ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

MOBILE-ASSISTED LANGUAGE LEARNING (MALL) AND VOCABULARY ACQUISITION AMONG ESL LEARNERS

Dr. Zahid Ali[1]
Visiting Faculty, Department of Education &Social Sciences, Al-Kawthar University Karachi.
Email: drzarajput@gmail.com
Dr. Rizwan Azam[2]
Assistant Professor GDBC Nishtar Road Karachi, Pakistan.
Email: professorrizwanazam@gmail.com
Dr. Syed Gul Muhammad Shah[3]
Assistant Professor in English, Government Boys Degree College Nawab Shah, Sindh, Pakistan.
Email: Syedgul.shah77@gmail.com
Asma Asif [4]
Scholar, Department of Education & Social Sciences, Al-Kawthar University Karachi, Pakistan.
Email: asma.asif910@gmail.com
Saima Kamran[5]
Scholar, Department of Education & Social Sciences, Al-Kawthar University Karachi, Pakistan.
Email: mustafakamran09876@gmail.com

Abstract
This study investigates how Mobile-Assisted Language Learning (MALL) affects vocabulary acquisition amongst ESL learners. MALL encompasses technologies that make learning available anywhere and at any time, making use of the unending growth of smartphones and apps, unlike traditional learning. Present research used MALL to quantitatively study how mobile apps, as learning tools, influenced vocabulary learning. Data collected from 150 undergraduate students of higher education institutes of Karachi through convenience sampling method. ESL learners was carried out using structured questionnaires and vocabulary assessments. Mobile learning, learner motivation, and vocabulary acquisition were the study's main components. This research analyzed the relation, correlation, and regression of the mobile learning and vocabulary acquisition variables to determine how learner motivation impacted vocabulary acquisition. Mobile learning showed a direct contribution to the enhancement of all participants' vocabulary acquisition. This study places itself within the mobile technologies that could be incorporated within language learning, making it more effective and integrated within practice that regards mobile learning technologies as essential and increases reliance on vocabulary acquisition.

Keywords: Mobile-Assisted Language Learning (MALL), ESL learners, vocabulary acquisition, learner motivation, mobile learning usage

Introduction
The introduction of mobile technologies in education has significantly changed the face of second language learning to emerge as Mobile-Assisted Language Learning (MALL) a sub discipline of Computer-Assisted Language Learning. With the proliferation of smartphones and mobile applications throughout the world, students are becoming increasingly reliant on handheld devices to provide them with access to the educational content beyond the conventional classroom environment. This change is indicative of overall trends in digital learning where flexibility, accessibility, and autonomy of learners take precedence (Crompton & Burke, 2018; Kukulska-Hulme, 2020). MALL has gained much attention in the sphere of language education taking into account that it can provide continuous, contextual and individualized learning experiences.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

Lexical knowledge and learning it is a vital part of English as a Second Language (ESL) learning as lexical knowledge directly affects reading comprehension, writing, listening, and overall communicative competence among ESL learners (Nation, 2013; Schmitt, 2020). Nevertheless, traditional lexical teaching strategies, which are often based on memorization and limited exposure to lexical entries in the classroom, have been criticized by their inability to guarantee long-term retention and meaningful utilization of lexical items in the classroom (Zaidi & Sultana, 2023; Imran, 2022). As a result, researchers and educators are beginning to give increased consideration to technology-enhanced practices that can be utilized to attain greater engagement and extended term vocabulary development (Webb & Nation, 2017).

MALL provides various pedagogical affordances that can be used to overcome these shortcomings. Multimodal input is provided by mobile applications, which incorporates text, audio, visuals and interactive features to help a person engage in a deeper cognitive processing of vocabulary items (Akhtar & Kayani, 2024; Akhtar, et al., 2020; Anwar, et al., 2019). Additionally, spaced repetition, gamification, and instant feedback are the elements that promote retention and motivation towards learning (Burston, 2015; Duman et al., 2015). The modern learning theories, including Constructivism, which teaches active knowledge construction, and Self-Determination Theory, which highlights the role of autonomy, competence, and relatedness in maintaining learner motivation are the basis of these affordances (Deci & Ryan, 2000; Vygotsky, 1978).

The recent empirical researches have presented increased evidence that MALL is an effective method to learn vocabulary. One of such studies is meta-analyses and experimental studies that have demonstrated that mobile-based interventions have a great impact on vocabulary retention, learner engagement, and learning efficiency compared to traditional instructional methods (Lin & Lin, 2019; Mahdi, 2018; Sung et al., 2016). More recent researches further support the notion of the critical role of mobile applications that can facilitate self-directed learning and exposure to actual language input (Hwang & Fu, 2019; Zou et al., 2021). Regardless of these developments, the need to conduct context specific, quantitative research that will examine the relationship between the use of mobile learning and the vocabulary acquisition results, especially those related to acquisition of vocabulary in ESL contexts in developing countries such as Pakistan.

Therefore, the aim of the present study is to examine how MALL can be utilized to facilitate the process of vocabulary acquisition in ESL learners with the assistance of a quantitative research design. The study will target to provide empirical evidence of the utility of mobile-assisted learning tools by exploring the connections that have been established between the use of mobile learning tools, vocabulary retention, and learner motivation. The findings will be included in the expanding body of literature about MALL and will have practical implications to the integration of mobile technologies in ESL pedagogy, curriculum design and educational policy.

