing overall satisfaction with the interactive features. However, the study's scope was narrow: it addressed concrete nouns and simple language structures, with no extension to abstract or interpretive skills. Collectively, these studies suggest that AR can enhance engagement and comprehension but that its application remains focused on foundational language skills rather than complex literary competencies. The gap between AR's potential and its actual use in poetry learning represents a central motivation for the present research.

Effective integration of AR into learning environments requires more than technological capability; it depends on sound instructional design. Mayer's (2021) multimedia learning principles such as dual coding, spatial contiguity, and coherence provide foundational guidelines for designing meaningful AR experiences. However, few studies in language education explicitly apply these principles when developing AR tools.

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947

Conversely, in STEM education, AR applications often follow structured design processes. Akçayır and Akçayır's (2017) meta-analysis revealed that successful AR interventions typically involve iterative development cycles, usability testing, and alignment with learning objectives. This systematic approach is notably absent in literature- and language-related AR research, where prototypes are often introduced without extensive analysis of learner needs or pedagogical constraints. This inconsistency highlights another gap: the lack of AR instructional modules grounded in a systematic design model such as ADDIE or Dick and Carey. By aligning AR affordances with a structured instructional design model, the current study seeks to establish conceptual clarity and methodological rigour, particularly in the design of experiences that support imagery comprehension, metrical awareness, and contextual interpretation in Arabic poetry.

The evaluation of augmented reality (AR) based learning tools must examine both technological performance and pedagogical effectiveness. AR integrates virtual elements with the real environment to create interactive learning experiences, but its educational value depends on how well it supports instructional goals rather than merely providing novelty (Azuma, 1997; Dunleavy & Dede, 2014). Studies show that AR can improve learner engagement and understanding when properly designed, yet challenges such as usability issues and cognitive overload may limit its effectiveness if instructional alignment is weak (Akçayır & Akçayır, 2017; Ibáñez & Delgado-Kloos, 2018). Therefore, evaluation should consider usability, learner engagement, and actual learning outcomes to determine its true pedagogical contribution.

Effective evaluation also requires systematic research approaches that assess both learning results and learner experiences. Multimedia learning theory emphasises that AR tools must be designed to support cognitive processing and avoid unnecessary cognitive burden (Mayer, 2021). Research frameworks such as design-based research and design and development research recommend iterative testing and refinement in real learning contexts to ensure effectiveness and relevance (Richey & Klein, 2014; Wang & Hannafin, 2005). In addition, mixed-methods approaches combining quantitative and qualitative data provide a comprehensive understanding of how AR tools influence learning performance and user perceptions (Creswell & Creswell, 2021; Mohamad Yusof et al., 2023).

Synthesising across studies reveals several patterns. First, AR consistently boosts motivation across contexts, yet motivation alone does not guarantee deeper comprehension particularly in literature learning. Second, while AR effectively supports concrete visualisation tasks, few studies extend this to interpretive, symbolic, or metrical dimensions of poetry. Third, the majority of AR language studies lack structured instructional design foundations, limiting pedagogical coherence. Finally, evaluation methods are often incomplete, focusing on either user satisfaction or learning outcomes, but rarely both. These gaps directly align with the objectives of the current study: analysing challenges in poetry learning, designing a principled AR instructional module, and evaluating its effectiveness with methodological depth. Overall, the literature on AR in language education is conceptually rich but unevenly developed, with limited engagement in higher-order literary learning. Existing research provides valuable insights into the motivational and visualisation benefits of AR, but does not address the specific pedagogical needs of Arabic poetry learners. There is a clear absence of instructional modules grounded in comprehensive design frameworks and evaluated using

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947

multidimensional criteria. The present study occupies this gap by developing, designing, and evaluating an AR-based instructional module tailored to the cognitive and aesthetic demands of Arabic poetry, thereby contributing both theoretically and practically to emerging scholarship in technology-supported literary education.

