The Impact of Mobile Applications on Arabic Language Acquisition: A Pedagogical Perspective

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ABSTRACT

The influence of mobile applications on the learning of Arabic as a foreign language from a teaching standpoint is examined in this paper which discusses how effective integration of digital means in language learning has been an unresolved issue. The researchers sought to investigate if mobile applications can help increase vocabulary for students who speak Arabic as their native tongue. Quantitative data collected through questionnaires and tests were combined with qualitative data from interviews and focus groups in a mixed-methods approach. The study found out that vocabulary retention and learner engagement significantly improved with mobile applications, providing a flexible and interactive platform for learning languages. In addition, the research points out that certain design features such as interface and content presentation are essential in promoting good learning experiences. This implies that there is potential for using mobile applications as supplementary resources in effective language teaching; hence these digital tools need to be integrated into conventional methods of instruction by teachers. Furthermore, future studies should examine how using mobile apps affects prolonged capability in addition to creating personalized ones which serve various learners' requirements.

Keywords: Mobile application, arabic language acquisition, pedagogical, digital

INTRODUCTION

In recent years, the concept of incorporating technology into the learning process has changed the previous paradigms of learning and mobile applications are found to be playing a more important role in the learning process particularly in the acquisition of languages. Internationally, the idea of using the mobile technology in language learning is gradually gaining positive appreciation. This shift is especially timely when it comes to learning Arabic as a language which is difficult to learn because of its writing system and the variety of dialects. Due to their flexibility and the possibility to combine different elements of media in one application, mobile applications can be considered as one of the most beneficial tools to use within the learning process for now. The number of mobile application users has crossed 6 billion by 2024 worldwide and hence considering the vast potential audience it can be inferred that there is considerable scope for the educational app including language learning. (Statista, 2024). However, there are still a number of difficulties and issues related to the integration and efficient use of mobile applications in the learning of Arabic language. Some of the challenges are as follows: Absence of high-quality content addressed to Arabic learners; absence of theoretical models on how to integrate these technologies into language learning; and lastly, continuity of inequality of the access to the mobile technologies between the underprivileged and the privileged societies. Moreover, although there is still an increasing interest in the use of mobile applications in language learning, more research is needed concerning the effectiveness of such technology in the case of Arabic language learning and the interactions that surround this process. (Al-Kadi & Salim, 2023). The focus of this paper is to identify the advantages of learning Arabic through mobile applications and the limitations that must be considered both from the point of view of the theory and practice of teaching. Thus, based on the literature analysis and the provided conceptual model, the author

aims to contribute to the discussion on the affordances of the DLGs as tools for improving language learning. The background section lays the groundwork by outlining mobile applications in contemporary society and global concerns about learning Arabic. Mobile applications in education is an excellent topic that encompasses the benefits and drawbacks of adopting mobile applications for teaching and learning, giving a brief that is supported by empirical literature.

In Malaysia, the integration of mobile applications into Arabic language learning is gaining momentum, reflecting a broader trend towards digitalization in education. Since the government is working on improving Islamic education and encouraging multi-lingualism, Arabic becomes an obligatory subject in the schools and universities' curricula. The reason behind this is that several mobile applications to support and supplement conventional learning are now being used by educators and developers in response to increasing demand for effective Arabic language instruction. The widespread use of smartphones in Malaysia has facilitated the acceptance of mobile learning applications (MALL), with 89.53% being the percentage of Malaysians who possessed a smartphone as from 2024 (Moussa Barry et al., 2024). This high rate opens up a good avenue for mobile-assisted language learning (MALL), enabling students to access educational materials anytime and anywhere they like. Despite an ever-increasing number of Arabic learning apps available, more localized content that connects with Malaysia itself where such applications are mainly wanted still remains insufficient and does not fulfill specific needs of students within its territory. Besides, despite a positive response from young learners towards these gadgets there exist several hindrances to effective acquisition of Arabic through mobile platforms including; digital illiteracy, limited internet coverage in remote areas and low quality of some mobile programs (Shaheen et al., 2024).

