

GAMIFICATION AND MOBILE LEARNING: EXPLORING DIGITAL GAME-BASED APPROACHES TO ARABIC LANGUAGE EDUCATION

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ABSTRACT

This research serves to foster Arabic vocabulary acquisition among non-native speakers by incorporating self-regulated learning and metacognitive strategies. The problem was a difficulty faced by many learners in acquiring and retaining new vocabulary in a foreign language, particularly when they are in contexts where the avenues for formal instruction are minimum. The study was conducted aiming at the development of an appropriate learning model that would integrate self-regulated learning with metacognitive strategies for better retention of vocabulary and improvement in language proficiency. Quantitative data were compiled using a Likert-scale questionnaire and qualitative insights from semi-structured interviews with 150 participants. The respondents were non-native learners of Arabic, and the quantitative data analyzed in assessing engagement levels through statistical techniques, while qualitative data were used to explore learner perceptions of gamified learning. Indeed, the results indicate that 65% of participants agree or strongly agree that gamified learning develops vocabulary acquisition, and similarly significant portions report improvements in sentence formation 61% and understanding of grammar rules of Arabic language 64%. This would suggest that self-regulated learning strategies need to be embedded within language education. Consequently, active learners who engage with the gamified platform have better performances. The results have practical implications for educators and curriculum developers in highlighting the fact that gamified learning can effectively act as a tool to bring improvements in language proficiency among non-native Arabic speakers. This study had a few limitations regarding sample size and vocabulary acquisition. Future research should also consider broader linguistic skills, such as speaking and listening, as well as longer-term impacts of the strategies.

Keywords: Gamification; Mobile Learning; Arabic; Digital

1. INTRODUCTION

With the advent of technology in all spheres of life, mobile learning together with gamification in teaching and learning languages has changed the old-fashioned way of teaching and acquiring language skills. Mobile technologies are now at the forefront of education because they are cheap, flexible, and engaging for the user. Yeo et al. (2022) posits that while mobile learning has the potential to change the traditional language education experience, gamification which is the application of game principles and design elements in non-game contexts motivates the learning process more. Such trends raise opportunities and possibilities but also risks when it comes to solving global challenges in education including the equitable provision of quality learning materials and the inclusiveness of different teaching approaches for varied types of learners. Furthermore, there is an increase in the worldwide debate on student-centered approach to education and how game-based learning aids in achieving that. Considering the implications of teaching with digital games, increased level of motivation and engagement has also been seen especially in teaching new languages (Abdul Ghani et al., 2022). The use of mobile devices has become common, and so there is a growing consideration on how it can aid language learning. This change is especially beneficial for the teaching of Arabic language due to the tenets of gamification which have a scope to simplify issues revolving around the acquiring of a vocabulary and mastering a grammar for both the native speakers and non-native language learners alike (Almelhes, 2024). As such, this study evaluates the relationship between

gamification, mobile learning and teaching of Arabic language by elucidating the trends, theories and practices associated with the incorporation of or digital game-based learning (DGBL) in learning the Arabic language, benefits and challenges in this area.

In Malaysia, there is a significant focus on mobile learning in the Arabic language classrooms through the use of mobile applications and digital games. A recent study at Universiti Sains Islam Malaysia (USIM) demonstrates an example of ‘Anytime, Anywhere Arabic Learning’ (A3L) where mobile technology helps facilitate learning materials and teacher-students’ interaction through Whatsapp application (Yahaya et al., 2019). In addition, a study involving 468 novice Arabic learners across four universities in Malaysia showed that the use of digital tools effectively enhanced the interest and the level of knowledge in Arabic among students (Wan Daud et al., 2022). The advantages of mobile digital games as depicted in the second language acquisition research in charting progress of the Arabic language among college students in Malaysia had very promising results where students’ performance and thirst for knowledge increased remarkably due to game based learning (Mhd Alkasirah et al., 2023). This indicates that there is an increasing trend in the adaptations of mobile technologies in Malaysia towards teaching languages especially the Arabic language.

