

A Qualitative Analysis of WhatsApp Integration on Speaking Vocabulary Development

Raja Muhammad Ishtiaq Khan^{1*}, Alaa Alahmadi², Noor Raha Mohd Radzuan³, Muhammad Shahbaz⁴

¹Department of English, College of Education, Majmaah University, Kingdom of Saudi Arabia

²Department of English, College of Science and Arts, King Abdulaziz University, Rabigh, Saudi Arabia

³Centre for Modern Languages, Universiti Malaysia Pahang, Kuantan, Pahang, Malaysia.

⁴Muhammad Shahbaz Department of English, GC Women University Sialkot, Sialkot, Pakistan

*) Corresponding Author

Email: r.khan@mu.edu.sa

DOI: 10.18326/rgt.v17i1.146-163

Submission Track:

Received: 10-02-2024

Final Revision: 09-05-2024

Available Online: 06-06-2024

Copyright © 2024 Authors



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

Abstract

Mobile device use is common in language learning development, and it has remarkable effects on improved engagement, accessibility, interaction, and learners' autonomy. The present study is a qualitative attempt to determine the learners' attitudes towards integrating m-learning to develop speaking vocabulary.

The study used a qualitative research method to analyze the data. The study respondents were 25 learners of English as a foreign language (EFL). Semi-structured interviews were used to gather the learners' responses. The findings suggest that the learners endorsed m-learning apps to develop vocabulary learning for speaking performance. More specifically, the data analysis exhibited that WhatsApp was valuable in retaining vocabulary for spoken proficiency.

Keywords: m-learning, vocabulary, speaking performance, attitudes

INTRODUCTION

Many educational institutions are adopting new technologies in the traditional classroom environment, including computers, smart boards, projectors, and digital podiums, to increase the use of technology in education in general and English as a Second Language (ESL) and English as a Foreign Language (EFL) learning (AlKhunzain & Khan, 2021; Khan et al., 2018; Khan et al., 2020; Shahbaz & Khan, 2017). Mobile phones, tablets, laptops, and other information technologies are widely used in language learning (Papadakis & Kalogiannakis, 2020). In education, the invention of wireless technology and the advancement of mobile technology have acquired much traction. Connectivity, social involvement, context-sensitivity, portability, and originality are all aspects that mobile devices have that desktop PCs do not (Behera, 2013; Cavus et al., 2020; Khan et al., 2022; Papadakis, 2018; Sarrab et al., 2012). Mobile phones make learning portable, real-time, and cooperative. These mobile technologies have changed our learning and broadened our perspectives (Khan et al., 2019; Kukulska-Hulme & Viberg, 2018; Matzavela & Alepis, 2021). As a result of these advances and the growing interest in mobile-assisted language learning (MALL), numerous research studies have been conducted to investigate the potential effects of mobile technologies on language learning. Kukulska-Hulme (2010) asserted that mobile technologies provide learners with new tools to communicate and collaborate by offering lectures, tutorials, and activities following

the lesson, reinforcing learners during the language learning process. After classes, students who used SMS text messaging enhanced their vocabulary knowledge by acquiring more words (Kim & Kizildag, 2011; Esawe & Esawe, 2024). Students gave favorable feedback on utilizing SMS text messaging to learn new vocabulary items (Khan et al., 2019; Alharthi, 2024). Interactivity in employing new terms explained this improvement and good feedback. These findings suggest that MALL can benefit all learners because practically every L2 student now possesses a mobile device. As a result, mobile devices may provide L2 learners with equitable possibilities. With these considerations in mind, it is reasonable to conclude that mobile activities should be enhanced to include four language skills: grammar, pronunciation, and, most importantly, vocabulary learning, which is a key to learning a foreign language (Golonka et al., 2014; El et al., 2024).

The increased use and availability of technology-based tools, mobile phones, and the general use of wireless devices causes a shift in technological viewpoint. These technologies improve student retention and achievement (Ali et al., 2022; Kukulska-Hulme et al., 2005). Technology plays a more significant role in developing language learning, and now it is being implemented in many backgrounds (Khan et al., 2019; Khan et al., 2020). Mobile learning entails learning anywhere and anytime, and there is little research on the subject (Stockwell, 2010; Metruk, 2024). This study delves into it because Mobile learning is an essential part of the foreign language learning process.