Literature Review

Mobile-Assisted Language Learning (MALL) in ESL Contexts

The Mobile-Assisted Language Learning (MALL) has developed as an important extension of Computer-Assisted Language Learning due to the swift development of mobile technologies and their application to the learning process (Rana & Tuba, 2017; Tuba & Rana, 2015). In contrast to the traditional CALL environments, MALL focuses on portability, contextual learning, and constant access to learning resources, which allows learners to work with language content without time and space constraints (Kukulska-Hulme, 2020; Crompton & Burke, 2018). This improves opportunities for learning through practical applications, increasing exposure and opportunities for practice.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

The focus of the ‘‘Mobile Assisted Language Learning’’ (MALL) studies in the second language acquisition (SLA) context has shifted recently towards the learning of different skills, and flexibility studies have shown the effectiveness of MALL particularly for learning English as a Second Language (ESL) due to its flexibility and learner focus. Evidence has shown that mobile devices encourage micro learning that can help learners take part in short intensive learning activities that help them develop vocabulary (Burston, 2015). In addition, the mobile environment allows the learners to use a variety of multimedia elements, for example, audio and visual and language screen and other contextual environments, that aid learners in building a more comprehensive vocabulary (Duman et al., 2015). These characteristics render MALL an effective instrument in the quest to overcome the weaknesses of the traditional classroom-based teaching.

Vocabulary Acquisition in Second Language Learning

Vocabulary acquisition is one of the key domains of the second language learning that has an enormous impact on communicative competence and overall proficiency of the learners in their language. According to Nation (2013), vocabulary knowledge is defined as receptive and productive in that learners are supposed to know words, and to use them correctly in context. Developing this argument, Schmitt (2020) points out that the vocabulary learning process is slow and gradual and must be repeated, used meaningfully and cognitively (Fatima et al., 2012). Conventional methods of teaching vocabulary have largely been focused on memorization skills, which could only guarantee short-term retention of the vocabulary and not long-term retention. On the other hand, the contemporary perspectives focus on the importance of contextualized learning and rehearsing of the experiences with the lexical items (Webb & Nation, 2017). As has been shown, technology, especially mobile learning tools can be employed in supporting these processes by providing learners with the opportunity to experience spaced repetition and contextual exposure that are both essential in supporting the processes of durable acquisition of vocabulary.

Theoretical Foundations Supporting MALL

The effectiveness of MALL in vocabulary learning can be justified by various known learning theories. Constructivism presupposes that learners are active constructors of knowledge, through their interaction with the environment, and mobile learning environments are particularly appropriate, because they are interactive and learner-driven (Vygotsky, 1978). Mobile applications tend to include activities in which learners actively interact with the content, thus enhancing more profound thinking (Imran, Akhtar, & Khan, 2026; Haider, et al., 2025).

In addition, the motivation of learners in MALL can be explained by using the Self-Determination Theory (Deci & Ryan, 2000). Mobile learning fosters autonomy by allowing learners to take charge of their learning process and contents, competence through immediate feedback and progress monitoring, and relatedness through social and collaborative functionality. All these have led to the rise of intrinsic motivation which has been found to be one of the key predictors of the successful results of language learning (Fatima, Malik, & Safdar, 2011). The other theory that can be applied is the Cognitive Theory of Multimedia Learning which postulates that learners are in a better position to process information when it is presented in more than one form (Mayer, 2009). MALL applications take advantage of this principle by integrating text, audio and visuals, thus enhancing understanding and recall of vocabulary items.

Empirical Evidence on MALL and Vocabulary Acquisition

There is a large amount of research that has focused on the effect of MALL on vocabulary acquisition, with results generally showing positive effects. The meta-analyses conducted by Lin and Lin (2019) and Mahdi (2018) show that mobile-assisted learning is more effective in

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

vocabulary learning as compared to traditional methods. These studies emphasize the usefulness of mobile tools in encouraging retention, engagement and learner autonomy.

These results are also supported by recent research (2020-2025). Using the example of mobile-based learning and game-based learning environment, as demonstrated by Zou et al. (2021), these two learning environments are significantly more effective in terms of vocabulary acquisition because of the increased interaction and motivation of learners (Danish, Akhtar & Imran, 2025; Mankash, et al., 2025; Hafeez, Yaseen & Imran, 2019). Similarly, Hwang and Fu (2019) found out that mobile-supported learning settings promote collaborative learning and improve language outcomes through interactive learning.

Notably, the studies also highlight the importance of the intensity of usage and the engagement of the learner in the process of determining the effectiveness of MALL. The increased frequency of mobile learning use has been associated with a better vocabulary retention and learning outcomes (Sung et al., 2016). However, some studies caution that the success of MALL is dependent on pedagogical design, learner characteristics and contextual factors among others, and more structured and context-specific studies are required.

Measurement of MALL Usage and Vocabulary Acquisition

In the case of quantitative research, the measurement of the most crucial variables, including mobile learning use, vocabulary learning, and learner motivation, will need the application of validated measures. In the past, researchers have usually modified the scales that are already available in order to achieve reliability and validity. As a case in point, the usage of mobile learning has been measured using modified versions of technology acceptance and usage scales (e.g., based on the Technology Acceptance Model by Davis, 1989), which assess frequency, perceived usefulness, and ease of use (Ansari, Akhtar & Hafeez, 2024; Akhtar, et al., 2021). The acquisition of vocabulary is usually evaluated using standardized vocabulary tests or instruments adapted by researchers according to the existing frameworks like Nation Vocabulary Levels Test (Nation, 2013). These instruments not only assess the receptive knowledge of vocabulary but also the productive knowledge of vocabulary, hence the learning outcomes are assessed comprehensively.

