A Review of Mobile Application Developments for Arabic Language Teaching and Learning

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ABSTRACT

The rapid advancement of multimedia technology has significantly influenced modern lifestyles and transformed various sectors, including education. In response to this evolution, multimedia has been widely integrated into teaching and learning processes, including in the field of Arabic language education. The use of multimedia technology in Arabic language learning has enabled greater accessibility, transcending the boundaries of time and place, while also making the learning experience more engaging and enjoyable. This study aims to explore the development of multimedia technology in Arabic language education. Employing a qualitative approach through descriptive analysis of previous studies, this review highlights trends, benefits, and challenges associated with the integration of multimedia in Arabic language teaching and learning. The findings are expected to provide valuable insights for educators, researchers, and developers in improving instructional strategies and enhancing students' mastery of the Arabic language.

Keywords: Multimedia Development, Mobile Application, Arabic Language, Language Learning.

INTRODUCTION

The transformation of teaching and learning approaches in the 21st century demands innovative integration of technology to meet the evolving educational needs of modern learners. In Malaysia (Abdelhamid et al., 2025), this transformation is aligned with the aspirations outlined in the Malaysia Education Blueprint 2013–2025, particularly under Shift 7: Utilizing ICT to Improve the Quality of Learning. The integration of information and communication technology (ICT) into education is no longer optional but essential, especially in preparing educators and students to thrive in the era of Industrial Revolution 4.0 (IR4.0). Technology, particularly mobile technology, has proven to positively impact not only daily life but also the effectiveness and accessibility of education (Mdhlalose & Mlambo, 2023). In the global context, Mobile Learning (m-Learning) has emerged as a dominant trend, offering flexible, accessible, and personalised learning experiences. According to Unwin (2015), mobile technology is vital for delivering inclusive and quality education

worldwide. The global mobile learning market reflects this trend, growing from USD 53.94 billion in 2022 to USD 69.33 billion in 2023, and is projected to reach USD 199 billion by 2027 (GlobeNewswire, 2023). Among the key drivers of this growth are smartphones and mobile applications, which have become essential tools in modern learning environments (Naz et al., 2019; Nerrahim & Hanif, 2022). Mobile applications (apps) have reshaped the learning landscape by enabling continuous access to educational content, supporting communication, managing files and schedules, and facilitating knowledge sharing. When integrated with multimedia elements such as text, video, audio, graphics, and animation enhance learner engagement and motivation (Elmi et al., 2024). In the context of Arabic language education, the use of mobile applications has shown great potential in making the learning process more interactive, flexible, and enjoyable. Previous studies have highlighted various benefits of mobile apps, including increased student motivation (Ghani, 2021), improved learning outcomes (Puasa, 2022), and greater access to learning resources anytime and anywhere (Daud, 2021; Firmansyah et al., 2020). Given the growing relevance of mobile-assisted language learning, particularly for languages with unique linguistic structures such as Arabic, it is essential to examine how mobile applications have been developed and applied in this field. Therefore, this article presents a comprehensive review of previous studies on the development of mobile applications for Arabic language teaching and learning.

RESEARCH METHODOLOGY

This study adopts a literature review approach aimed at exploring the development of mobile applications in the field of Arabic language education in Malaysia. Relevant studies were identified through online academic databases including ScienceDirect, SpringerLink, Google Scholar, and ResearchGate. To retrieve appropriate sources, the researchers utilised specific keywords such as "mobile learning in Arabic language" and "development of mobile application".

The inclusion criteria for the reviewed studies were as follows:

i) studies related to the design or development of mobile applications;

ii) studies published within a 10-year period from 2015 to 2025; and

iii) studies that focused on the teaching and learning of the Arabic language.

The selected studies were then analysed and categorised based on their research domain, such as instructional design, user engagement, pedagogical approaches, and technological features. This method provides a structured overview of the current state of mobile application development in Arabic language education and highlights the key trends, gaps, and implications for future research and practice.