Many studies suggest that learners, whether studying a second or foreign language, have positive attitudes regarding using mobile technologies in the language learning process. For example, Hockly (2013) mentioned a British Council study on a bigger scale of app-based mobile learning projects in underdeveloped nations like Sudan and China. In this regard, Chang, Chen, and Hsu (2011) investigated the intentions and attitudes towards using mobile technologies for language learning, which is not separate from CALL and is considered a component of MALL. The impact of technology-

assisted language learning on EFL learners' vocabulary acquisition was discovered that vocabulary learning activities presented via PCs in language labs and receiving vocabulary cards via mobile phones are both practical in vocabulary acquisition (Khan et al., 2020; Taj et al., 2017).

Students' perceptions of mobile-assisted feedback on oral production were investigated by Chiang et al. (2016). According to the study, learners who received mobile-assisted feedback had more confidence in speaking English and had more positive attitudes. Similarly, Estarki and Bazyar (2016) investigated the impact of MALL on pre-intermediate EFL learners' writing performance, finding that MALL substantially affected students' academic performance when they received academic writing instruction via technology. (Noriega, 2016) investigated integrating mobile devices into traditional English classes using a genre approach to writing skills. The study's findings suggested that mobile technology can assist a genre approach to increase writing skills and abilities. In addition to the most recent studies, the literature shows the favorable impacts of MALL on learners' L2 learning acquisition and proficiency. Vocabulary knowledge is crucial for language learning and plays a more significant role in developing speaking skills (Khan et al., 2018; Khan & Kumar, 2022; Peng & Xu, 2023).

The use of vocabulary is vital in the review of literature. Most of the studies focus on vocabulary for reading and writing skill development, and there needs to be more on using M-learning to develop the vocabulary for speaking proficiency. There have been several theories about using mobile devices to aid language learning. Dual Coding Theory (DCT) (Paivio, 1990) and the Theory of Multimedia Learning (TML) are two of these theories that are relevant to this research (Mayer et al., 2001; Yan et al., 2024). While the former theory proposes a pictorial-verbal system for knowledge construction, in which a verbal system deals directly with language and a nonverbal (pictorial) design deals with nonlinguistic objects, elements, and events, the latter theory proposes that information,

both verbal and visual, is successively accessed in short-term memory. The data is then processed in working memory using verbal and visual representations to create a holistic form that leads to a full grasp of the material. The literature needs to include studies on the aspects of vocabulary learning for speaking performance. Therefore, the present study aims to determine the learners' attitudes towards using the WhatsApp application to learn vocabulary for speaking proficiency.

THE PRESENT STUDY

The present study aims to determine EFL learners' voices on the use of WhatsApp in the development of spoken vocabulary. This study was part of an experimental study where participants could practice eight words daily using WhatsApp vocabulary cards. Moreover, they had to produce an example sentence as it was created on the vocabulary card. Finally, they were required to use these words in their speaking practice the next day in the class. In addition to the experiment aspect, it was crucial to elucidate the learner's Experience with using vocabulary cards through WhatsApp to enhance their spoken abilities. The present study used the term M-learning, which is part of MALL. MALL includes the use of the application as a whole, and the WhatsApp application helps learners gauge or develop learning performance. Examples of MALL applications are Fluent U, Hello English, Memorise, and Hello Talk. The use of smartphone applications for the delivery of instructional material is generally referred to as M-learning, as we have used in the present study.

RESEARCH METHOD

The study employed a qualitative research design to answer the research questions. The qualitative research method generates a dense (deep) description of participants' thoughts, ideas, and experiences and interprets their actions (Creswell, 2009). Qualitative research results establish a precise and profound association between information processing and success in

language testing (Tetnowski & Damico, 2001). Qualitative techniques are used to get deeper insights into challenges linked to planning, administering, and interpreting language assessments (Mohajan, 2018). To this end, semi-structured interviews were used to attain the data. The researcher devised the interview protocol, which two assistant professors in the field reviewed. For the semi-structured interview, ten open-ended questions were chosen at first. Seven questions were used in the present study after merging two questions, and one question was omitted for the irrelevance of the question with the study material, keeping in view the expert's comments. These seven questions were the data collection tools in the present study during the interview process.