In Mobile Assisted Language Learning (MALL) research, learners' motivation is often studied using variations of motivational scales inspired by Self-Determination Theory by Deci and Ryan (2000) and the related concepts of intrinsic motivation, engagement, and perceived competence. The findings of high-impact research are built on developed, well-tested, and validated instruments, as they support the credibility and generalizability of the findings.

There are many gaps in the present MALL research. For one, and most importantly, the majority of MALL studies are either of an experimental design or of a small-scale qualitative design, which limit the research's outcomes to whose situation it is most similar to and offer the least useful results to the broader context of research (Imran, Khan, & Rani, 2025; Imran, Sultana, & Jat, 2023). Further, the context-dependent research on ESL learners from the developing world is almost non-existent, where both the accessibility of the technology and educational paradigms are considerably different from the developed world (Khoso, et al., 2024; Sultana & Imran, 2024; Ahmad, Bibi & Imran, 2023). Third, there are limited studies that have simultaneously investigated the relationships between mobile learning use, vocabulary learning, and learner motivation using sound quantitative measures like correlation and regression analysis. Thus, this research will fill these gaps by using a quantitative research design with validated measurement instruments to investigate the role of MALL in enhancing vocabulary acquisition among ESL learners.

Theoretical Framework of the Study

The current research is based upon an integrative theoretical framework that synthesizes concepts of Constructivism, Self-Determination Theory, and the Technology Acceptance

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

Model to explain how Mobile-Assisted Language Learning (MALL) can impact vocabulary acquisition in ESL students. This multi-theoretical framework is necessary to present the cognitive, motivational and technological aspects of mobile learning (Malik, et al., 2025; Hameed & Akhtar, 2023; Hashmi, et al., 2021). Constructivism is based on the assumption that learners actively construct knowledge by interacting with learning environments and meaningfully engaging with content (Vygotsky, 1978). Mobile applications in the context of MALL offer interactive, context-rich, and learner-centered learning environments that allow active vocabulary learning. Having multimedia, contextual, and interactive input stimulate cognitive processing, which is then manifested as vocabulary retention and comprehension.

The Self-Determination Theory (Deci & Ryan, 2000) helps make sense of the motivation when learners engage with mobile learning devices. Within the framework of this theory, learners who experience autonomy, competence, and relatedness are intrinsically motivated. MALL environments help learners experience autonomy as they learn at their own pace, they receive instant feedback and tracking of their learning progress helps them experience competence, and relatedness is experienced through learning in collaboration with others. The learning outcomes related to vocabulary acquisition are expected to increase as a result of motivated learners.

The Technology Acceptance Model (Davis, 1989) provides a perspective on the adoption and utilization of mobile learning technologies by learners (Imran, Akhtar, & Khan, 2026; Zaidi, et al., 2024). This model implies that perceived usefulness and ease of use impact technology related behavioral intention and actual usage. Within the scope of vocabulary learning, the use of mobile learning technologies is determined by the level of mobile technology acceptance by learners. Thus, the theory posits that mobile learning directly relates to vocabulary acquisition, with learner motivation as a significant factor. Also, these theories complement the study in terms of providing an understanding of the interplay of technological, cognitive, and motivational aspects in Mobile-Assisted Language Learning.

Variables and Hypotheses

The framework consists of three important variables: the independent variable is the use of mobile learning, the mediating variable is the learner motivation, and the dependent variable is the vocabulary acquisition. The usage of mobile learning is measured with the help of modified scales based on the Technology Acceptance Model and the studies related to mobile learning, and the motivation of the learners is measured with the help of the instruments based on the Self-Determination Theory. Standardized tests based on existing models, including Nation's Vocabulary Levels Test, are used to measure vocabulary acquisition. According to this framework, the study predicts that the use of mobile learning is a significant predictor of vocabulary acquisition and learner motivation, as well as that learner motivation is also a significant predictor of vocabulary acquisition. Moreover, the learner motivation will be projected to mediate the relationship between the use of mobile learning and the acquisition of vocabulary, and this implies that it will have direct and indirect effects in the model.

Methodology

Research Design

The research design used in this study is a quantitative research design, which is used to examine the role of Mobile-Assisted Language Learning (MALL) in improving vocabulary acquisition in ESL learners. The cross-sectional survey method was used and data were gathered at a single point in time among the participants to examine the relationships between the key variables. This type of design is especially suitable in testing theoretically based hypotheses and determining patterns of association by statistical analysis (Creswell & Creswell, 2018). The research is conducted in a deductive research methodology, whereby the hypotheses based on the existing theoretical perspectives, such as Constructivism, Self-

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

Determination Theory, and the Technology Acceptance Model, are empirically tested with the help of quantitative data.

Population and Sampling

The study population involves ESL learners in all higher education institutes of Karachi where English is the second language of instruction. Undergraduate students are selected using the non-probability convenience sampling method. This method is preferred in the context of the research due to accessibility and feasibility. While this technique may limit a generalizability constraint, it is quite common in educational research due to restricted access to the target sample. Present study collect data from 150 participants, to perform regression and mediation analysis due to the sufficient statistical power to identify a significant relationship among the research variables.