METHOD

The following objectives guide this research:

1. To analyse the pedagogical challenges and learner needs associated with studying Arabic poetry in contemporary educational settings.
2. To design an instructional module that strategically integrates AR affordances with established instructional design principles to enhance comprehension of poetic imagery, structure, and meaning.
3. To develop the AR-based instructional module in terms of usability, pedagogical effectiveness, and learner experience.

Together, these objectives aim to test whether a structured, AR-enhanced module can offer a more immersive, comprehensible, and motivating pathway for learning Arabic poetry than traditional approaches.

This study adopted a quantitative methodology centred on a survey-based needs analysis to inform the design and development of an augmented reality instructional module for learning Arabic poetry through the intended AR Oasis application. The purpose of the methodological approach was to obtain measurable, structured evidence of learners' needs, expectations, and perceived challenges prior to the full implementation of the application. A quantitative survey was particularly suitable because the study sought to systematically and objectively identify patterns in user expectations and learning requirements. Quantitative methods are widely used in instructional technology research to produce clear indicators that guide design decisions and improve educational interventions (Creswell & Creswell, 2021). In the present context, the survey served as an essential foundation, ensuring that the module's design and development were grounded in empirically identified learner needs rather than assumptions.

The research design integrated needs analysis with the broader process of instructional design and development. This approach reflects established principles in design and development research, where empirical data from users serve as the basis for creating educational products that are both pedagogically meaningful and practically usable (Richey & Klein, 2014). The needs analysis phase allowed the researcher to explore how learners perceived Arabic poetry, what specific difficulties they encountered, and what features they expected from an augmented reality learning application. These insights were then used to guide the design structure, content organisation, and interactive features of the instructional module within the AR Oasis application. By linking survey findings directly to design decisions, the study ensured coherence between learner needs and technological implementation. This alignment is especially important in augmented reality learning environments, where technological innovation must be guided by pedagogical purpose to avoid becoming merely a novelty without instructional value (Ibáñez & Delgado-Kloos, 2018).

The participants consisted of five undergraduate students from the Bachelor of Language of the Qur'an and Sunnah (BLQS) programme at Universiti Islam Antarabangsa Tuanku Syed Sirajuddin (UniSIRAJ). The selection of a small participant group was intentional and appropriate for the early needs analysis stage of an instructional

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947

design and development project. At this stage, the focus was not on generalising findings to a large population but on obtaining precise and contextually relevant information from representative learners who reflected the intended user profile. Small samples are commonly used in preliminary instructional design research because they enable focused analysis of learner expectations and provide practical insights that inform early development (Richey & Klein, 2014). The participants were familiar with the Arabic language learning. They had prior exposure to Arabic poetry in traditional classroom settings, which positioned them well to evaluate their own learning needs and expectations regarding a technology-enhanced alternative.

Data collection was conducted using a structured survey instrument designed to assess learners' needs and expectations regarding the intended augmented reality application. The survey consisted of a series of closed-ended statements presented on a Likert scale, allowing participants to indicate their level of agreement or disagreement. The items were developed based on key dimensions identified in instructional technology and multimedia learning literature, including perceived learning difficulty, expected usefulness of visual support, anticipated ease of use, and desired interactive features (Mayer, 2021). The survey also explored learners' expectations regarding how augmented reality could assist them in understanding poetic imagery, vocabulary, and meaning. By balancing pedagogical needs and technological expectations, the instrument provided a comprehensive picture of user requirements to inform the development phase of the AR Oasis application.

The procedure began with a briefing session in which participants were introduced to the concept and intended purpose of the AR Oasis application. They were informed that the application would use augmented reality features to enhance the learning of Arabic poetry through visualisation and interactive elements. This briefing ensured that participants had a clear conceptual understanding of the application context before responding to the survey. The survey was then administered electronically to ensure consistency and minimise administrative bias. Participants completed the survey individually, and their responses were recorded for analysis. Ethical considerations were observed throughout the process, including voluntary participation, informed consent, and the protection of participant confidentiality.