The effectiveness of gamification and mobile-assisted learning in teaching the Arabic language has been explored in several studies. Ghani (2022) explored the impact of mobile digital games on the education of the third level or university students and reported the findings including that game-based learning particularly in language classes took away the monotony and greatly improved the engagement and learning levels of the students, particularly the Arabic classes. Shortt (2023) in her systematic review also suggested that gamification, in this case Duoling, among other language training mobile tools, aided language learners in raising their motivation and acquiring proficiency. A research study concerning the students’ perceptions of the effectiveness of gamification in learning Arabic cohesive devices showed that the use of gamified tools greatly motivated the learners as well made it easy for them to grasp the advanced strategies of the language that were difficult in normal classes (Jalil & Mohd Ismath, 2022). A different study by Almelhes (2024) emphatically stated that gamification not only improves motivational levels but also boasts improvements in non Arabic speaking users mastering of vocabulary and grammar. These pieces of research shows the present trend that there is a shift in the attitude of many educators towards the use of gamification techniques in teaching Arabic language.

Even though more technology is being adopted in the education system, there is still a research gap about the effects of gamification and mobile learning on the acquisition of the Arabic language. Again, most of the studies done on gamification have only looked at general language learning context without exploring the applicability of this innovative approach upon the Arabic language which has varying set of phonology and grammar. There is also a dearth of scholarship on the issue focusing on the use of mobile games in a game-based approach to teaching Arabic to non-native speakers. The purposes of this investigation are two-fold; to find out how mobile learning gamification affects the enhanced engagement of learners and the learning of Arabic language and also the prudence of adopting these digital game-designed methodologies in increasing learners’ vocabulary, grammar and motivation. The aim of the study is to provide better insights on the ability of the technology in popular overcoming some of the shortcomings in learning Arabic language. The article is organized as follows: this introductory section will be followed by a literature review on game-based learning, mobile learning and Arabic language learning. A methodology will provide the research design and methods of data collection. Results will be given and discussed, with a conclusion that will highlight the key points of the research and indicate how the teachers may or may not use the findings.

2. LITERATURE REVIEW

2.1 Defining Learning, Arabic, and Mobile

Learning is the approach through which persons learn new things, gain skills and abilities, and acquire competencies. Most often, this takes place with the help of an instructor with the use of either formal or informal education. With the coming of digital technology, mobile learning (M-learning) is one of the recent inventions that have been developed. M-learning incorporates the use of mobile devices like smartphones, tablets, and other devices that aid in learning, thus enhancing such learning, making it more convenient, especially in interacting with the content. Arabic, on the other hand, is culturally and religiously significant but when it comes to learning the particular language, it still has its fair share of challenges owing to the language's different grammatical and phonetic rules. M-learning in Arabic Language teaches literacy by employing digital devices and other mobile sources in enhancing foreign language vocabulary, grammar as well as pronunciation, especially through games and other interactive means of their (Yahaya et al., 2019) interpretations.

2.2 Relevant Theories and Models

M-learning theories are based on constructivism, which is mainly focused on the learner and the adoption of certain approaches that engage the students with the content through the use of interactive tools. The Social Constructivism advocated by Vygotsky, and the Cognition Theory as proposed by Piaget, these theories justify that learning is enhanced when individuals work in groups and learn from the environment, which is made easy by the use of mobile devices. In Arabic education for instance, mobile technologies such as WhatsApp and elearning games offer services where students are provided with guided language training environments (Yahaya et al., 2019). Learning with computers involves game-based learning constructs (e.g. Garrison's input-process-output model) has been used to describe the process enhancing the motivation and engagement that is vital in attaining proficiency in a second language like Arabic. Applications like Duolingo, which are also gamified, provides a holistic approach enabling learning to take place which is very useful in acquiring retention of words and structures usually known as grammar (Ikhlas & Abidin, 2024).

2.3 Research Gaps and Conclusion

Although interest is on the rise, investigation of M-learning for Arabic language acquisition remains quite scarce, especially in terms of its non-native speakers' use. It is proven that the use of mobile applications increases the motivation of the learners and even expands their engagement into some practice of the language learning through the use of the app itself. There is, however, a need for more longitudinal research regarding the effects of M-learning on Arabic language proficiency. Limited research has been done on the effect of gamified mobile interfaces on the language learners' acquisition of complex grammatical systems of Arabic (Yahaya et al., 2019). Therefore, although M-learning has considerable promise in learning and teaching Arabic, this promise has not been studied in full extent. Perspectives that could enhance understanding of the role of mobile devices in the learning of Arabic by such learners could be those that lean towards personalized and adaptive learning modes.