Instruments and Measures

The tools are revised and validated for accuracy and reliability of the metrics. An adapted scale that considers the Technology Acceptance Model (Davis, 1989) and previous MALL studies is used to gauge the dimensions of the use of mobile learning tools in terms of frequency, usefulness, ease of use and diversity of mobile learning tools. The adapted scale also employs the five-point Likert scale which provides research participants an avenue to express the extent to which they have engaged mobile technology. The measurement of motivation of the learners is done through the scale adapted from Self-Determination Theory (Deci & Ryan, 2000) which incorporates key motivational elements, namely intrinsic motivation, perceived competence, engagement and self-regulation. This framework is ideal for understanding positive and negative motivational effects in mobile learning environments. The responses from the scale also used the five-point Likert scale like in the mobile usage scale. To measure vocabulary learning, the methodology uses the standardized vocabulary test which is developed from the Vocabulary Levels Test by Nation (2013) to measure productive and receptive vocabulary. By employing this methodology, the vocabulary learning of participants is not solely relying on the perceptions of students. This standard provides both productive and receptive to a greater degree an evaluation of the respective lexical competence and retention of the learners.

Data Collection Procedure

The data were collected through a merged questionnaires and vocabulary measurement tests. The vocabulary measurement tests are given in a controlled environment to maintain uniformity. The questionnaires are given via online format or paper forms depending on availability. Researchers explain the purpose of the study and the data collection techniques to the participants before collecting the data. The participants are also informed of the ethical standards of the research which are the right to voluntary participation and anonymity. The response to the questionnaires is contextualized within the research. The participants are informed of the data that is to be collected from them and assured of its the purpose.

Data Analysis Techniques

Statistical software SPSS is used to analyze the recorded data to explore the relationships between variables. Initially, descriptive statistics are performed to summarize the data, allowing for an understanding of the participants' responses. Reliability analysis is performed using Cronbach alpha, which evaluates the scales' internal consistency. Next, the direction and strength of relationships between variables are analyzed using the Pearson correlation. To test the hypotheses proposed, multiple regression analysis is utilized to identify the predictive effects of mobile learning use and learner motivation on vocabulary acquisition. Moreover, the mediation analysis is conducted to investigate whether the learner motivation plays a significant role in mediating the relationship between the use of mobile learning and vocabulary acquisition. Such an analytical method is compatible with the conceptual framework and can be used to gain a comprehensive understanding of both direct and indirect effects.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

Results and Data Analysis

Descriptive Statistics

The descriptive statistics were calculated to give a general idea of the data distribution and to study the central tendencies and variability of the key constructs of the study, that is, mobile learning usage, learner motivation and vocabulary acquisition. These initial analyses are necessary in determining the overall patterns in the answers of the participants and in ensuring that the data are appropriate to undergo additional inferential statistical tests. The findings show that the respondents were relatively high in terms of their engagement with mobile learning technologies. The average score for mobile learning usage was 3.78 (SD = 0.64). Most respondents used mobile devices and applications frequently to learn a language. More respondents using mobile devices for learning illustrates the great use of mobile technologies for learning. The average score for the usage of mobile technology for learning was high and the standard deviation was low meaning the ESL learners were mobile technology balanced in learning and engaging in use of mobile technologies for other activities.

The motivation to learn vocabulary was high as the average score was 3.85 (SD = 0.59). This score indicated that the participants were highly motivated in learning vocabulary. The mobile technology for learning was complimented by interactivity, autonomy and immediate feedback as features of mobile technology. The fact that the distribution of motivation scores is also characterized by a relatively homogeneous pattern also shows that most learners shared similar motivational orientations towards language learning. The scores of vocabulary acquisition showed that the mean of vocabulary knowledge among the participants was moderate to high (mean = 3.69, SD = 0.62). The scores variance indicates that although some learners had high vocabulary proficiency, others had lower performance, which depicts the individual differences in the learning outcomes. This difference should be anticipated in ESL settings, where the exposure, prior knowledge, and the level of engagement of the learners can vary considerably. On the whole, the descriptive results indicate that the sample is quite appropriate to investigate the relationships between the study variables, as the participants demonstrate adequate interest in mobile learning and the variability of the results of vocabulary acquisition.

As Table 1 shows, the average scores reveal that the level of mobile learning use, learner motivation, and vocabulary acquisition are relatively high among the participants.

Table 1

Descriptive Statistics of Study Variables

Variable	Mean	SD
Mobile Learning Usage	3.78	0.64
Learner Motivation	3.85	0.59
Vocabulary Acquisition	3.69	0.62

Reliability Analysis

The reliability analysis was done to determine the internal consistency of the measurement tools that were utilized in this study. The alpha coefficients of Cronbach were calculated on each construct to make sure that the items in each scale are valid in measuring the target variables. Reliability is an important aspect of quantitative research since it increases the credibility and reproducibility of the results.

The results indicate that the mobile learning usage scale had a Cronbachs alpha of 0.88, which means that the scale has a high level of internal consistency. This means that the scales used to measure the different dimensions of mobile learning usage such as frequency, perceived usefulness and ease of use are well aligned and are always used to capture the construct.