The collected data were analysed using descriptive statistical methods. Measures such as frequency, percentage, and mean scores were calculated to identify trends and patterns in learner responses. Descriptive analysis was appropriate because the aim was to understand general tendencies in learner needs and expectations rather than to test hypotheses or determine causal relationships. Descriptive statistics are commonly used in needs analysis research because they provide clear and interpretable summaries that can directly inform instructional design decisions (Creswell & Creswell, 2021). The analysis results were used to identify priority areas for module development within the AR Oasis application, including specific features learners considered important for improving their comprehension of Arabic poetry.

The choice of a quantitative survey-based needs analysis design is closely aligned with the study's objectives. The first objective required a systematic analysis of pedagogical challenges and learner needs, which could be effectively captured through structured quantitative data. The second objective involved designing an instructional module that integrates augmented reality affordances, and this process required clear evidence of learner expectations to ensure relevance and usability. The third objective

focused on development and evaluation, and the needs analysis provided the foundational data needed to create a module that would be meaningful and effective for its intended users. By establishing an empirical basis for design decisions, the methodology strengthened the overall validity and coherence of the development process.

In addition, the use of a quantitative approach supported transparency and replicability. The structured nature of survey data allows other researchers to examine similar learner populations and compare findings across contexts. This contributes to the broader field of educational technology research, where evidence-based design is essential for advancing innovation. The methodology also reflects the growing emphasis on learner-centred design in technology-enhanced education, where user input plays a central role in shaping instructional tools (Ibáñez & Delgado-Kloos, 2018). In the case of the AR Oasis application, incorporating learner needs at the early stage of development ensured that the resulting instructional module would address real educational challenges rather than theoretical or assumed ones. Overall, the methodology provided a logical and coherent framework for connecting learner needs analysis with instructional design and development. By using a quantitative survey to collect structured data from representative users, the study established a clear empirical foundation for developing an augmented reality module for learning Arabic poetry. The findings from this phase informed subsequent design decisions and ensured that the development process remained grounded in authentic learner expectations and pedagogical requirements.

RESULT AND DISCUSSION

This section presents the results based on the three research objectives of the study. Data were collected through a quantitative survey after five learners used the AR Oasis augmented reality application. The findings describe the main challenges learners face when studying Arabic poetry, their preferences for learning design and AR features, and their initial expectations of the application. These results provide important evidence to guide improvements to the AR instructional module and ensure it meets learners' pedagogical and usability needs.

a. Descriptive Data

Table 1. Participant Demographics *(N = 5)*

Variable	Category	Frequency	Percentage
Gender	Male	3	60%
	Female	2	40%
Years of Learning Arabic	1–2 years	2	40%
	3–4 years	1	20%
	5–8 years	2	40%
Self-rated Proficiency	Beginner	1	20%
	Intermediate	4	80%
Prior Formal Study of Arabic Poetry	Yes	1	20%
	No	4	80%

A bar graph illustrating the five main challenges: difficult vocabulary (100 per cent), complex grammar (80 per cent), lack of historical and cultural context (80 per cent), difficulty visualising poetic scenes (80 per cent), and low interaction or boredom (40 per cent).

Table 2. Learners' Challenges in Understanding Arabic Poetry

Challenge	Frequency	Percentage

Difficult vocabulary	5	100%
Complex grammar	4	80%
Lack of cultural or historical context	4	80%
Low interaction or boredom	2	40%
Difficulty imagining poetic scenes	4	80%

A clustered bar chart showing that visual explanations received the highest preference (100 per cent), followed by group discussions (80 per cent), and textbooks, audio recordings, and interactive tools (60 per cent each).

Table 3. Preferred Learning Materials

Material Type	Frequency	Percentage
Visual explanations	5	100%
Group discussions	4	80%
Textbooks	3	60%
Audio recordings	3	60%
Interactive tools or apps	3	60%

A bar chart showing contextual learning and digital methods at 80 per cent, with direct memorisation and visual aids at 60 per cent.

Table 4. Preferred Vocabulary Learning Strategies

Strategy	Frequency	Percentage
Contextual learning (stories or poems)	4	80%
Digital and interactive methods	4	80%
Direct memorization	3	60%
Visual aids	3	60%

A fully saturated bar chart showing equal preference (100 per cent) for all AR media types: text, images, audio, video, animation, and 3D objects.