PARTICIPANTS AND SAMPLING

The study participants were Saudi EFL learners in the department of common first years. The study is part of a MALL experiment where 60 learners were taught through WhatsApp. A total number of 25 learners participated in the study. The researcher used non-probability sampling for qualitative data sampling and the participants whose engagement was above ninety percent in the WhatsApp group and in speaking practice were marked as the active participants in the present study. Finally, their consent to participate in the interview process was also considered. A detailed written consent form was given to the participants, and the researcher explained the interview process. All the participants had read and returned the signed consent form to the researcher. The researcher can choose handy and willing participants to engage in the interview process using non-probability sampling (Creswell & Poth, 2016). The participants were selected on a volunteer basis based on their WhatsApp group conversation during the intervention. This research adopted Creswell's (2012) proposal that the qualitative sample size should be used when participants repeated the same experiences and no new thoughts emerged. The following figure 1 displays the sampling of the study.

Total number of participants in the experimental group	60
Number of participants for the qualitative data	25

Figure 1. sampling of the interview data

A consent form was obtained to participate in the interview process, and the interview method was explained to them. Creswell gives the steps (2012) guided the analysis of the interview data procedure: According to Creswell (2012), diverse data sources are necessary for a study to triangulate conclusions.

After listening to the recorded transcripts twice, they were transcribed.

- ii. The transcribed information was read twice.
- iii. After reading the learning replies, the data was coded by segmenting and labeling the transcribed data.
- iv. Related codes were used to categorize themes and subthemes.
- v. Thematic connections were made.
- vi. Theme interpretation was built.

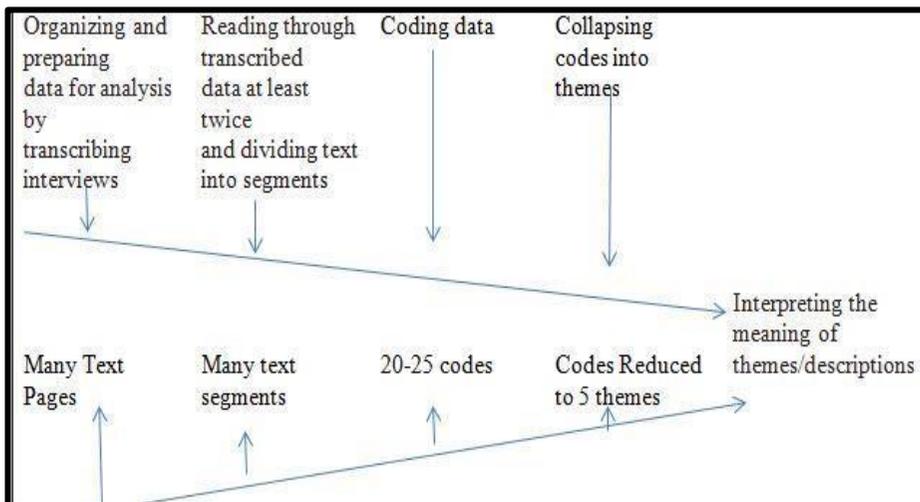


Figure 2. Steps involved in interview data adopted from Creswell (2012, p.244)

FINDINGS

The following themes and subthemes emerged after transcribing and reading the participant's responses to the semi-structured interview questions about WhatsApp usage.

Table 1. Themes and Subthemes

Serial Number	Themes	Subthemes
1	Vocabulary creates problems	Lack of practice Use of English language out of the classroom Vocabulary usage
2	WhatsApp usage is an interesting experience	Pleasant idea Ease of use Confidence building Source of interaction
3	Effective for developing vocabulary	Faster learning Developed vocabulary and speaking Good idea of practice vocabulary in advance Self and peer correction
4	Developed self-confidence and speaking motivation	Encouragin The ability to revise Overcome speaking hesitation

Vocabulary Creates Problems

Vocabulary is an essential aspect of language learning, mainly with regards to speaking competence. In response to questions 1 and 2 of the semi-structured interview, most of the experimental group's students stated that a lack of vocabulary was the primary cause of their incapacity to talk both within and outside the classroom. The participants said they read many vocabulary items to improve their language learning skills. Almost every section of the book begins with vocabulary exercises and definitions.