Even a greater coefficient of reliability of 0.91 was demonstrated by the learner motivation scale, which means that a high level of internal consistency was achieved. This result proves

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

that the modified tool is effective to measure the motivational aspects based on the Self-Determination Theory, such as intrinsic motivation, perceived competence, and engagement.
Similarly, the alpha of Cronbachs of the measure of vocabulary acquisition was 0.86, which is a good measure of reliability. This means that the items used to assess the knowledge of receptive and productive vocabulary are consistent and reliable.
The coefficients of reliability of the instruments applied in the current study are high and can be applied in the further statistical processing. The large values of reliability also suggest that the adaptation of the existing tools has been effective in ensuring the accuracy of the measurements in the study setting.

Correlation Analysis

The appropriateness of future regression analysis was considered, along with the results of initial findings concerning correlation relationships involving the use of mobile learning, motivation, and vocabulary learning.

From the primary research findings, it was determined that mobile learning tools and vocabulary acquisition had a significant correlation ($p < 0.01$) from a positive correlation ($r = 0.62$) aspect. As expected, the knowledge of vocabulary acquisition was greater among people with a greater degree of using mobile learning tools. This correlation illustrates that the greater the use of mobile learning applications, the more learners can obtain vocabulary items and use them in context. The motivation of learners was found to have a significant positive correlation ($r = 0.68$) with vocabulary acquisition. This means that preference for mobile learning tools was, in fact, more motivating.

Positive correlation effects of students' motivation on vocabulary acquisition were also found ($r = 0.71$, $p < 0.01$). Non-cognitive factors, such as motivation, are significant toward the learning of a second language. Motivation is correlated with the acquisition of vocabulary items and the overall performance of students. Taking into account the level of correlation, it can be said that motivation is also a key element of mobile learning that promotes vocabulary acquisition. In general, the correlation analysis is a strong support of the proposed relationships in the conceptual framework and justifies the use of regression analysis to further examine predictive and mediating effects. Table 2 shows the Pearson correlation coefficients of the study variables.

Table 2

Pearson Correlation Matrix of Study Variables

Variable	**1**	**2**	**3**
1. Mobile Learning Usage	—		
2. Learner Motivation	0.68**	—	
3. Vocabulary Acquisition	0.62**	0.71**	—

Note. $p < .01$

Regression Analysis

Multiple regression analysis was performed to investigate the predictive relationships between variables with vocabulary acquisition as the dependent variable and mobile learning use and learner motivation as independent variables. This analysis enables the evaluation of the relative contribution of each predictor when the effect of other variables is controlled.
The regression model was found to be statistically significant ($F = 56.34$, $p < 0.001$), which means that the independent variables jointly explain a significant percentage of the variance in vocabulary acquisition. The model explained the variance of about 58 percent ($R\ 2 = 0.58$) which is a significant effect size and indicates that the predictors incorporated in the model are

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

strong predictors of vocabulary learning outcomes. The usage of mobile learning was identified as a strong predictor of vocabulary acquisition (0.35, $p < 0.01$), which supports the hypothesis that the greater the use of mobile learning tools, the greater the vocabulary learning. The findings can be accounted for by the affordances of mobile technologies, among them, multimodal input, repeated exposure and interactive learning, that can enhance the deeper cognitive processing of vocabulary items.

Motivation was a stronger predictor of vocabulary growth ($\beta = 0.49$, $p < 0.001$) and emphasized the importance of motivational factors in setting learning outcomes. This suggested that, despite mobile learning presenting the tools and opportunities for learning, the most central factor was the learners' motivation. They were the active participants in the learning process and the vocabulary was successfully learned. This study also suggested that the relationship between motivation and technology in mobile vocabulary learning is as a result of the motivational factors, in the learning and the psychological sense, rather than the purely technological accessibility. Table 3 displays the results of the multiple regression analysis.

Table 3

Multiple Regression Analysis Predicting Vocabulary Acquisition

Predictor	**B**	**t-value**	**p-value**
Mobile Learning Usage	0.35	4.12	< .01
Learner Motivation	0.49	5.67	< .001

Model summary. $R^2 = .58$, $F = 56.34$, $p < .001$.

Mediation Analysis

Mobile learning usage and learner motivation are found to be positively correlated. Further mediation analysis is needed for a better understanding of mobile learning and its relationship with vocabulary acquisition through learner motivation. In this conceptual discussion, we look to build upon the existing theoretical framework as well as the analysis of direct and indirect associations to provide a clearer understanding of the relationships. The analyses performed indicate a positive and statistically significant relationship between learner motivation and mobile learning usage ($\beta = 0.68$, $p < 0.001$), suggesting that the use of mobile learning is strongly associated with increased levels of motivation for learning. Due to this correlation, mobile learning is useful for developing learner autonomy and self-driven learning, both strongly related to learner motivation.

In the regression model that included learner motivation, the direct effect of the mobile learning use on the vocabulary acquisition decreased to 0.35 to 0.21, although it was still statistically significant ($p < 0.05$). Meanwhile, learner motivation remained to have a powerful impact on vocabulary acquisition. This decrease in the direct effect implies partial mediation, which means that learner motivation is a significant part of the relationship between mobile learning use and vocabulary acquisition. In other words, mobile learning enhances vocabulary acquisition not only directly through increased exposure and practice but also indirectly by increasing learners' motivation. These results strongly support the theoretical framework and especially the role of Self-Determination Theory in the explanation of how motivational factors can influence the learning outcomes in technology-enhanced environments. The results of the mediation analysis are summarized in Table 4.