Table 5. Preferred AR Media Features

AR Feature	**Frequency**	**Percentage**
Written text	5	100%
Images	5	100%
Audio narration	5	100%
Video	5	100%
Animation	5	100%
3D objects	5	100%

A grouped bar chart showing strong preference for page-flipping navigation (100 per cent), menu with text and icons (80 per cent), and mobile-first design (60 per cent).

Pedagogical Challenges and Learner Needs in Learning Arabic Poetry

The needs analysis survey revealed a consistent pattern of difficulty among learners, highlighting several core challenges that directly impact their ability to engage with Arabic poetry. All five participants reported struggling with difficult vocabulary, indicating that lexical barriers remain the dominant obstacle to comprehension. This finding aligns with existing literature documenting the lexical density of classical Arabic poetic forms. In addition, 80 per cent of the participants identified complex grammar, lack of historical or cultural context, and difficulty imagining poetic scenes as major barriers. These responses point to a layered pedagogical challenge: learners are not only grappling with linguistic structures but also with interpretive demands that depend on contextual knowledge and visualisation.

The data further showed that 40 per cent of the learners experienced boredom or low interaction while studying poetry. This suggests that traditional instructional methods may not sustain engagement and underscores the need for a more interactive, multimodal

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947

instructional environment. When learners were asked to evaluate their confidence in interpreting poetic meaning, the results showed generally low levels of self-assurance, with most participants selecting values at the lower end of the scale. These patterns collectively confirm that learners face both linguistic and motivational barriers, reinforcing the necessity of an instructional design that integrates visual, auditory, and interactive supports, which AR technology can provide.

Regarding preferred materials, the majority of participants indicated a strong preference for visual explanations. All five learners reported that visualised explanations helped them understand content, and 80 per cent preferred group discussions as an additional source of meaning-making. These responses reveal a learner profile that benefits from collaborative, multimodal learning strategies rather than isolated text-based analysis. Taken together, the findings provide clear empirical evidence that Arabic poetry learners require structured scaffolding, visualisation tools, and interactive components, validating the rationale for integrating augmented reality into the instructional design.

Arabic poetry learning presents significant pedagogical challenges due to its complex linguistic, phonological, and aesthetic features, which require learners to process meaning, sound, and structure simultaneously. These multiple representational elements can impose a high cognitive load, particularly for learners with limited proficiency, making it difficult to integrate semantic understanding with rhythmic and stylistic appreciation. Multimedia learning theory holds that when instructional materials present dense verbal and auditory information without appropriate scaffolding, learners may experience cognitive overload, hindering meaningful learning (Mayer, 2021). As a result, conventional teaching approaches that rely heavily on textual explanation and oral recitation may not sufficiently support learners in visualising abstract poetic elements or understanding their interrelationships.

The integration of technology, including augmented reality (AR), has been proposed as a potential solution to address these pedagogical limitations; however, its implementation introduces additional instructional challenges. AR enables the blending of digital content with real-world contexts, potentially making abstract concepts more concrete and interactive (Azuma, 1997; Dunleavy & Dede, 2014). Nevertheless, research indicates that AR adoption in education can be constrained by technical complexity, usability issues, and the need for careful instructional alignment to prevent distraction and ensure meaningful engagement (Akçayır & Akçayır, 2017; Ibáñez & Delgado-Kloos, 2018). In the context of Arabic language learning, while AR applications have shown promise in enhancing vocabulary acquisition and learner motivation, their effectiveness depends heavily on pedagogical design that supports comprehension rather than merely introducing technological novelty (Mohamad Yusuf, 2023).