RESULTS

Furthermore, there is also a study by Neamah et al. (2017) that aims at the development of the mobile application “A4Kids” as shown in Figure 1. This mobile application was designed to help children learn the Arabic language through the mobile approach in Malaysia. Hence, it can assist children in learning Arabic easily, no matter the time or location. The platform for this app development is Android. Furthermore, this application also has icons for learning subjects that consist of six main categories, which include alphabets, words, numbers, colors, days and months, quizzes, and games. This application was also evaluated by 30 Arabic language teachers who are involved in teaching Arabic at primary schools in Kedah. The results of the evaluation conducted show that the respondents agreed that A4kids is easy to use and comprehend and can help children learn Arabic easily. However, the application focuses solely on vocabulary and basic elements such as letters, numbers, colors, days, months, and simple words. It does not support oral communication skills or productive language use such as speaking or direct interaction. However, the application focuses solely on vocabulary and basic elements such as letters, numbers, colors, days, months, and simple words. It does not support oral communication skills or productive language use such as speaking or direct interaction. In general, this study can be continued on the effectiveness of this application when children use it to learn Arabic.

Figure 1. Mobile Application "A4Kids".

Meanwhile, the study by Rosadi et al. (2018) is also on the development of an Arabic language learning application that was developed using the Object Oriented Programming (OOP) method. This application provides a way of learning how to read Arabic with learning stages and corresponding exercises. The use of this application among users, particularly children, has been effective in the learning of Arabic reading skills. This is because the application has graphic and audio multimedia components that helped the children to correctly identify the sound that was played to them. However, based on the research and analysis conducted, the identified gap is that this application does not have vocabulary learning elements as one of its features. Vocabulary learning has to be integrated as well because it is the building block of reading. This application can be seen in Figure 2 below.

Figure **Error! No text of specified style in document.**. Mobile Application Arabs Early Learning.

Furthermore, the study by Wihidayat et al. (2018) was to design and develop a mobile application for Arabic language learning, and this application is called 'LALA'. This application is for primary school students in Indonesia and the learning is self-directed. This application will introduce the students to 4 language skills; listening, reading, writing and speaking. Also, gamification elements have also been incorporated to increase students' interest in learning Arabic language. The developed application has also been tested by the students who use it and the usability assessment results indicate that this application is very easy to use in a self-learning context. However, the developed application has a limitation on the language which can be used by the users since the translation used in the application is Malay and not English. This application can be seen as shown in Figure 3.

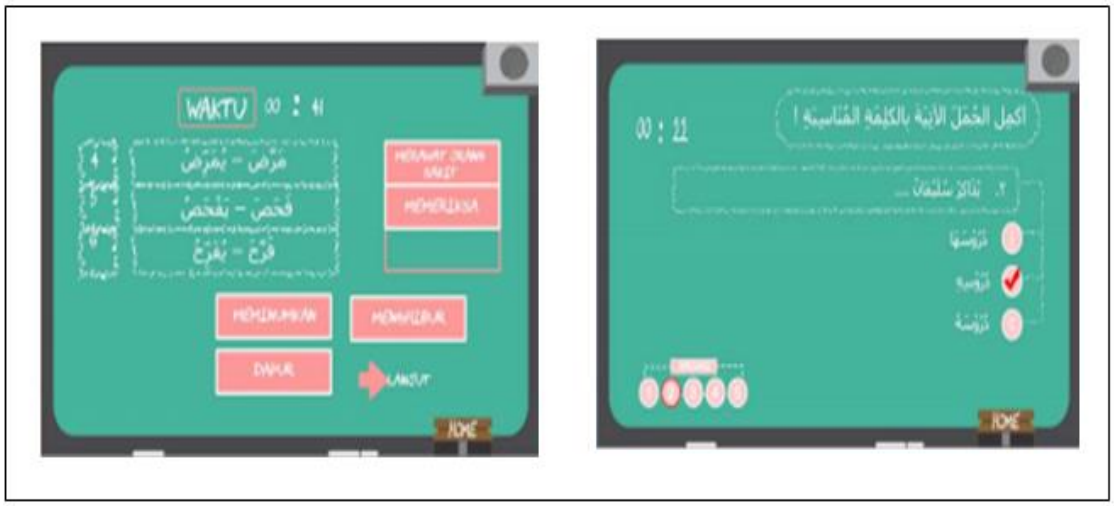

Figure 3. Mobile Application “LALA”.