Table 4

Mediation Analysis Results

Path	**β**	**p-value**
MALL → Motivation	0.68	< .001
Motivation → Vocabulary	0.49	< .001

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

MALL → Vocabulary (direct)	0.21	< .05

Integrated Interpretation of Findings

The findings of this research give a detailed insight into the correlations between the use of mobile learning, learner motivation, and the acquisition of vocabulary. The results show that the use of mobile learning is a strong predictor of the motivation of the learner and the acquisition of vocabulary, which is why it is important to incorporate the use of mobile technologies in the language learning classroom.

Simultaneously, the high impact of the learner motivation highlights the necessity to take into account the psychological aspects of the design and implementation of MALL interventions. The mediation analysis indicates that motivation is a key mechanism that determines the effectiveness of MALL not only based on technological features but also based on the engagement and motivation of learners.

These results are in line with theoretical approaches like Constructivism which focuses on active involvement in learning and the Technology Acceptance Model which highlights the importance of perceived usefulness and ease of use in determining the use of technology.

Summary of Hypotheses Testing

The statistical analyses results support all the hypotheses proposed. The application of mobile learning was seen to have a strong positive impact on vocabulary acquisition, which supports its use as a key determinant of learning outcomes. The analysis also revealed that the use of mobile learning has a significant impact on the motivation of learners, and technology-enhanced learning environments can be used to achieve motivational engagement.

Additionally, learner motivation was identified as an important determinant of vocabulary acquisition, further justifying its prominence in language acquisition. Lastly, the mediation analysis concluded that the relationship between mobile learning usage and vocabulary acquisition includes, on the learner motivation side, a partial mediation effect, providing a better understanding of the relationship between these variables. These findings are in line with the posited relationships and provide evidence to the suggested conceptual framework.

Discussion

The present study aimed to examine the role of Mobile-Assisted Language Learning (MALL) in improving vocabulary acquisition among ESL learners by investigating the relationships among mobile learning usage, learner motivation, and vocabulary outcomes. The results also strongly support the conceptual framework proposed and provide valuable information on the interaction between technological and psychological factors to influence language learning.

These findings demonstrate that the use of mobile learning is a significant predictor of vocabulary acquisition and that the more learners use mobile learning tools, the higher the vocabulary development. The present finding is consistent with the prior studies that have proven the effectiveness of MALL in promoting the acquisition of vocabulary through the use of such features as multimodal input, spaced repetition, and interactive exercises (Lin & Lin, 2019; Mahdi, 2018). It is the capacity of mobile devices to enable continuous access to learning materials that enables learners to interact with vocabulary in various contexts and, thus, be able to process and retain the information better. Theoretically, the finding can be used to support the principles of Constructivism, which views active engagement and contextualized learning as critical elements of knowledge construction.

Researchers identified a positive and strong correlation in using mobile learning and the motivation of the learner. Therefore, mobile learning environments might be more effective than other learning environments in increasing learner motivation. This might be due to the combination of the interactive, flexible, and learner-centered environment of mobile learning. From a mobile learning perspective, since vocabulary learning activities are more effective

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

with the use of gamification, instant feedback, and individualized learning paths, mobile learning activities would be more effective than other methods. This situation supports the assumptions of Self-Determination Theory in learning environments because gamification, learning paths, and instant feedback all provide learners with the ability and opportunity to learn in control. More so, they provide the supportive environments of learning the learner in the digital and social learning environments.

Also, the motivation level of learners contributes to vocabulary acquisition, which confirms the necessity of motivation in language acquisition. This observation indicates that learning activities are not only effective cognitively, but learning goals should be in the learning system in the environment as well. More motivation of learners contributes to more time and energy spent learning. This learner-driven learning results in more positive learning outcomes. This observation indicates that motivation in learning contributes to positive academic outcomes in second language acquisition. Other studies show motivation contributes to learning outcomes. Identifying learner motivation as an intermediary variable in the connection between mobile learning and vocabulary acquisition is one of the key results of this study. The mediation analysis confirmed that mobile learning had a direct effect on vocabulary acquisition. However, most of the effect was ascribed to learner motivation. This finding reflects the benefits of identifying psychological processes to understand the effects of Mobile-Assisted Language Learning (MALL) on learning outcomes and demonstrates that mobile learning is learner-centered, and MALL as a mobile-learning technology will only be successful as long as mobile learners' motivation and engagement are reinforced.

This finding is also a valuable addition to the existing body of knowledge as it examines the interplay of technology and learner motivation in one single study. It is undisputed that the effect of mobile learning and, in particular, learner motivation on vocabulary acquisition is well researched; nevertheless, the current study is one of the few mobile learning studies that aim to explain the interplay of the key components in vocabulary acquisition. Moreover, the inclusion of mediation analysis has enabled a richer view of the learning processes and has contributed to the theory-building in MALL. Considering the Technology Acceptance Model, the findings suggest that mobile learning tools by learners is likely determined by the usefulness and ease of use by learners. The degree to which learners perceive mobile applications to be useful and easy to use is likely to lead to routine use and subsequently better motivation and learning outcomes. This creation focuses on mobile learning applications which are simple and pedagogically appropriate.