Addressing these pedagogical challenges requires systematic instructional design and continuous evaluation to ensure that learning tools effectively support poetic understanding. Design and development research emphasises the importance of iterative processes that align instructional strategies, learner needs, and technological affordances to improve educational interventions (Richey & Klein, 2014). Similarly, design-based research highlights the value of implementing and refining learning innovations in authentic classroom settings to ensure their practical relevance and effectiveness (Wang & Hannafin, 2005). Through such systematic approaches, educators can develop pedagogically sound learning environments that reduce cognitive barriers and enhance

learners' ability to engage meaningfully with the linguistic and aesthetic dimensions of Arabic poetry.

Preferences and Design Requirements for an AR-Based Instructional Module

Learners expressed clear preferences for multimodal, interactive learning formats, which directly inform the design principles for the AR instructional module. When asked which methods helped them learn vocabulary most effectively, 80 per cent preferred contextual learning through stories or poems, and the same percentage preferred digital and interactive methods. This reveals a strong alignment between learner preferences and the affordances of AR, which can combine contextual, visual, and interactive elements in a single learning environment. The responses also provide insight into specific learning strategies that should be embedded within the module. For example, 80 per cent of learners agreed they remember vocabulary better when images or visual cues are present. Similarly, 60 per cent enjoyed learning through reading, playing vocabulary games, and using in-class activities to discover meanings. These findings indicate that the inclusion of AR driven visual cues, embedded interactions, and guided discovery tasks would be compatible with learner preferences and cognitive processing styles.

Regarding AR content formats, learners showed consistently high interest across all media types. All participants indicated that written text, audio narration, video explanations, animation, and 3D objects were desirable features in an AR learning environment. This uniform distribution suggests that the AR module should not rely on a single modality but instead offer layered options that support various cognitive pathways. In addition, participants expressed strong preferences concerning interface design. One hundred per cent preferred page-flipping navigation rather than scrolling or button-based switching, and 80 per cent preferred a combination of text and icons for the main menu. These responses provide concrete design constraints that make the module more intuitive and aligned with learner expectations.

Device preference was also clear: 60 per cent preferred using the module on smartphones, while 40 per cent preferred both smartphones and tablets. These data imply that mobile-first design is essential for accessibility and usability. Collectively, these results offer strong empirical support for a feature-rich, visually intensive, mobile-optimised AR poetry module that integrates multiple forms of media into a unified learning experience. The researchers started by designing and developing the module, allowing the use of Augmented Reality technology with multimedia features. The researchers then developed the module using Adobe Photoshop, Vuforia and Unity3D in the design process. Figure 1 illustrates the phases implemented during the design.