Meanwhile, the study by Sayed et al. (2019) is concerned with the development of the Arabic mobile application ع Elmi as shown in Figure 4. The aim of this application is to address the challenges encountered by the illiterate Arab population and can also be used for children. In addition, there are three suitable learning strategies to be used with this application, namely visual, kinesthetic, and tactile. This application also uses an interactive graphic approach to help users enjoy learning the educational content of the course. There is also a speech recognition technique to identify the user’s reading proficiency level. The word will be displayed in text, and the user will be required to pronounce it. From a usability perspective, this application is easy to use in helping users learn reading and writing skills. Their researchers and colleagues said they will increase the number of examples and provide explanations in English to assist those who are not familiar with Arabic in learning Arabic. They also suggested that it is important to know the effectiveness of this application in some schools. In conclusion, this study can be extended in the content area to be of benefit to users.

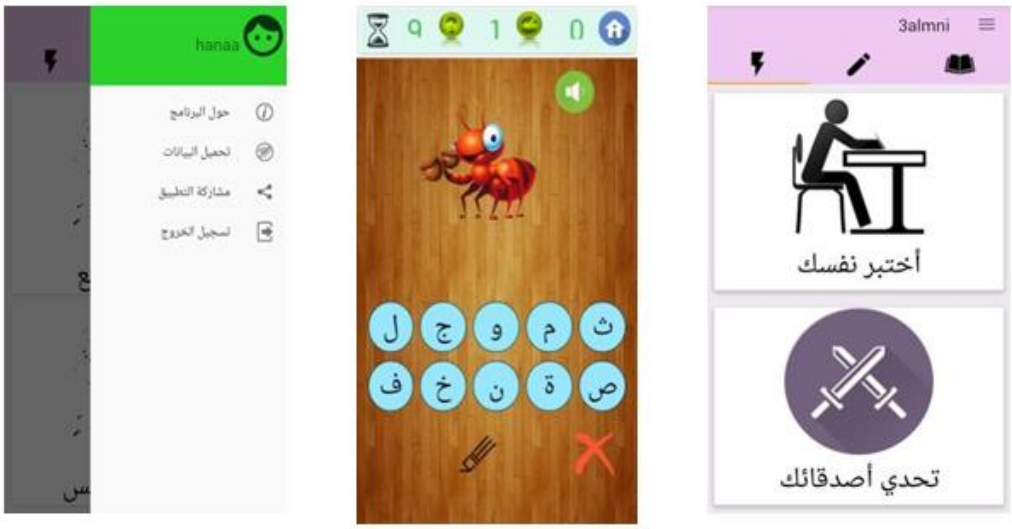

Figure 4. Mobile Application ع Elmi.

A research study was conducted by Koderi et al. (2020) on the development of mobile learning for the mastery of vocabulary among MTs students. In this study, the Hannafin and Peck development model was used. This study focuses on vocabulary learning according to the textbooks used in schools. Two research methods are used in this study, qualitative and quantitative methods. The results of the experimental study indicate that there is an enhancement in students' memory of Arabic vocabulary. The study is aligned with curriculum-based vocabulary learning and shows positive outcomes; however, it does not explore productive skills such as speaking. This application can be seen in Figure 5:

Figure 5. Arabic Language Mobile Application Al-Mufrodat.