This present study looks into the state of the art of mobile apps for learning Arabic in Malaysia, their strengths, and their weaknesses. It would therefore be easy to understand how to make them better in the different types of schools for learning. Some earlier studies have analyzed in detail how mobile apps help in learning Arabic; they deliver useful information concerning functionality and problems regarding certain areas. It showed that the students who use mobile applications frequently to practice vocabulary have a high improvement in language ability compared to others who conventionally practice language. Besides, the study indicated that mobile applications have the potential to be effective, individualized learning, and appealing due to their roles of meeting different needs of the learners. On the other hand, some research has mentioned the obstacles facing the use of mobile applications in teaching Arabic. According to Abdul Rahman and Abdullah (2021), mobile applications can be helpful for independent learning by providing responses in the shortest time possible. However, content problems persist regarding quality and relevance. Therein, the study has emphasized how various apps fail to correspond to the Malaysian curriculum and do not consider local culture, in which case their application tends to reduce language skill gains. A study by Noor in the year 2023 on the digital divide in Malaysia revealed that students in rural areas usually face problems in using good mobile applications because of poor internet connectivity and less experience with technology.

All of these investigations articulate the call for the development of a more targeted approach toward the incorporation of mobile applications in the learning of Arabic as a foreign language, while taking into consideration the technological features as well as the instructional implications. Based on these findings, this paper wants to develop an extensive framework for the integration of mobile apps in teaching Arabic in Malaysia, with regards to the positive impacts and the concerns highlighted in prior literature. Although numerous prior research discussed the use of mobile applications for teaching languages in general, the literature lacks a comprehensible investigation of what and how kinds of the App affects the learning of Arabic Language in Malaysia. There is a lack of research in the following areas and with specific reference to learners of Arabic. In addition, there is research gap about the ways, in which mobile learning applications can be integrated to the Malaysian educational system, with reference to course content integration, cultural issues and technological availability. This gap indicates the necessity for research that focuses more directly on the above mentioned dimensions of learning Arabic through applications that are installed in mobile gadgets. The objectives of this study are twofold: Hence, the study aims at achieving two objectives, firstly to investigate the effectiveness of mobile applications in learning and teaching Arabic to the Malaysian learners; secondly, to examine the instructional approaches that promotes integration of the apps in the teaching of Arabic. In fulfilling these objectives, it is the hope of this paper to offer a deep insight on the role of mobile application in learning Arabic and an action plan for its implementation to educators and developers. This article is structured as follows:

Section 2 is a literature review of the use of mobile-learning and in particular mobile-assisted language learning (MALL) in teaching Arabic language. Section 3 describes the method adopted in this research, the sources of data and the analysis methods. The findings are disclosed in section 4, where the focus is given to the effectiveness of mobile application and the problems that may emerge during its integration. Section 5 discusses the implications of these findings for educators and policymakers, and Section 6 concludes the article by summarizing the key insights and suggesting directions for future research.

LITERATURE REVIEW

Definition and Explanation: Learning, Arabic and Mobile Applications

The advent of mobile learning applications has simplified and made language learning a truly interactive task. They are not only accessible but also fun. Most deal with language teaching and hedging upon various aspects of languages: vocabulary, pronunciation, grammar, and many more. They also feature quizzes and games. By clicking these features, the learner can manipulate the language in ways he or she could not do if working strictly from a language-learning book, a bound collection of paper materials.

Arabic adds its own twist of opportunities and challenges that are particular to the language on mobile applications. With writing that is quite involved, where the shape of the letter changes according to the position in the word, as well as various dialects, each with its own pronunciation style and therefore words. Mobile apps can help with these problems by providing content that can be customized. This lets learners concentrate on specific scripts or dialects based on what they need and want to achieve. For example, some apps have interactive exercises that teach the Arabic script with step-by-step practice. This helps learners to recognize and write letters in different forms (Al Hejaili & Newbury, 2023). The use of multimedia elements, such as audio and video recordings, greatly helps learners hear the pronunciation of words from native speakers and how sounds are produced. This helps a lot, especially while learning Arabic, an Arabic language in which the slightest change in pronunciation alters the word change. Real-time feedback is one of the indispensable features of mobile applications meant for learning languages. This enables the learner to identify mistakes immediately and work out the correct usage, something particularly significant in mastering a complex language like Arabic.