A large percentage of the students admitted to doing the vocabulary activities in the classroom. They also considered the newly presented vocabulary when answering vocabulary-related questions on the exam. In the social setting, there was a disconnect

between word recognition and its associated meaning. The learners' responses during the interview sessions reflected this.

(EL1): "Well, plenty of vocabulary is available in our coursebook, and a lot of exercises are there for discussion, but what we do is that we only try to fill in the blanks, and we never try to use these words in our conversation.

(EL 3): "Yes, the meaning in vocabulary is difficult, and for this reason, I cannot use these words. Grammar and new words are problems for me, especially in public speaking".

(EL17): "In my opinion, we discuss vocabulary in every skill, and in both my books, I have plenty of vocabulary, but I think I do not use words in my speaking."

After they departed the formal classroom, some students mentioned a need for speaking chances for vocabulary utilization. This made it impossible for them to employ the words they had acquired in the classroom to shape their speaking performance after the official class had concluded. When the teacher was absent, most students said they needed to communicate in English. Even if some learners desired to talk, they could not find a partner to practice their language abilities. Learners articulated this as follows:

(EL20): "Well, I think that some words are easy when I see them in the text, but as far as speaking is concerned, I never thought about using them."

(EL14): "I do not think that I ever used this vocabulary during my speaking in or out of the classroom, and even I never realized that this could be helpful for my speaking."

Whatsapp Usage Is an Interesting Experience

Using WhatsApp from a learning perspective is a substantial experience for all types of learners. The analysis of learner perceptions of WhatsApp activities revealed that they favored integrating WhatsApp into the classroom. They also believe WhatsApp has the potential to aid in the advancement of language learning performance. The findings demonstrated that English

language learners preferred to use WhatsApp for vocabulary study and that its use had a considerable favorable impact on language proficiency. WhatsApp was viewed as a valuable tool for learning English by respondents. During the interview sessions, many students mentioned WhatsApp as a helpful tool for language study.

(EL 3): "In my opinion, the use of WhatsApp application is one of the modern ways of learning, which gave me a new insight and access to learning and practicing new words anytime, anywhere."

(EL4): "I think that discussion with classmates in the group and speaking practice and discussion in the group activities were interesting aspects of the group."

(EL7): "It was a good idea. Working in a group and with classmates is the interesting aspect of using the WhatsApp application".

Effective for Developing Vocabulary

According to the learners' comments, learning vocabulary through WhatsApp was a successful means of developing vocabulary. It also gives the students more confidence in participating in speaking discussions. Learning a language ahead of time can help students participate more effectively in class. They felt accomplished after receiving the vocabulary cards before the formal class. As a result, they passionately participated in the speaking debates. As a result, all participants agreed that the program helped them improve their vocabulary.

(EL 3): "Exposure to new words in advance helped me a lot in participation in the WhatsApp discussion and speaking practice the next day in the class."

(EL9): "I think that one advantage of this activity is that when I received the vocabulary one day in advance, my ability to revise this vocabulary in the book exercises, but before doing this, the speaking discussion is the most important aspect of the WhatsApp group discussion."

(EL18): "I think that all of the features are very interesting for language learning, but once I got to know the words before coming to the class, they were perfect for me. I produced many advantages in learning other aspects of language learning."

Developed Self-Confidence and Speaking Motivation

Self-confidence and motivation play a crucial role in the development of language learning. For shy students, WhatsApp engagement is a great way to meet new people. These types of students became dynamic and active participants in the classroom due to the WhatsApp application's interaction. According to this study, the confidence they gained from using WhatsApp increased their debate abilities in the classroom discourse during the treatment session. Many students were at ease with the WhatsApp integration. This type of conversation helped them gain confidence in the language-learning process. Most students reported that acquiring vocabulary and applying the newly introduced words in their discussions had a beneficial impact on their confidence. A closer examination of the students' comments revealed that the WhatsApp app produced an environment where they felt confident and at ease throughout group discussions and speaking exercises.

(EL2): "It allowed me to interact with each other, and we learned from our fellows by correcting and looking at the sentences. We had also improved our confidence in participating in the discussion as before this, we never tried to use the learned words in our conversation".