Additionally, the study by Hijriyah et al. (2022) titled "Arabic Language Learning Media Based on Smart Apps Creator for Islamic Primary School Students" aims to develop an Arabic language learning application as shown in Figure 6 and to identify its effectiveness among Islamic primary school students. The researchers used the Dick and Carey development model as a guide in the development of this Arabic language learning application. This application is equipped with sound, video, and interactive quizzes to assist users, educators, and students in teaching and learning activities. Moreover, it can indirectly help students understand the Arabic learning materials contained in the application. Assessment in the form of activities and exercises is also provided to enhance students' interest and understanding of learning the Arabic language. The developed application was also evaluated by experts to measure its usability. Therefore, the findings show that the developed application is very effective for learning Arabic. However, this application supports receptive skills such as reading and listening more than productive skills such as speaking and writing. Furthermore, this application is still not available on the Google Play Store, which prevents users from downloading it on their smartphones.

Figure 6. Arabic Language Learning Media for 8th Grade MTs Students.

Meanwhile, the study by Robi'ah et al. (2023) aimed at developing a mobile application for the Arabic language with an emphasis on the vocabulary of the Arabic language in three areas: jobs, parts of the body, and the zoo. This study used the ADDIE development model (Analyse, Design, Development, Implementation, and Evaluate). This application presents the learning content in the form of images, voice text, and nice colors to help the users memorize and master Arabic vocabulary more easily. Furthermore, some exercises are also provided to determine the users' understanding and mastery of the vocabulary. In this regard, the methods and media of teaching and learning Arabic vocabulary should also be developed and diversified to be used as sources of learning Arabic vocabulary and as teaching materials. The application of this model is shown in Figure 7 below.

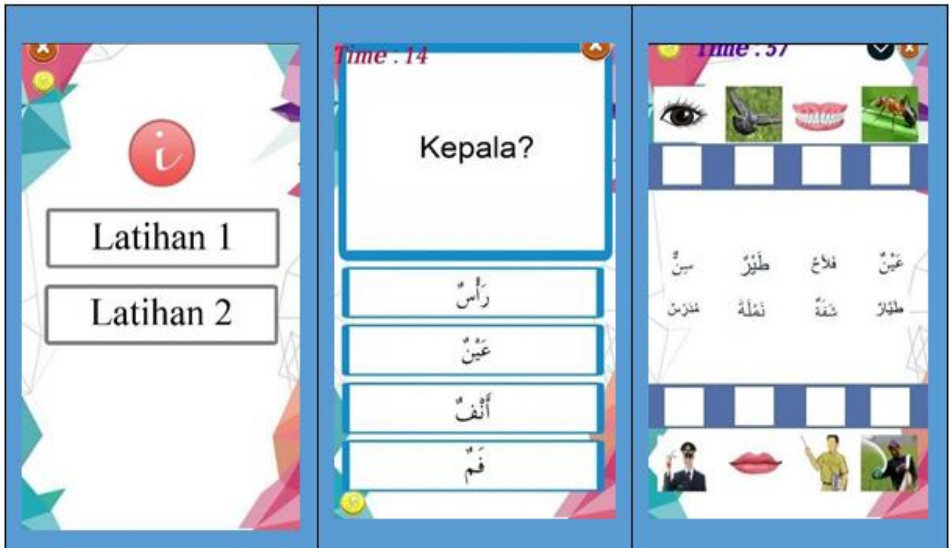

Figure 7. Interactive Multimedia for Arabic Vocabulary Learning.

As a summary from the discussion of past studies related to the development of Arabic mobile applications in Arabic language teaching and learning, clearly show that the use of Arabic mobile applications can benefit students and the public who want to learn Arabic with the existence of mobile applications developed by previous researchers. The integration of technology in language teaching and learning does not mean completely abolishing traditional teaching methods that have been practiced for a long time by language teachers. On the contrary, the use of this technology is an innovative teaching process which is a combination of traditional teaching techniques with the addition of more creative delivery methods using technological instruments. Through the use of technology in this teaching activity, students can apply language skills, especially speaking skills, in addition to other language skills while doing learning activities. However, the results of the research that has been done show that the mobile applications developed by the researchers mentioned above are still not commercialized in the Google Play Store or the Apps store. Therefore, the Arabic mobile applications that will be developed need to be commercialized so that the public can benefit from the applications.