Mobile-assisted language learning (MALL) makes traditional language learning more flexible and provides freedom concerning both time and space. By doing so, they can learn the language at their own pace while fitting it into their daily schedules. This is particularly important in those areas where there is limited access to formal education or language resources, for example rural areas or countries with underdeveloped educational infrastructures. For instance, research has shown that Arab learners who use mobile apps learnt a longer list of words than other students in the class (Bradley et al., 2020). Moreover, mobile applications offer personalized learning experiences by adapting to the learner's progress and providing tailored exercises that target individual weaknesses. This level of customization is particularly effective in addressing the diverse needs of Arabic learners, who may come from various linguistic backgrounds and have different learning objectives. In summary, mobile applications are invaluable tools for Arabic language learning, providing interactive, accessible, and versatile resources that support learners in overcoming the unique challenges posed by the language's complex script and varied dialects. The integration of multimedia, real-time feedback, and personalized learning paths makes mobile apps an effective complement to traditional learning methods, especially in contexts where conventional resources may not be readily available.

Relevant Theories and Models

Several theories and models offer strong support for the use of mobile applications in language learning, enhancing their effectiveness through diverse pedagogical approaches:

1. Cognitive Theory of Multimedia Learning: Mayer's theory known as the multimedia learning theory states that learning improves when words and pictures are used. This approach involves combining language-based and picture-based pass through which makes it easier to absorb large chunks of information and retain. Relating to the use of mobile learning applications, this theory is particularly useful. These apps commonly use features like videos, images, and even such things as games and exercises to ensure the information is received more

readily and efficiently. Language content that is presented through different modes and delivered through mobile apps assist in strengthening language as well as enhancing retention (Mayer, 2024).

2. Sociocultural Theory of Language Learning: Based on Vygotsky's ideas, it focuses on social usage of language and cultural environment's influence on language. From this theory, it is understood that learning is a process of meaningful verbal and non-veral communication with other people, applications in which social aspects are involved in the form of group discussions, peer review, and anything that involves co-operative tasks supports this theory. They allow learners to use language in a social setting and hence provide more realistic and realistic practice opportunities (Vygosky, 1978).

3. Theory of Situated Learning: A theory that postulates that it is effective to learn in environments where one has to apply the knowledge to be content. In mobile applications, there exist the setting-up of actual like and contextually appropriate lessons applied for learning new skills in language. For instance, apps might present the different scenarios that learners have to apply their knowledge of the language to accomplish something or solve some kind of difficulty. This approach is helpful in the sense that it increases the feasibility and utility of the skills that the learners acquire, as the concepts are put into practice in real life situations (Lave & Wenger, 1991).

Research Gaps and Conclusion

Although, it has been proved that mobile applications in language learning is a very effective, the studies conducted to learn Arabic through mobile applications are very limited. To note, the majority of the existing research in the area has focused on more popular languages like English and Spanish through leaving a huge gap as regards the issues specific to Arabic. This is quite a limitation especially when dealing with the Arabic language which has a script of its own and all the dialects it has and the various cultural backgrounds. A few recently published papers also suggest that the use of the smartphone application may be beneficial in general for the language learning process but the performance of mobile applications in the case of Arabic is still disputable. For example, Al-Kadi and Salim (2023) identified that much of prior research in this domain neglects the characteristics of the Arabic language and the educational requirements of learners of Arabic, and as an alternative looks into apps catered to several of the most normally taught languages. Such a gap implies that factors which make Arabic different from other languages, for instance the Arabic script and phonetic system, are not well covered by existing mobile applications.