(EL 15): "The most motivating aspect was when I wanted to try and when I wrote sentences in the group, and looking at the responses encouraged me to take part in the group activities. Moreover, yes, it was the first time I practiced my vocabulary. I would say that discussion allowed me to increase my vocabulary".

(EL6): "It gave me confidence while participating in the classroom discussion. This is just because of the new vocabulary words I have learned".

DISCUSSION AND IMPLICATIONS

The majority of students were enthusiastic about incorporating WhatsApp into their formal classes. They said it helped them improve their learning performance by allowing them to participate in WhatsApp group chats and practice language in classroom conversations. Additionally, the vocabulary illustrated through picture cards in the WhatsApp group, including translations of the words, example sentences, and meaning, aided learners in their vocabulary recall.

Through the app platform, learners demonstrated a positive understanding of using vocabulary cards to foster their vocabulary. Vocabulary application has helped in the retention of vocabulary, which resulted in better proficiency in their speaking skill. The learners' replies in the semi-structured interviews revealed an excellent attitude about utilizing WhatsApp for vocabulary learning. Using such a smartphone application was a novel and enjoyable experience in vocabulary development. It gave opportunities for vocabulary acquisition when these words were used in conversation. In a nutshell, the learners' reactions to the integration of WhatsApp activities were largely positive. Almost all of them stated that WhatsApp activities had aided them in familiarizing themselves with new terminology before traditional class and classroom engagement. Furthermore, WhatsApp was found to be suitable, practical, a fun way to learn, convenient, and a valuable tool for cooperation with students in and outside of the traditional classroom in the study.

Saudi EFL students, on the whole, had much fear when it came to speaking English in class because the learners have limited vocabulary, which causes severe concerns in using suitable vocabulary in their speaking. These are related to a lack of English language practice, concern about making an unfavorable impression, and a fear of using the wrong words (Alrabai, 2014). WhatsApp's inclusion aided them in gaining confidence and feeling less worried, increasing their interest in acquiring vocabulary and using these words in their discussions. Teachers should use

originality and vibrancy when teaching language skills to keep students engaged in the classroom. WhatsApp could be an excellent approach to get students more involved in learning.

The study results align with the studies showing that learners, whether studying a second or foreign language, have positive attitudes regarding using mobile technologies in language learning. For instance, Hockly (2013) mentioned that a British Council study on a bigger scale of app-based mobile learning projects in underdeveloped nations like Sudan and China exhibited positive attitudes towards integrating M-learning apps to develop their vocabulary. Moreover, the results also confirmed Chang and Hsu (2011), who investigated the intentions and attitudes toward using mobile phones for language learning, which is not separate from CALL and is considered a MALL component. Taj, Ali, Sipra, and Ahmad (2017) investigated the impact of technology-assisted language learning on EFL learners' vocabulary acquisition. He discovered that vocabulary learning activities presented via PCs in language labs and receiving vocabulary cards via mobile phones effectively acquire vocabulary.

Students' perceptions of mobile-assisted feedback on oral production were also in line with the study conducted by Xu et al. (2017), where learners who received mobile-assisted feedback had more confidence in speaking English and had more positive feedback attitudes. The present study confirms the finding of (Khan et al., 2018) as the study also affirmed that vocabulary knowledge is crucial for language learning. It plays a more significant role in the development of speaking skills.

CONCLUSION AND RECOMMENDATIONS

The current study concentrated on the voices of EFL students using WhatsApp integration as an additional vocabulary-learning aid for speaking abilities. The study found that participants held positive views about using WhatsApp incorporation to enhance their ability to use and retain their vocabulary for spoken proficiency. The findings revealed positive perceptions and attitudes towards using

WhatsApp when acquiring EFL vocabulary. Using WhatsApp has improved the vocabulary acquisition of Saudi English as EFL learners. Most respondents recognized that the integration of WhatsApp motivated them to acquire new vocabulary items.

Furthermore, they reported that WhatsApp has enhanced their proficiency in language acquisition, specifically their ability to engage in meaningful communication. Similarly, the results also demonstrated that incorporating WhatsApp motivated them to learn and practice EFL vocabulary actively. Because of this, they were able to devote more time to studying, which improved their capacity to communicate with one another in class. This asserts that the utilization of WhatsApp offers an engaging instructional environment in enhancing EFL vocabulary learning and other aspects of language learning.