Table 1. Summary of Data Collection

Title/Author/ Date	**Methodology**	**Research Objectives**	**Findings**	**My Comments**
Development of A4Kids Mobile Application by Neamah et al. (2017)	Evaluation involving 30 Arabic language teachers from primary schools in Kedah	To develop a mobile application (A4Kids) that facilitates Arabic language learning for children using the Android platform	The respondents agreed that A4Kids is easy to use and understand, and can help children learn Arabic effectively regardless of time and location	The application focuses solely on basic elements such as letters, numbers, colors, days, months, and simple words. It does not support oral communication skills or productive language use such as speaking or direct interaction.

Arabic Language Learning Application by Rosadi et al. (2018)	The application was developed using Object-Oriented Programming (OOP) techniques	To build a structured Arabic reading learning tool with graduated learning stages introduction using multimedia content	The application proved effective for children in developing Arabic reading skills.	It lacks a vocabulary learning component, which is a foundational element for reading proficiency.
Development of LALA Arabic Language Learning App by Wihidayat et al. (2018)	Application design and development; usability testing with primary school students	To design and develop a mobile Arabic learning app incorporating four language skills with gamification for primary students	The application supports listening, reading, writing, and speaking. Usability tests showed it is very easy to use for self-directed learning.	A comprehensive app integrating key skills and gamification, but limited by language accessibility; lacks English language support, which reduces usability for wider audiences
Development of Elmi Arabic Mobile Application by Sayed et al. (2019)	Application development incorporating speech recognition and interactive graphics; evaluation of usability and learning strategies	To develop an Arabic learning app for illiterate users and children using visual, kinesthetic, and tactile strategies, and to assess usability	The app includes speech recognition to assess reading skills and uses interactive graphics to enhance engagement. It is easy to use and supports reading and writing. Researchers plan to add English explanations and extend school-based trials	Innovative use of multimodal strategies and speech recognition. However, effectiveness in real classroom settings is still under-researched and content could be expanded further
Development of Mobile Vocabulary Learning for MTs Students by Koderi et al. (2020)	Hannafin and Peck development model; mixed methods: qualitative and quantitative approaches	To develop a mobile learning application to improve Arabic vocabulary mastery based on school textbooks	The experimental study showed improvement in students' memory and retention of Arabic vocabulary	The study is aligned with curriculum-based vocabulary learning and shows positive outcomes; however, it does not explore productive skills such as speaking
Arabic Language Learning Media Based on Smart Apps Creator by Hijriyah et al. (2022)	Dick and Carey development model; expert evaluation for usability	To develop an Arabic learning application for Islamic primary school students and evaluate its effectiveness	Equipped with sound, video, and interactive quizzes. Effective in supporting learning, but not yet available on Google Play Store for public access	Well-structured and multimedia-rich application; however, limited accessibility hinders its practical implementation for wider users
Arabic Vocabulary Mobile Application by Robi'ah et al. (2023)	ADDIE model (Analyse, Design, Development, Implementation, Evaluation)	To develop a mobile app focusing on Arabic vocabulary in the themes of jobs, body parts, and the zoo	The app uses images, audio, and color to support vocabulary memorization, with exercises to assess user mastery	Visually appealing and thematic, suitable for vocabulary building. However, lacks support for productive skills such as sentence construction or speaking practice

STUDY DISCUSSION

We cannot avoid the sophistication of ever-evolving technology in this advanced and modern era. There has been a new revolution in various fields due to the rapid development of telecommunications technology all over the world. Without a doubt, the existence of telecommunications technology has contributed significantly to the continuity and comfort of life. It was initially used merely as a medium for communication; however, the advent of mobile smartphones has expanded its role far beyond that. Today, smartphones are used not only for communication but also for multiple functions such as accessing the internet, transferring data, providing interactive messaging services, and downloading applications, thereby transforming them into indispensable smart devices. Consequently, the choice of mobile devices as access tools for M-Learning is both reasonable and inevitable in the modern world. Importantly, the application of smartphones extends beyond adults to teenagers and children, driven by the full-scale development of information technology, which led to the emergence of E-Learning and subsequently M-Learning.