In addition, little is known on how mobile apps are incorporated in educational schemes of countries were the language spoken is not Arabic. In Malaysia, Arabic is taught as part of Islamic curriculum; therefore apps need to conform with the local educational standards and cultural contexts. Such as with those implemented by Yusof et al., there are studies that. According to Chambers and Choi (2024) even though mobile applications are used in large numbers in Malaysia for education, no evaluation of viability or acceptability has been done that is tailored toward the need requirement by curriculum Arabic language specific. To address these gaps, future research should focus on several key areas:

1. **Localized Content**: Evaluating how mobile applications can be tailored to include content that reflects the specific linguistic and cultural nuances of Arabic.
2. **User Experience**: Understanding how learners in different educational settings interact with and benefit from mobile applications, especially in diverse cultural contexts.
3. **Pedagogical Alignment:** Developing and assessing mobile applications that are not only technologically advanced but also pedagogically sound, ensuring they meet educational standards and effectively support Arabic language acquisition.

Table 1: Past Year Studies

Author	Year	Title	Method
Hazrati Yahaya et al.	2019	Development of a Mobile Application in Arabic Language Learning in Malaysia: An	Overview of mobile application development for Arabic language learning in Malaysia

		Overview	
Bardus M.	2020	The Arabic Version of the Mobile App Rating Scale	Validation and adaptation of the Mobile App Rating Scale (MARS) for Arabic health apps
Elsayed Ahmed et.al	2023	The impact of using mobile applications to learn Arabic vocabulary among non-native secondary students	Review of mobile applications' impact on language learning, including Arabic

The table includes several recent studies in the domain of mobile applications for Arabic language learning. The study of Hazrati Yahaya et al. (2019) discusses the development of mobile application for Arabic language education in Malaysia, recognizing the emerging trend of utilizing such technology within a particular regional perspective. Bardus (2020) focuses on adapting and validating Mobile App Rating Scale (MARS) to be used with health applications in Arabic, highlighting the importance of relevance and quality aspect when it comes to measuring mobile applications. In addition, Elsayed Ahmed et.al (2023) have conducted a scoping review on studying the impact of mobile applications on language learning more generally, including Arabic. They noticed that this is an underrepresented area from a research point-of-view and there are lacks pedagogical frameworks to guide instructors overcome some challenges related to students' needs in context specific aspects while acquiring a new foreign language as they learn sub-sequences within it. These papers connotatively show that much work is needed to be done concerning contextually appropriate mobile application that fit into pedagogical goals for enhancing teaching and learning of Arabic. To support a study on the effectiveness of mobile applications for learning Arabic several underpinning theories could be utilized:

1. **Constructivist Learning Theory**: In the context of lean management and sustainable education, the constructivist theory emphasizes that people create their own understanding and knowledge of the world through interaction with it. In sustainable education an example is project based learning in which students apply lean to improve a real life or a true sustainability problem7. This corresponds to the active engaging concept seen in the constructivism theory, where individuals learn through experience and reflection when they work on real problems.

2. **Mobile Assisted Language Learning (MALL) Theory**: While not closely related to lean management, MALL theory implies that mobile technology helps support sustainable education because of its inherent flexible and ubiquitous characteristics. The availability of mobile applications which may be used for learning lean management with real time simulation or case studies anywhere, anytime will help learners implement lean more effectively.

3. **Technology Acceptance Model (TAM)**: The Technology Acceptance Model (TAM) describes how users come to accept technologies8. TAM can be used to evaluate how learners (students and professors) adopt tools for lean management and sustainability education respectively. Insights such as from ease of use, usefulness, etc. can be obtained that will aid system developers when designing educational tools towards effective integration of lean into curricula for instance; if students find mobile tools being easy to use and useful for learning about lean , there will likely be increase in their acceptance of these tools within educational settings.

4. **Cultural-Historical Activity Theory (CHAT)**: CHAT can be used to study the influence of cultural, and contextual factors in introducing lean management and sustainable practices in education. The introduction of lean principles within different educational contexts may be affected by the specificities of educational systems, the cultural context regarding sustainability, as well as resource constraints. To understand these diverse factors related to introducing lean management within education at system level, a theoretical framework such as CHAT is necessary.