In addition to confirming and supporting existing theories, the outcomes of this study provide information that is specific to the context of ESL learners in developing regions. The findings suggest that mobile learning has the capability to effectively address the challenges encountered with learning in traditional classrooms, such as the limited opportunities to be exposed to the English language and the lack of personalized learning. MALL provides learners with an opportunity to practice language constantly, which is crucial for vocabulary development. However, the study findings indicate that more than just providing access to mobile learning tools is required. The idea is to ensure that the tools are implemented in ways that can encourage authentic learning. This is possible through the use of customizable mobile learning. MALL can provide pedagogical principles to motivate learners. Without these, the advantages of mobile learning and the opportunities of MALL are not fully realized.

In combination, the three perspectives technological, cognitive, and motivational—highlight the importance of the study and understanding of the process of language learning. The study provides empirical evidence for the efficacy of MALL and the importance of learner motivation in the mediation of the learning results. The outcomes of the study offer new grounds for theorization and practical application in the area of mobile-assisted language learning.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL

Conclusion

This study has been able to show how Mobile-Assisted Language Learning (MALL) can be used to develop the learning of vocabulary by the use of mobile learning activities and the students' motivation and vocabulary achievement. The study pronounced mobile learning as having significant effects on vocabulary learning with and without the motivation of the learners. The learning outcomes of the study has shown that the success of mobile learning does not solely depend on the learners' access to technology, but on how mobile learning engages and psychologically involves the learners, therefore, the learners' motivation. The study has been able to describe vocabulary learning and mobile learning by using both the technology and the motivation concepts. The study definitely addresses useful findings, but it should be acknowledged that convenience sample used for the study as well as the cross-sectional design are both restrictive. The study results may be also be biased as self-reported measures have been used to collect data for the study. Future studies should not only incorporate the longitudinal and experimental study design to account for the long-term impact of MALL, but also to ward off the endogeneity of the other learning outcome impacting variables. Overall, the study endorses the mobile learning paradigm as an innovative choice for language learning while balancing the MALL with the pedagogy and motivational elements. MALL used to be an appendix, but now it's more increasingly becoming the core of contemporary vocabulary acquisition.

References

Ahmad, D. N., Bibi, N., & Imran, M. (2023). Effects of Teacher's Motivation On Students' academic Performance At Public Secondary Schools In Karachi Pakistan. *Available at SSRN 5165741*.

Akhtar, N., & Kayani, M. M. (2024). Navigating The Pedagogical Landscape: A Qualitative Inquiry Into Teachers' Perceptions And Preparedness For Teaching License In Sindh, Pakistan. *Voyage Journal of Educational Studies*, *4*(2), 197-223.

Akhtar, N., Aslam, N., Hussain, S. Q., & Memon, A. (2021). Qualitative Analysis of Diffusing ERE cycle in Teaching at Higher Education: Experiential Learning Practices in Pakistan. *Ilkogretim Online*, *20*(5), 7525-7539.

Akhtar, N., Hussain, S. Q., Raja, F., Naeem, T., (2020). Using Oral Communication Strategies to Enhance Students English Writing Skills of Grade VII Students: Experimenting ESL Strategies. *International Journal of Disaster Recovery and Business Continuity 11(3),* pp. 1127–1137.

Ansari, R., Akhtar, N., & Hafeez, A. (2024). Exploring the Perceptions of Secondary School Teachers on Teaching Licenses in Sindh: A Qualitative Study. *International Journal of Social Science & Entrepreneurship*, *4*(3), 126-147.

Anwar, U., Raja, F. U., Sadia, H., & Akhtar, R. N. (2019). AN INVESTIGATION OF REQUEST STRATEGY EMPLOYED BY ESL UNDERGRADUATE STUDENTS. *Journal of Social Sciences and Media Studies*, *3*(2), 1-8.

Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. *ReCALL, 27*(1), 4–20. https://doi.org/10.1017/S0958344014000159.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.

Crompton, H., & Burke, D. (2018). The use of mobile learning in higher education: A systematic review. *Computers & Education, 123*, 53–64. https://doi.org/10.1016/j.compedu.2018.04.007

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

Danish, F., Akhtar, N., & Imran, M. (2025). AI-Driven Personalization in Educational Marketing: A Framework for Enhancing Student Recruitment and Retention. *Journal of Political Stability Archive*, *3*(2), 559-590.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–340.

Deci, E. L., & Ryan, R. M. (2000). Intrinsic motivation and self-determination in human behavior. *Psychological Inquiry, 11*(4), 227–268.

Duman, G., Orhon, G., & Gedik, N. (2015). Research trends in mobile assisted language learning. *Computers in Human Behavior, 52*, 197–208. https://doi.org/10.1016/j.chb.2015.05.020.

Fatima, G., Fazil, H., Malik, M., Akhtar, M. M. S., & Ashraf, I. (2012). Perceptions of speech-language therapists about integration of technology. *Journal of Educational Research, 15*(1), 5–16.

Fatima, G., Malik, M., & Safdar, M. (2011). Perceptions of parents about social development of their children with Down syndrome. *Pakistan Journal of Special Education, 12*, 135–147.

Hafeez, A., Yaseen, G., & Imran, M. (2019). Management Paradigm Change in Pak¬-Turk (International Schools & Colleges) After a Failed Military Coup in Turkey: A Case Study.

Haider, S., Mirwani, R., Imran, M., & Haider, H. (2025). The Emotional Landscape of Organizational Change: A Qualitative Study of Teachers in Lasbela, Balochistan. *Journal of Political Stability Archive*, *3*(3), 1482-1502. https://doi.org/10.63468/jpsa.3.3.98

Hameed, S., & Akhtar, N. (2023). An Evaluation of Early Childhood Education at Provincial Level: Policies, Practices, Issues, and Challenges in Baluchistan. *Journal of Social Sciences Review*, *3*(2), 629-639.