The adoption of e-learning in educational institutions has accelerated the development of a new educational paradigm called M-Learning, which represents an extension of E-Learning with a greater emphasis on mobility and flexibility (Kumar Basak et al., 2018). Although related, the two concepts differ in scope: E-Learning broadly encompasses learning via electronic devices such as computers, smartphones, and mobile phones (Kenan, 2015), whereas M-Learning specifically focuses on learning through portable devices such as smartphones and tablets (Bernacki et al., 2020). A systematic review in higher education found that mobile learning not only facilitates ubiquitous access and personalized learning but also enhances collaboration and engagement, particularly in language learning (Naveed et al., 2020). These features position M-Learning as a major pedagogical innovation aligned with 21st-century educational goals. Nevertheless, researchers such as Nagasundram et al. (2024) caution that overdependence on smartphones may lead to Nomophobia the fear of being without a device potentially undermining academic focus and social interaction. Thus, while mobile learning fosters accessibility and interactivity, its usage requires careful management to safeguard learners' well-being.

Within this context, Mobile-Assisted Language Learning (MALL) has emerged as a promising innovation, defined as the use of apps or software on mobile devices to support language learning (Rachman et al., 2023). MALL offers learners the flexibility to access resources and participate in activities anytime and anywhere, provided there is internet connectivity (Alqarni, 2024). Students no longer need to rely on computers; instead, they can study materials, complete exercises, and develop their skills on mobile platforms (Biantoro, 2020). They also benefit from instant access to notes, videos, quizzes, and digital resources, which allows for independent, self-paced, and personalized learning experiences (Mohamed & Al-Jadaan, 2024). Moreover, recent studies highlight that such tools are deeply embedded in students' daily lives and are perceived as essential supports for academic success (Cheok et al., 2024). While integrating technology does not mean abolishing traditional methods, it does represent an innovative fusion of conventional pedagogy with creative, technology-enhanced delivery. Through this integration, students can strengthen their language proficiency particularly speaking skills via interactive and engaging tasks.

However, despite the promising outcomes, research indicates that many Arabic language learning apps developed to date remain underutilized because they are not commercialized on mainstream platforms such as Google Play Store or App Store. To improve this landscape, scholars should strengthen critical analysis by comparing methodologies across studies, highlighting contradictions, and evaluating the robustness of findings. It would also be useful to introduce a framework or thematic model that categorizes apps not only by technological features but also by pedagogical alignment (e.g., receptive vs. productive skills, gamification vs. traditional learning). Practical recommendations for commercialization, integration into school curricula, and teacher training should be emphasized to increase impact. In addition, comparative insights for instance, contrasting Arabic mobile app development with English or Mandarin apps could broaden the implications. Finally, future reviews should address emerging trends such as AI, adaptive learning, and VR/AR in Arabic language education to future-proof the field. Thus, future Arabic mobile applications need to not only be commercialized but also systematically aligned with pedagogical frameworks, comparative perspectives, and technological advancements to maximize their educational value and sustainability.

CONCLUSION

Based on the review of previous studies highlighting the development of mobile applications for Arabic language teaching and learning, it is evident that Arabic language mobile applications offer significant benefits not only to students but also to the general public who are interested in learning the language through the tools developed by earlier researchers. The integration of technology in language education does not imply the complete replacement of traditional teaching methods that have long been practised by language educators. Rather, it represents an innovative instructional approach that blends conventional techniques with more creative and interactive delivery methods supported by technological tools. Through the incorporation of technology in teaching activities, learners are able to apply language skills particularly speaking skills while also enhancing other linguistic competencies throughout the learning process. However, findings from the literature indicate that many of the mobile applications developed by researchers have yet to be commercialised or made available through platforms such as the Google Play Store or App Store. Therefore, future development of Arabic language mobile applications should prioritise commercialisation, in order to expand access and usability for a broader audience, including both formal learners and independent users.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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