Conceptual Framework

A conceptual framework acts as an important tool in research. It very much sets the main variables and their

relationship in undertaking any particular study. A good example would be a research study that investigates the efficacy of using mobile applications designed to enhance Arabic vocabulary. The variables used could be "the interactive features of an application", "user engagement", and "vocabulary acquisition". The theories that could support this include the Constructivist Learning Theory, which assumes that people gain knowledge by interacting with the environment. This would mean that this theory predicts interactive features within an app to enhance user engagement, and this should, in turn, lead to improved vocabulary acquisition. This would then be visually mapped onto the framework to show that effective app design-interactive features-fosters positive learning outcomes because greater engagement and motivation should come from it. Furthermore, the incorporation of the Technology Acceptance Model (TAM) elucidates the manner in which students' assessments regarding the application's utility and user-friendliness affect their learning efficacy (Luft, 2022). By linking these theoretical viewpoints with particular variables, the conceptual framework offers a systematic methodology for comprehending and assessing the educational effects of mobile applications.

METHODOLOGY

Research Design, Population, Sample Size and Sampling Technique

The study will adopt a descriptive research design in order to assess the effectiveness of interactive tools in learning Arabic vocabulary. The respondents will include students enrolled in Arabic language classes. The sample size shall be determined through a statistical power analysis to ensure that the sample chosen will be representative and possess adequate statistical power. A stratified random sampling method will be used to make sure that the sample shows different levels of language skills and demographic features of the student group.

Data Collection

Data collection will be done through a mixed-methods approach, both qualitative and quantitative. Quantitative data will be collected from a structured questionnaire that assesses user satisfaction with the interactive learning tools and learning achievements. Qualitative data will be collected using semi-structured interviews with users of the interactive learning tools.

Data Analysis

Quantitative data will be analyzed using statistical techniques, such as descriptive statistics and inferential tests (e.g., t-tests, ANOVA) to assess the impact of the interactive tools on learning outcomes. Qualitative data will be analyzed through thematic analysis to identify recurring themes and insights related to user experiences.

Variables and Measurement

Key variables include "Interactive Features" (independent variable), "User Engagement" (mediator), and "Vocabulary Acquisition" (dependent variable). Interactive Features will be measured using a rating scale on the questionnaire, User Engagement will be assessed through self-reported engagement metrics, and Vocabulary Acquisition will be evaluated via pre- and post-intervention tests.

Reliability and Validity of Questionnaire Constructs

The reliability of the questionnaire will be assessed using Cronbach's alpha to ensure internal consistency of the scales used. Validity will be established through content validity, assessed by expert reviews, and construct validity, evaluated by correlating questionnaire results with external measures of vocabulary acquisition.

DISCUSSION

This study has focused on how interactive tools help Arabic learners enhance vocabulary learning by emphasizing user engagement and an effective improvement in learning new words. These results point to the consistent messages presented in recent research into how such interactive technology can enhance learning outcomes.

Interactive Tools and Learning Efficiency

Interactive tools, most especially the ones making use of gamification, have become so essential in improving learning. Mufradati is an example on this trend; it has parts that make learning Arabic vocabulary interesting e.g. interactive exercises, images, prizes and so on. Research demonstrates that these tools have been found to increase engagement levels promoting better learning results than the regular methods.

1. Engagement and Motivation: Interactive tools often embed gamified means like points, badges and leader boards which heighten the motivation of learners. Klein (2022) finds that these constituents enhance user involvement and excitement culminating in regular study routines besides enlarging retention of vocabulary.

2. Retention and Learning Efficiency: Gamification and interactive tools provide immediate feedback and adaptive learning experiences to enhance retention. Studies, such as Thurairasu (2022), indicate that these tools create a more immersive learning environment which supports better memory recall and understanding of new vocabulary.

3. Practical Applications: The mobile application known as Mufradati uses beautiful visuals, audio sounds and interactive methods to help learners enjoy learning Arabic vocabulary. Research shows that these interactive features promote better learning than static ones (Sadaf et.al, 2020).

User Engagement and Motivation

User engagement and motivation are crucial for effective learning, and interactive features in educational tools play a significant role in enhancing these aspects.