Table 1: Past Studies

Authors	Year	Title	Methodology
Yahaya et al.	2019	Development of a Mobile Application in Arabic Language Learning in Malaysia: An Overview	Overview of utilizing WhatsApp as a tutorial platform for lifelong Arabic learning at Universiti Sains Islam Malaysia.
WAA bin Wan Daud	2021	Gender Differences in Learning Arabic Using Mobile Apps	ANCOVA analysis to test efficiency of mobile apps for Arabic proficiency.
Abdul Ghani et al.	2022	The Impact of Mobile Digital Game in Learning Arabic Language at Tertiary Level	Experimental study assessing the effect of mobile digital games on Arabic language learning among tertiary students.
Wan Daud et al.	2022	How Well It Works for People Learning Arabic as a Foreign Language: A Case Study in Malaysia	Survey-based study evaluating the effectiveness of mobile-assisted learning for beginner Arabic learners in four Malaysian universities.
Jalil & Mohd Ismath	2022	Students' Attitudes Towards Gamification in Learning Arabic Cohesive Devices	Survey assessing students' engagement and mastery of Arabic cohesive devices through gamified learning strategies.
Shortt M	2023	Gamification in Mobile-Assisted Language Learning: A Systematic Review	Systematic review examining the role of gamified mobile applications, like Duolingo, in language acquisition and learner motivation.
QN Naveed et al.	2023	Mobile Learning in Higher Education: A Systematic Literature Review	Systematic literature review of mobile learning in education, with a focus on Scopus and Web of Science databases.
Almelhes SA	2024	Gamification for Teaching the Arabic Language to Non-Native Speakers: A Systematic Review	Systematic review analyzing the impact of gamification on motivation and achievement in Arabic language learning among non-native speakers.
Khalilullah et al.	2024	Mobile Learning of Islamic Studies	Framework development and implementation of mobile tools for Quranic memorization and Arabic learning.
Yusof et al.	2022	The Development of an Integrated Exercise Module for Basic Arabic Language through Mobile Learning Application	Need analysis and module design for Arabic learning through mobile platforms.
WAA bin Wan Daud	2024	Analysis of M-Learning Requirements in Arabic Language Learning	Quantitative study using questionnaires to analyze M-learning requirements for Arabic education.

There are a number of recent studies involving mobile-assisted learning in Arabic education that have different approaches as shown in the table provided. For instance Abdul Ghani et al. (2022) explores the use of mobile digital games to enhance the learning of Arabic language among students by

focusing on the motivation as well as performance of khoj games, while Yamben et al. (2020) uses a case study approach. Similar studies such as Yahaya et al. (2019) and Wan Daud et al. (2022) look at the use of mobile devices such as smart phones in implementing language learning through social media platforms such as WhatsApp for learning Arabic language for students mainly in Malaysia. In contrast, Almelhes (2024) and Shortt (2023) conducted systematic reviews examining the literature on mobile language learning focusing on rate of learner engagement through immersion with gamification. Further Jalil and Mohd Ismath (2022) investigated students' perceptions of gamification in learning the Arabic cohesive devices by means of surveys to understand how students' levels of engagement vary. These studies in combination show heightened occurrences of gamification and mobile devices use in the teaching of Arabic language. Effects have been instruments used to gauge student perceptions in varied methods deployed in such studies, foring concluding remarks. WAA bin Wan Daud (2021) assessed mobile applications on learning Arabic by looking at psychology and geographical cultures within male and female populations. Khalilullah et al. (2024) proposed a design to facilitate learning through mobile devices, in Qura'n memorization and exposure to Arabic language. Similarly, a study by Yusof et al. (2022) carried out needs assessment, the purpose of which was the creation of an integrated exercise module for basic Arab language acquisition supported with mobile technology. QN Naveed and it was team (2023) systematically analysed literature on mobile education for university students and made recommendations on the growth of blende.

2.4 Self-Determination Theory (SDT)

Within the framework of lean management, SDT relates to the satisfaction of needs such as autonomy, competence, and relatedness within the stakeholders of educational leaders. Involvement in lean practices such as team-based problem solving provides teachers with autonomy which increases motivation and engagement, which in turn can enhance education for sustainability by continuous improvement (Almelhes SA, 2024).

2.5 Constructivist Learning Theory

At the heart of Lean management are iterations which are active improvement processes that take a course for some time before making any stopped changes of completing any plan-set of work, also known as PDCA cycles. In Education, these founded approaches encourage learner-centered environments that do not exist in isolation with any goals, but where the goals of education for sustainability are incorporated into the practical learning experience (Ismail et al., 2023).