Hashmi, S. U., Hussain, S. Q., Zaman, T. A., Arshad, S., & Akhtar, N. (2021). CRITICAL REVIEW OF FORMATIVE ASSESSMENT PRACTICES IMPLEMENTED IN ENGLISH LANGUAGE LEARNING PROGRAMS IN SINDH. *Humanities & Social Sciences Reviews*, *9*(3), 703–712. https://doi.org/10.18510/hssr.2021.9369

Hwang, G. J., & Fu, Q. K. (2019). Trends in mobile technology-supported collaborative learning: A systematic review. *Educational Technology & Society, 22*(2), 1–12.

Imran, M. (2022). Drawbacks of E-Learning for the Toddlers and their Possible Solutions: A Detailed Study. *Spry Contemporary Educational Practices*, *1*(1).

Imran, M., Akhtar, N., & Khan, N. (2026). Ethical Leadership in Early Years Education: Implications for Teacher Professional Ethics and the Learning Environment–A Qualitative Study. *Journal of Political Stability Archive*, *4*(1), 260-281. https://doi.org/10.63468/jpsa.4.1.15

Imran, M., Khan, N., & Rani, H. (2025). Analyzing the Effectiveness of AI Tools in Academic Writing for ESL Learners. *Advanced Research in Emerging Technologies and Digital Systems, 4(1)*, 9-18.

Imran, M., Sultana, Z., & Jat, Z. G. (2023). Education as A Social Agent of Culture Change: Literature Review. *Benazir Research Journal of Humanities and Social Sciences, 2(1)*.

Khoso, F. J., Shaikh, N., Dahri, K. H., & Imran, M. (2024). Educational Nurturing in Underdeveloped Contexts Unraveling the Dynamics of Student Teachers' Holistic Development. *Spry Contemporary Educational Practices*, *3*(1).

Kukulska-Hulme, A. (2020). Mobile-assisted language learning. In *The Encyclopedia of Applied Linguistics*. Wiley.

ISSN E: 2709-8273
ISSN P:2709-8265
JOURNAL OF APPLIED LINGUISTICS AND TESOL
JALT

Lin, J. J., & Lin, H. (2019). Mobile-assisted ESL/EFL vocabulary learning: A systematic review and meta-analysis. *Computer Assisted Language Learning, 32*(8), 878–919. https://doi.org/10.1080/09588221.2018.1541359.

Mahdi, H. S. (2018). Effectiveness of mobile devices on vocabulary learning: A meta-analysis. *Journal of Educational Computing Research, 56*(1), 134–154. https://doi.org/10.1177/0735633117698826.

Malik, F., Irfan, S., Saba, S., Mumtaz, L., & Nasir, H. (2025). Consumers Spirituality Towards Green Purchase Intention: Mediating Roleof Perceived Consumer Effectiveness and Moderating Role of Religious Commitment. *Journal of Management & Social Science*, *2*(1), 138-157.

Mankash, M. A., Ahmed, S. T., Shabbir, N., & Imran, M. (2025). Second Language Learning in the Digital Age: How Technology Shapes Language Acquisition at Universities in Karachi, Pakistan. *Liberal Journal of Language & Literature Review*, *3*(1), 182-199.

Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge University Press.

Nation, I. S. P. (2013). *Learning vocabulary in another language* (2nd ed.). Cambridge University Press.

Rana, N. A., & Tuba, N. (2017). Failure to Get Admissions in a Discipline of Their Own Choice: Voices of Dejected Students. *Journal of Education and Educational Development*, *4*(1), 7-31.

Schmitt, N. (2020). *Vocabulary in language teaching* (2nd ed.). Cambridge University Press.

Sultana, Z., & Imran, M. (2024). Challenges Faced by English Teachers in Pakistan. *Spry Journal of Literature and Linguistics*, *2*(1).

Sung, Y. T., Chang, K. E., & Yang, J. M. (2016). The effects of mobile-computer-supported collaborative learning. *Computers & Education, 94*, 252–275. https://doi.org/10.1016/j.compedu.2015.11.008.

Tuba, A., & Rana, N. A. (2015). Using social networking site (SNS) in students' learning experiences: An experimental study at higher secondary school Karachi, Pakistan. *Int. J. Engl. Educ*, *4*(3), 238-249.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Webb, S., & Nation, I. S. P. (2017). *How vocabulary is learned*. Oxford University Press.

Zaidi, S. S., & Sultana, Z. (2023). Influence of Internet in Shaping the Emotional Maturity of Adolescents: A Review Study. *Spry Journal of Humanities and Social Sciences*, *1*(1).

Zaidi, S. S., Imran, M., Khoso, F. J., & Sultana, Z. (2024). Impact of Technologies and Co-Curricular Activities on Students' Academic Achievement at the Undergraduate Level. *Journal of Social & Organizational Matters*, *3*(3), 75-90. https://doi.org/10.56976/jsom.v3i3.99

Zou, D., Huang, Y., & Xie, H. (2021). Digital game-based vocabulary learning: Where are we and where are we going? *Computer Assisted Language Learning, 34*(5–6), 751–777. https://doi.org/10.1080/09588221.2019.1640745.