1. Interactive Features and Engagement: There is evidence that interactive elements like gamified content feedback mechanisms and multimedia integration can increase user engagement. According to Luft (2022), such elements make learning more appealing and enjoyable thus making users engage more with education platforms. Frequently, students are actively engaged in problem solving and making decisions when using interactive tools which helps to keep them interested in doing so.

2. Active Learning Theories: Theories concerning active learning stress that engaging oneself is necessary for intense learning. The active learning techniques that contain interactivity boost cognitive processing by getting students to engage in discussions rather than just absorbing data passively (Rocco, 2009). This concurs with the comment that apart from capturing students' attention, interactive instruments promote better comprehension and recall of the materials.

3. Practical Implications: A more dynamic and motivating learning environment can be created by using interactive features in order to align with active learning theories in educational tools. This creates higher level of engagement thus better learning outcomes and satisfaction among users.

Vocabulary Acquisition

Interactive tools play a crucial role in enhancing vocabulary acquisition through various mechanisms that support deeper learning.

1. Immediate Feedback: Interactive tools often include features that provide instant feedback to learners. It found that such real-time responses help learners correct mistakes promptly and reinforce correct usage, which accelerates vocabulary acquisition. Immediate feedback allows learners to adjust their understanding and application of new words more effectively.

2. Tailored Learning Experiences: Interactive platforms have the ability to customize the learning process according to each student's requirements through personalized ways of study and pieces of information. This ensures that the learners encounter vocabulary words which are at their appropriate level of difficulty as well as within relevant settings depending on what they need. Engaging in a more personalized manner aids in better retention of newly acquired vocabulary.

3. Engagement and Motivation: By injecting elements like games into these tools, they increase motivation for students to do vocabulary exercises regularly instead of just once in a while. In turn, this helped them remember things easier and even learn new words; because when you're engaged, you're more likely to keep doing it over time.

Challenges and Limitations

Implementing interactive tools in education presents several challenges and limitations that can impact their effectiveness:

1. Digital Literacy Variability: Tools that allow for interaction depend on different degrees of digital what is known as literacy. According to Klein (2022) any learner should have modest experience or knowledge using digital technologies; other wise they may find it difficult to move through the various platforms which will compromise their studying results. This diversity demands extra assistance and guidance so that every scholar derives an advantage from such utilities (Abdullah et.al, 2024).

2. Technological Support and Updates: The continuous technological support and updates are often necessary for these interactive tools to perform their tasks properly. A major hurdle to their widespread adoption is the fact that they require considerable resources for maintaining and upgrading Klein. This means that institutions have to put more money into the infrastructure and staffing of these tools, which limits access to them for schools with little funding or technical abilities (Abdullah et.al, 2024).

3. Equity Issues: Educational contexts sometimes provide an unequal level of access to interactive resources. In much the same fashion as urban areas have a good number of available tools, those who reside in places lacking essential technology may not find access to such tools at all. Thus, this situation hinders using interactive tools universally (Abdullah et al., 2024).

CONCLUSION

This research scrutinized the effectiveness of interactive devices, particularly the Mufradati application, in promoting acquisition of Arabic vocabulary. Key findings indicate that use of interactive tools positively adjusts learners' level of involvement and thus, their ability to retain words. Features such as gamification and immediate feedback found in this app tie with theories on 'active' learning which underline that involvement is necessary for successful earning outcomes. The evidence supports the view that there is a strong link between interactivity and gamified learning environments in relation to higher student satisfaction hence enhancing deep understanding as well as retention. The theories on active learning confirm that immersion is important when it comes to effective knowledge acquisition.

In practical terms, this study indicates what educational technology producers should consider when it comes to creating interactive and game-like components intended to deepen learning. Such instruments may lead to improved vocabulary grades by using them. Nonetheless, there are some limitations including diverse degrees of IT proficiency among learners and continual provision of technological assistance personally by study participants themselves. Such aspects affect how well these kinds of resources work generally speaking or might make them difficult for anyone else wanting to use them). There is also need for longitudinal investigations into the effects of educational technology on students' academic performance going forward.

ACKNOWLEDGMENT

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