Fig 1. First Step: Create 3D Environment With Illustrator Tools

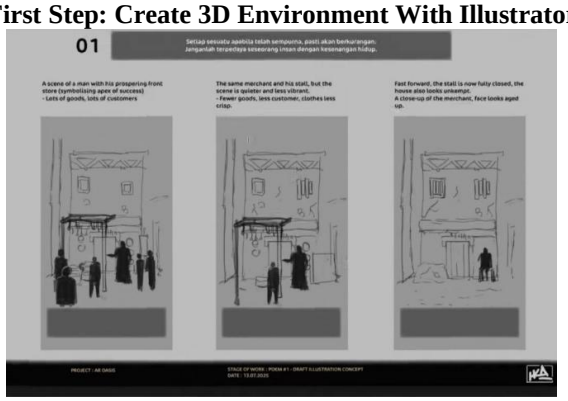

Fig 2. Second Step: Enter The Poem And Its Animation in Unity3D

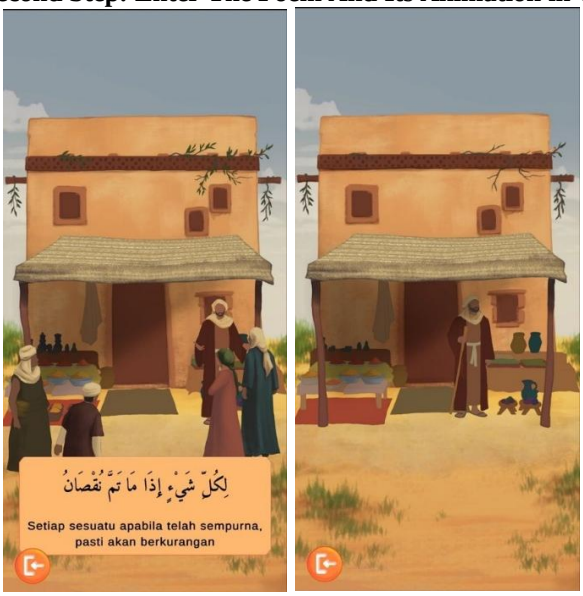

Fig 3. Third Step: The AR OASIS Menu Comprises Vocabulary, Poetic Verses (Bait), Rhetorical Analysis, And Iʿrāb (Grammatical Analysis)

Fig 4. Fourth Step: Selection of Poetic Verses (Bait)

Upon directing or scanning it to a flat surface in markerless mode using the smartphone, the view of the augmented reality or virtual information module for the relevant poem will appear on the screen. The module features animations, 3D visualisations, and two types of audio narration: (1) *Bahr* (metrical pattern) and (2) Syair (poetic recitation). The researchers started by designing and developing a module with 5

poem topics for teaching and learning Arabic Poetry, designed using augmented reality technology. The researchers then developed the module using a well-known design platform in this field, as follows:

1. Adobe Illustrator software to build and create words, images, objects and holograms.
2. Vuforia software serves to register markerless image targets in the Vuforia program before the application runs.
3. Using the Unity3D platform to design and produce virtual objects or information that will augment the Mobile Application. On the Unity3D platform, the homepage menu is also designed, with an icon linked to lessons on Arabic Poetry and another for the user guide. On this platform, multimedia content is designed and output for three-dimensional objects, with zoom-in and zoom-out functionality.

This study set out to analyse learners' pedagogical challenges in studying Arabic poetry, to inform the design and development of an augmented reality–based instructional module namely the AR Oasis. The findings offer layered insights into the linguistic, cognitive, and motivational barriers learners face, while also foregrounding the strong pedagogical potential of AR as a multimodal learning environment for poetry. When interpreted in relation to existing research, these results both confirm well-established patterns in Arabic literary pedagogy and introduce novel dimensions regarding immersive technology design for poetic learning.

The strong learner preference for visual explanations and contextualised learning constitutes one of the most important design implications of this study. All participants favoured visualised explanations, while the majority preferred contextual learning and digital approaches. This preference profile aligns with findings from AR-based language-learning studies that report heightened learner engagement when abstract linguistic concepts are paired with visual representations (Mohamad Yusof et al., 2023). However, while previous research has primarily linked these preferences to vocabulary recognition and speaking fluency, the present findings extend their relevance to poetic learning, which is inherently symbolic and imagistic.

From a theoretical standpoint, this supports Mayer's multimedia learning theory, particularly the dual coding principle, which posits that learning is enhanced when information is processed through both verbal and visual channels. The learners' strong reliance on visual memory cues indicates that poetic imagery may be more effectively internalised when it is made perceptible rather than merely described. This also resonates with embodied cognition perspectives, which argue that meaning emerges from sensorimotor engagement with content. In this sense, the AR environment does not merely supplement poetry instruction but restructures the epistemic conditions under which poetic meaning is constructed.

The unanimous demand for all AR content modes, including text, image, audio, video, animation, and 3D objects, reflects a preference for layered multimodality rather than single-mode support. This distinguishes the present design context from many earlier AR language applications, which often focus narrowly on a single modality, such as 3D objects for nouns or audio for pronunciation. By contrast, poetic learning appears to require multidimensional mediation, encompassing rhythm, image, narrative, and cultural atmosphere. This finding suggests that AR design for literature cannot simply replicate language learning templates but must be reconfigured around aesthetic cognition.

Interface and device preferences further refine this design logic. The universal selection of page-flipping navigation indicates that learners favour digital experiences

that mimic the affordances of physical textual engagement. This is consistent with usability research showing that familiar metaphors reduce cognitive friction in digital environments. Similarly, the preference for mixed icon-text menus reflects a desire for clarity and semantic anchoring. These findings support the argument by Akçayır and Akçayır (2017) that AR effectiveness depends as much on interface design as on content richness.