Overall, using the M-learning app could be handy in language learning, particularly vocabulary development. The use of vocabulary through WhatsApp can be helpful in the retention of vocabulary, which can be used for speaking performance. WhatsApp can also be beneficial for language instruction in situations like COVID-19 to deliver the learning material. The study used only qualitative methods, and further studies are required to use a mixed-method research design. The study used semi-structured interviews; a questionnaire with interviews may exhibit more extensive results. During covid-19-like circumstances, the study can be conducted to use the m-learning app to develop other language skills.

REFERENCES

- Alharthi, S. M. (2024). Siri as an interactive pronunciation coach: its impact on EFL learners. *Cogent Education*, 11(1), 2304245.
- AlKhunzain, A., & Khan, R. (2021). The use of M-Learning: A perspective of learners' perceptions on M-Blackboard Learn.
- Ali, A., Khan, R. M. I., & Al-Awadhi, A. A. (2022). The adoption of mobile learning among university students. *International Journal of Computer Science and Network Security*, 531-538.

- Behera, S. K. (2013). E-and M-Learning: A comparative study. *International Journal on New Trends in Education and Their Implications*, 4(3), 65-78.
- Cavus, N., Shukshina, L., Chernova, O., Telezhko, I., Ishmuradova, A., & Zakharova, V. (2020). Perceptions of Foreign Language Teachers for M-Learning. *International Journal of Emerging Technologies in Learning (iJET)*, 15(23), 95-107.
- Chang, C.-S., Chen, T.-S., & Hsu, W.-H. (2011). The study on integrating WebQuest with mobile learning for environmental education. *Computers & Education*, 57(1), 1228-1239.
- Chiang, F. K., Zhu, G., Wang, Q., Cui, Z., Cai, S., & Yu, S. (2016). Research and trends in mobile learning from 1976 to 2013: A content analysis of patents in selected databases. *British Journal of Educational Technology*, 47(6), 1006-1019.
- Creswell, J. (2012). *Planning, Conducting and Evaluating Quantitative and Qualitative Research*: Pearson Education. <http://basu.nahad.ir/uploads/creswell.pdf>.
- Creswell, J. W. (2009). *Mapping the field of mixed methods research*: SAGE publications Sage CA: Los Angeles, CA.
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*: Sage publications.
- El Morabit, S., & Manegre, M. (2024). Comparing student-centered learning in a video-based app to the grammar-translation method in an EFL class. *Computer Assisted Language Learning*, 1-19.
- Estarki, N. K., & Bazyar, M. (2016). The effect of MALL on pre-intermediate EFL learners' writing performance. *European Online Journal of Natural and Social Sciences*, 5(2), 406.
- Esawe, A. T., Esawe, K. T., & Esawe, N. T. (2024). Evaluating schoolteachers' acceptance of m-learning during Covid-19 using the Technology Acceptance Model: the moderating role of gender and age. *SN Social Sciences*, 4(2), 43.
- Golonka, E. M., Bowles, A. R., Frank, V. M., Richardson, D. L., & Freynik, S. (2014). *Technologies for foreign language learning*:

- A review of technology types and their effectiveness. *Computer assisted language learning*, 27(1), 70-105.
- Hockly, N. (2013). Mobile learning. *Elt Journal*, 67(1), 80-84.
- Khan, I., Ibrahim, A. H., Kassim, A., & Khan, R. M. I. (2019). Evaluating the efficacy of active reading software in enhancing EFL learners' reading comprehension skills. *International Journal of Scientific & Technology Research*, 8(12), 1861-1869.
- Khan, I., Ibrahim, A. H., Kassim, A., & Khan, R. M. I. (2020). Exploring The EFI Learners' Attitudes Towards the Integration of Active Reading Software in Learning Reading Comprehension at Tertiary Level. *MIER Journal of Educational Studies Trends & Practices*, 248-266.
- Khan, R., Radzuan, N., Alkhunaizan, A., Mustafa, G., & Khan, I. (2019). The efficacy of MALL instruction in business English learning.
- Khan, R. M. I., Mustafa, G., & Awan, A. A. (2020) Learners' Attitudes on the Infusion of Cooperative Learning in Education.
- Khan, R. M. I., Radzuan, N. R. M., Shahbaz, M., & Ibrahim, A. H. (2018). EFL Instructors' Perceptions on the Integration and Implementation of MALL in EFL Classes. *International Journal of Language Education and Applied Linguistics*, 39-50.
- Khan, R. M. I., Shahbaz, M., Kumar, T., & Khan, I. (2020). Investigating Reading Challenges Faced by EFL Learners at Elementary Level. *Register Journal*, 13(2), 277-292.
- Khan, R. M. I., Ali, A., & Alouraini, A. (2022). Mobile learning in education: Inevitable substitute during COVID-19 Era. *SAGE Open*, 12(4), 21582440221132503.
- Khan, R. M. I., & Kumar, T. (2022). Interaction Analysis of WhatsApp Application Integration in M-Learning. *Webology*, 19(1), 795-806.
- Kim, J. S., & Kizildag, M. (2011). M-learning: next generation hotel training system. *Journal of Hospitality and Tourism Technology*.
- Kukulska-Hulme, A., Evans, D., & Traxler, J. (2005). Landscape study in wireless and mobile learning in the post-16 sector.

- Kukulska-Hulme, A. (2010). *Mobile learning as a catalyst for change*: Taylor & Francis.
- Kukulska-Hulme, A., & Viberg, O. (2018). Mobile collaborative language learning: State of the art. *British Journal of Educational Technology*, 49(2), 207-218.
- Matzavela, V., & Alepis, E. (2021). M-learning in the COVID-19 era: physical vs digital class. *Education and Information Technologies*, 26(6), 7183-7203.
- Metruk, R. (2024). Mobile-assisted language learning and pronunciation instruction: A systematic literature review. *Education and Information Technologies*, 1-28.
- Mayer, R. E., Heiser, J., & Lonn, S. (2001). Cognitive constraints on multimedia learning: When presenting more material results in less understanding. *Journal of educational psychology*, 93(1), 187.
- Mohajan, H. K. (2018). Qualitative research methodology in social sciences and related subjects. *Journal of Economic Development, Environment and People*, 7(1), 23-48.
- Noriega, H. S. R. (2016). Mobile learning to improve writing in ESL teaching. *Teflin Journal*, 27(2), 182-202.
- Paivio, A. (1990). *Mental representations: A dual coding approach*: Oxford University Press.
- Papadakis, S. (2018). Evaluating pre-service teachers' acceptance of mobile devices with regards to their age and gender: a case study in Greece. *International Journal of Mobile Learning and Organisation*, 12(4), 336-352.
- Papadakis, S., & Kalogiannakis, M. (2020). A research synthesis of the real value of self-proclaimed mobile educational applications for young children. *Mobile learning applications in early childhood education*, 1-19.
- Peng, M. Y. P., Xu, Y., & Xu, C. (2023). Enhancing students' English language learning via M-learning: Integrating technology acceptance model and SOR model. *Heliyon*, 9(2).

- Sarrab, M., Elgamel, L., & Aldabbas, H. (2012). Mobile learning (m-learning) and educational environments. *International journal of distributed and parallel systems*, 3(4), 31.
- Shahbaz, M., & Khan, R. M. I. (2017). Use of mobile immersion in foreign language teaching to enhance target language vocabulary learning. *MIER Journal of Educational Studies Trends & Practices*, 66-82.
- Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of platform. *Language learning & technology*, 14(2), 95-110.
- Taj, I. H., Ali, F., Sipra, M. A., & Ahmad, W. (2017). Effect of technology enhanced language learning on EFL reading comprehension at tertiary level.
- Tetnowski, J. A., & Damico, J. S. (2001). A demonstration of the advantages of qualitative methodologies in stuttering research. *Journal of Fluency Disorders*, 26(1), 17-42.
- Yan, L., Sha, L., Zhao, L., Li, Y., Martinez-Maldonado, R., Chen, G., ... & Gašević, D. (2024). Practical and ethical challenges of large language models in education: A systematic scoping review. *British Journal of Educational Technology*, 55(1), 90-112.