2.6 Behaviorist Learning Theory

Lean management employs a system of rewards, such as praise, for achieving lean objectives. These types of rewards can, in the same manner, promote the desired behaviors in the sustainable practices within education, thus pushing the teachers and learners towards doing things in an eco-friendly manner (Shortt et al., 2021).

2.7 Cognitive Load Theory

Lean management enhances processes by cutting down on waste and making activities more efficient. This is consistent with sustainability in education by making sure that tasks are achievable, therefore minimizing cognitive burden and promoting attention to sustainable objectives (Almelhes, 2024).

3. CONCEPTUAL FRAMEWORK

A conceptual framework can be described as an organization of key variables of a study and the relations therein. This is done in a flexible manner allowing for an illustration of how the variables

are anticipated to relate in practice. For example, considering gamification of learning, aspects like learner engagement, game components, and learning results relate to each other. Theories like constructivism and self-determination theory, for example, help to elaborate on how game-like elements (for instance rewards and challenges) spur intrinsic motivation and promote active learning. In this way, simply by enumerating those components and their natures, structure helps in coordination of research objectives and the hypotheses with literature and therefore facilitates the investigation process and systematizes the results (Adom et al., 2018).

4. METHODOLOGY

4.1 Research Design, Population, Sample Size, and Sampling Technique

The methodological framework of this research is descriptive, since no manipulation will be done on any of the variables, yet researchers will merely explore the relationships. The focus of the study will be on Educators and Students who practice mobile gamification in learning the Arabic Language. Purposive sampling technique will be used to reach of those participants who have at least used any gamified learning platform. The sample size of 150 participants is determined based on Cochran's formula to ensure adequacy of representation and statistical power for its generalizability.

4.2 Data Collection

Questionnaires aimed at measuring motivation, engagement, and language competence will be used for data collection in line with the study. The questionnaire will incorporate Likert-scale items to evaluate with the effect of gamified learning approaches in learning Arabic language. The data will be collected by means of both the online and face-to-face methods in order to enhance response rates.

4.3 Data Analysis

Quantitative information will be examined in SPSS software with the purpose of undertaking statistical tests for determining the relationship or interaction between causes and effects in the gamification elements and learning outcomes (Jilcha Sileyew, 2020).

4.4 Variables and Measurement

The crucial dimensions are engagement, motivation, and learning outcomes. The former will be assessed using proven measures such as the Intrinsic Motivation Inventory (IMI), while language proficiency will be gauged by means of standardized testing and self-reporting.

4.5 Reliability and Validity of Questionnaires

The present study seeks to ensure reliability by employing Cronbach's Alpha statistics to assess the internal consistency of the survey instrument with a targeted threshold of alpha coefficient value above 0.7. Moreover, construct validity will be assessed by conducting factor analysis in order to assess whether the questionnaire actually measures the concept it is intended to measure (HamedTaherdoost, 2021).

5. DISCUSSION

The analysis of the data will employ both univariate and multivariate statistics' descriptive and inferential methods respectively. The survey which used a Likert -scale was created to cover three aspects; motivation, engagement and Arabic proficiency.

Table 2: Section 1 (Motivation)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 I feel motivated to learn Arabic when using gamified learning apps.	5% (7)	12% (18)	22% (33)	40% (60)	21% (32)
2 Gamified learning makes me more interested in mastering Arabic grammar.	6% (9)	10% (15)	25% (37)	38% (57)	21% (32)
3 The rewards in the learning game encourage me to continue studying Arabic.	7% (10)	14% (21)	20% (30)	39% (58)	20% (30)

The findings show that a significant majority of the respondents, or 61% (Agree and Strongly Agree), are eager to learn the Arabic language when the process is via gamified applications, which illustrates the power of the application of gambits in improving the learners zeal. These findings correspond to the evidence on the effects of gamification on the engagement level of the learners, for instance, being able to give them rewards and having an activity that makes them stay interested (Mustafa et al., 2023). 59% of the participants (Agree and Strongly Agree) share the view that interactive learning encourages them to learn more about Arabic grammar. It is seen that using such gamified methods as competences, challenges with integration of feedback loop with students, increases learners' attention towards learning the complication subject of grammar (Aldur & Perez, 2023). Next, out of all the participants 59% declared that in-game rewards encourage them practice Arabic more. This means that the continuous engagement of the learners is partially reliant on the gamification features of the system, which include rewards (badges, points etc) that satisfy the learners instantly. In all instructional situations, the effects of these reward structures are clear in terms of an increase in motivation and sustained effort over time (Torrado Cespon & Diaz Lage, 2022).