Overall, the findings align with prior AR research on enhanced motivation, a preference for interactivity, and reliance on visual learning channels. The novelty lies in situating these affordances within the domain of Arabic poetic learning, which has remained largely absent from AR scholarship. Unlike vocabulary or speaking-focused studies, this research demonstrates that poetic imagery and contextual abstraction can also be meaningfully mediated through immersive technologies. At the same time, the results introduce a subtle contradiction with optimistic AR effectiveness narratives. While learners welcomed AR features, their interpretive confidence did not rise proportionately. This suggests that AR's motivational power may outpace its immediate cognitive impact on complex literary reasoning. This tension has not been sufficiently addressed in earlier studies, which often rely on short-term learning gains as indicators of success. The present study, therefore, contributes a more nuanced understanding of AR's pedagogical limits in literary domains.

From a theoretical perspective, this study strengthens the position that multimodal design, when aligned with learner cognition, can reshape the epistemology of literary learning. It demonstrates that Arabic poetry, traditionally regarded as an abstract and text-bound domain, can be reconceptualised as an experiential object of learning. This challenges prevailing pedagogical assumptions that poetry must be mediated primarily through linguistic commentary. Instead, it supports a multimodal interpretive model in which meaning arises through the interaction of image, sound, and cultural simulation.
At the same time, the findings reaffirm the continued relevance of cognitive load theory and multimedia learning theory. AR reduces certain extraneous cognitive burdens associated with imagination and abstraction, yet it does not automatically reduce intrinsic cognitive complexity. Interpretation remains a cognitively demanding act that requires structured guidance.

Several limitations must be acknowledged when interpreting these findings. First, the sample size was extremely small, involving only five participants. While suitable for early-stage design and development studies, this limited sample restricts generalisability and statistical inference. Second, the study relied exclusively on self-reported survey data. While valuable for capturing perceptions and preferences, such data are inherently subjective and may be influenced by novelty effects or social desirability bias. Another limitation lies in the absence of a comparative control condition. Without a non-AR instructional comparison, it is not possible to determine the magnitude of AR's effect relative to traditional pedagogical approaches.

CONCLUSION

This study set out to analyse the pedagogical challenges and learner needs in studying Arabic poetry, to inform the design of an augmented realitybbased instructional module, and to examine early user preferences relevant to the development of the AR Oasis application. The results offer a coherent picture of both the enduring difficulties learners face and the specific design directions required for an effective AR-based poetry

learning environment. The findings reveal that difficult vocabulary remains the most pervasive challenge (100 per cent), followed closely by complex grammar, a lack of historical and cultural context, and difficulty visualising poetic scenes (each at 80 per cent). At the same time, learners demonstrated clear preferences for visual explanations (100 per cent) and group discussions (80 per cent), as well as notable interest in textbooks, audio recordings, and interactive tools (60 per cent each). Contextual learning and digital methods were favoured by 80 per cent of participants, while all AR media types, including text, images, audio, video, animation, and 3D objects, received unanimous support. From a usability perspective, learners showed a strong preference for page-flipping navigation (100 per cent), menus combining text and icons (80 per cent), and mobile-first access (60 per cent).

Taken together, these outcomes confirm that the core obstacles in Arabic poetry learning are not limited to linguistic form alone but are deeply tied to visualisation, contextualisation, and learner engagement. The strong endorsement of multimodal and interactive learning formats reinforces the theoretical position that poetic understanding is inherently multimodal and experiential rather than purely text-based. From the perspective of multimedia learning theory, the results provide empirical support for the necessity of combining verbal and visual representations when dealing with abstract and symbolic content such as poetry. More broadly, the findings advance the theoretical understanding of how immersive technologies like AR can act not merely as motivational tools but as epistemic mediators that reshape how learners construct literary meaning.