Table 3: Section 2 (Engagement)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 I actively participate in learning activities through the gamified platform.	6% (9)	10% (15)	22% (33)	40% (60)	22% (33)
2 I spend more time learning Arabic with gamified apps compared to traditional methods.	4% (6)	12% (18)	25% (37)	38% (57)	21% (32)
3 Gamified learning increases my interaction with peers during language lessons.	5% (8)	11% (16)	28% (42)	37% (56)	19% (28)

A considerable proportion (62%) of the individuals under study assert that they participate in the learning tasks on the gamified platform. This is consistent with recent research on the impact of gamification on participation and engagement of individuals through immersion to learn (Smiderle et al., 2020). About 59% of the individuals state that they enjoy learning over the gamification of the platform rather than the conventional way. This is consistent with studies which indicate that gamified spaces extend users' time of engagement as they are more interactive (Alsadoon et al., 2022). Next, 56% of the respondents agree that gaming elements added to learning materials create opportunities for students to interact with each other more. Some studies show that competitiveness and cooperation within a gamified system enhance the interaction among the students (Chung & Pan, 2023).

Table 4: Section 1 (Language Proficiency)

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 I feel that my Arabic vocabulary has improved through gamified learning.	4% (6)	10% (15)	21% (32)	42% (63)	23% (34)
2 My ability to form correct sentences in Arabic has improved with the help of games.	5% (7)	12% (18)	22% (33)	39% (59)	22% (33)
3 The gamified lessons have increased my understanding of Arabic grammar rules.	6% (9)	11% (17)	19% (29)	41% (61)	23% (34)

Out of all participants polled, 65% agree or strongly agree that they have enhanced their Arabic vocabulary thanks to the use of gamification in learning. This is consistent with the literature which reports that gamified websites are effective in improving learners' vocabulary knowledge through meaningful interactions (Almelhes, 2024). An overwhelming 61% of respondents believe that they have been able to use Arabic more properly, thanks to the introduction of gaming elements in teaching. Game play and real-world interactive activities support effective grammar usage and the organization of sentences (Fatima Zoghoul, 2020). Approximately 64% of subjects expressed a higher comprehension of Arabic morphology through game-based activities. The process of learning grammar in organizations includes the element of gaming which is sequential and progressive (Puasa et al, 2023).

6. CONCLUSION

This research examined how effective the use of gamified learning platforms in the Arabic language impacts non-native speakers of the Arabic language. It shows that a considerable number of the participants improved their vocabulary learning by (65%), sentence construction by (61%) and grammar comprehension by (64%) thanks to the use of the gamified approach. These results lend credence to the idea that gamification is advantageous in enhancing learner engagement, interactivity and motivation in any language learning environment.

The findings of this study are in agreement with contemporary concepts concerning the use of gamification in education, especially those focused on the role of motivation and self-directed learning. Game elements including incentives, levels, and feedback systems are encouraging an environment conducive to active learning. This work adds to the increasing literature on the applicability of language games for language learning, especially under the tenets of digital game based learning. For instance, teachers and developers of curricula may utilize the gamified platforms as a means of enhancing learners' interest and involvement in learning Arabic. The results indicate how the usage of gamification as part of teaching approaches can greatly improve the vocabulary and grammar skills of the learners. The advent of mobile applications and incorporation of digital games has provided an effective yet easy-to-implement approach for teaching the Arabic language, particularly to students who are not native speakers of the language. This research has a few restrictions that should be taken into account. Firstly, although the sample size is appropriate for the present findings, it may restrict the potential of the results to be applied to wider populations. Secondly, the study was based on participants' self-reporting, which could lead to bias in the thinking.

Moreover, the research emphasized on vocabulary and grammar only and excluded any other elements that make up language skills, for instance, speaking and listening.

As for the advancement of the research, future research could include additional dimensions of language proficiency including factors like oral fluency and listening comprehension, in a study of gamified learning. Additionally, a longitudinal study may shed more light on the effects of long-term immersion in the gamified platforms on the process of language learning lags. Exploring and examining the effectiveness of research into gamified learning in different populations and cultural settings can also help understand the scope of its usage better.

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