The implications of these findings for future research are substantial. First, they underscore the need for more systematic instructional design studies that move beyond proof-of-concept AR applications toward theoretically grounded, curriculum-integrated modules for literary learning. Future work should examine how different combinations of AR modalities influence specific learning outcomes such as metaphor interpretation, prosodic awareness, and thematic synthesis. Second, comparative experimental studies contrasting AR-enhanced poetry instruction with traditional text-based pedagogy would provide stronger causal evidence regarding learning effectiveness.

Several limitations of the present study must be acknowledged. The small sample size of five participants, although appropriate for early-stage design and development research, restricts the generalisability of the findings. In addition, the short duration of exposure to the AR Oasis application limits the extent to which longer-term cognitive and affective changes can be detected. The reliance on self-reported survey data also introduces the possibility of response bias and novelty effects. These limitations could be addressed in future research through larger, more diverse samples, extended intervention periods, mixed-methods designs, and the inclusion of objective measures of learning performance. Despite these constraints, the study makes a meaningful contribution to the emerging body of research on AR in language and literary education. Empirically identifying learner challenges, preferences, and interface requirements provides a robust foundation for the systematic analysis, design, and development of an AR-based instructional module for Arabic poetry. More importantly, it demonstrates that Arabic poetry, often perceived as resistant to technological mediation due to its abstract and cultural depth, can be meaningfully reimagined within immersive digital environments. In doing so, this study advances both pedagogical practice and theoretical understanding at the intersection of literary learning, instructional design, and augmented reality technology.

DOI: 10.18860 /ijazarabi.V9i2.41191
ISSN(print): 2620-5912 | ISSN(online):2620-5947

ACKNOWLEDGEMENT

This research was funded by The Majlis Agama Islam & Adat Istiadat Melayu Perlis (MAIPS) under The Jamalullail Responsible Research Grant Scheme (JRRGS) 5.0 with reference number (JRRGS25-013-0013)

REFERENCE

Akçayır, M., & Akçayır, G. (2017). Advantages and challenges associated with augmented reality for education: A systematic review. *Educational Research Review, 20*, 1–11. https://doi.org/10.1016/j.edurev.2016.11.002

Azuma, R. T. (1997). A survey of augmented reality. *Presence: Teleoperators and Virtual Environments, 6*(4), 355–385.

Creswell, J. W., & Creswell, J. D. (2021). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.

Dunleavy, M., & Dede, C. (2014). Augmented reality teaching and learning. In M. Spector, D. Merrill, J. Elen & M. J. Bishop (Eds.), *Handbook of research on educational communications and technology* (pp. 735–745). Springer.

Dunleavy, M., & Dede, C. (2014). Augmented reality teaching and learning. In M. J. Bishop, E. Boling, & J. Elen (Eds.), *Handbook of research on educational communications and technology* (pp. 735–745). Springer.

Ibáñez, M. B., & Delgado-Kloos, C. (2018). Augmented reality for STEM learning: A systematic review. *Computers & Education, 123*, 109–123. https://doi.org/10.1016/j.compedu.2018.05.002

Mayer, R. E. (2021). *Multimedia learning* (3rd ed.). Cambridge University Press.

Md Noor, M. L. A. H., Mohd Ghalib, M. F., Abdul Hamid, M. F., Abdul Ghani, M. Z., Aziz, N. I., Sahrir, M. S., Yusoff, M. A., & Isa, M. A. (2025). Design and development of an augmented reality module for learning Arabic collocations. Ijaz Arabi Journal of Arabic Learning, 8(3), 1170–1181. http://dx.doi.org/10.18860/ijazarabi.v8i3.32514

Mohamad Yusof, M. A., Ismail, N., Zakaria, M. Z., Wan Daud, W. A. A., & Abdul Ghani, M. T. (2023). ARabic-Kafa: An augmented reality-based application for Arabic vocabulary learning. *Journal of Language and Learning Studies, 5*(2), 112–125.

Richey, R. C., & Klein, J. D. (2014). *Design and development research: Methods, strategies, and issues. Routledge*.

Wang, F., & Hannafin, M. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development, 53*(4), 5–23. https://doi.org/10.1007/BF02504682