**REVIEW**

# Evaluating the Effectiveness of Interactive M-Learning in Fostering EFL Vocabulary for Enhanced Speaking Proficiency

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## ABSTRACT

This study aims to assess the impact of interactive vocabulary learning via WhatsApp on the speaking proficiency of English as a Foreign Language (EFL) learners in Saudi Arabia. Drawing on Krashen's input Hypothesis and Cognitive Theories of Multimedia Learning, the research employs a quantitative approach involving sixty EFL learners from an English language foundation program. Two pre-formed elementary-level groups were randomly assigned as control and experimental groups. The findings indicate that the intervention group showed significant improvements in both vocabulary and speaking tests. To maximize WhatsApp's effectiveness, it is recommended that content be dynamically designed to accommodate diverse learners, include both genders in future studies, and incorporate video clips and additional images to enhance vocabulary learning and speaking proficiency, with careful planning of vocabulary activities being crucial.

*Keywords:* MALL; Speaking; Vocabulary; WhatsApp

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# 1. Introduction

Vocabulary is a fundamental aspect of developing speaking fluency[1, 2]. Besides grammar and pronunciation, it is essential for mastering speaking abilities. English language learners cannot communicate effectively and confidently without adequate vocabulary proficiency. Communication models highlight the interrelation between vocabulary and speaking skills, which are crucial for proficient and coherent communication. To acquire speaking ability interactively, learners must excel in various elements, including pronunciation, grammar, lexicon, topic, and fluency[3]. Improving vocabulary is key to enhancing speaking ability. Even with a broad vocabulary, lack of practice in conversations can lead to vocabulary attrition and reduced speaking capability.

Integrating technology as an interactive learning platform is crucial for advancing language education[4, 5]. Engagement is a multifaceted concept involving psychological, intellectual, and emotional elements[6]. Learners show engagement through active participation in language tasks and increased dedication to their studies. Mobile applications can serve as sources of engagement and interaction.

The rise of computing devices has transformed language learning, moving from traditional settings to more engaging digital mediums[7]. A shift from Computer Assisted Language Learning (CALL) to Mobile Assisted Language Learning (MALL) has occurred with advancements in e-learning technology[8]. College and university students use smartphones extensively, averaging nine hours a day[9]. Modern mobile technologies, such as tablets and smartphones, foster active learner involvement in educational applications, revolutionizing learning and communication activities[10]. Despite their extensive use, evaluating the value and suitability of educational apps remains challenging due to various considerations.

Educators use various smartphone applications (e.g., WhatsApp, Twitter, Messenger, Soma, MicroWorlds, mobile-based intelligent vocabulary tutors) to enhance teaching and learning[11]. Research by Fithriani et al.[12], Loewen et al.[13], Wahyuni and Febianti[14], and Papadakis et al.[15] shows that most college students own smartphones, although they are often used for non-educational purposes. However, these applications can be valuable for learning[16]. Many L2 educators and scholars support WhatsApp's integration to advance listening and speaking skills[17, 18]. The expansion of technology in language instruction has led to increased studies on educational participation[19, 20]. Consequently, L2 scholars have assessed the impact of technological devices on academic engagement.

Research[21–28] indicates that MALL integration positively impacts vocabulary skill development among EFL learners. Similarly, Fattah[29] and Mustafa[30] found that M-learning enhances cognitive and linguistic engagement in speaking skills. MALL also promotes collaborative language development and meets real-world communication needs[31]. It helps EFL students overcome time constraints, ensure error correction, and increase autonomy through mobile phones. Many Saudi EFL students face challenges in speaking due to insufficient planned engagement with peers and lecturers.

Despite this, there is a lack of studies on M-learning's role in developing vocabulary for speaking performance. This study aims to fill this gap by investigating the effective use of M-learning to enhance spoken vocabulary proficiency among Saudi EFL learners, distinguishing it from previous research. While many studies have explored M-learning in writing and reading[22, 25, 32–34], this study focuses on refining vocabulary usage in collaborative learning environments to improve spoken proficiency.

# 2. Literature Review

## 2.1. WhatsApp for Speaking Development

Numerous researchers[21–28] have indicated that MALL integration in EFL classes positively impacts vocabulary skill development among EFL learners. Similarly, Fattah[29] and Mustafa[30] discovered that M-learning improves learners' cognitive and linguistic engagement in speaking skills. Moreover, MALL promotes the collaborative development of language abilities among learners while addressing real-world communication needs[31]. It supports EFL students both inside and outside the classroom by alleviating time constraints, ensuring error correction, and increasing autonomy through cell phone use. Many Saudi EFL students struggle with speaking due to insufficient planned speaking engagement with peers and lecturers.

To date, few experimental studies[18, 35, 36] have investigated the effectiveness of the WhatsApp application in enhancing speaking proficiency. There is a pressing need to explore new research into WhatsApp's utility in improving vocabulary for speaking proficiency. WhatsApp integration

has shown a positive influence on developing speaking expertise. Several studies have utilized WhatsApp to improve speaking proficiency.

Andújar-Vaca and Cruz-Martínez[18] examined the benefits of mobile-mediated communication (MMC) in improving second language (L2) oral proficiency in Spain. The study results indicated a significant improvement in speaking skills, particularly in fluency, pronunciation, and vocabulary assessments. Additionally, Jafre et al.[37] conducted a preliminary investigation to enhance learners' communication abilities through WhatsApp. Their analysis revealed a significant improvement in speaking abilities, with follow-up test scores increasing by 2.5% to 6% after implementing the WhatsApp treatment. Learners' positive perceptions of the application and their willingness to use the platform further supported these findings.

Studies such as Andújar-Vaca and Cruz-Martínez[18], Jafre et al.[37], and Khan et al.[2] assert that smartphone applications offer learners a ubiquitous learning environment across various contexts. Students can use the application during their free time to enhance language learning proficiency. WhatsApp offers numerous activities, including using glossed vocabulary cards for discussions, which can help learners improve their vocabulary and overall language proficiency. The autonomy provided by the application contributes to the development of speaking skills. Ahmed et al.[36] and Hamad[24] suggested that participants using mobile applications for learning demonstrated improved speaking accuracy and fluency.

The review indicates that integrating WhatsApp is beneficial for increasing learners' speaking performance. However, the literature reveals a gap in studies examining WhatsApp's effectiveness in enhancing vocabulary for speaking performance. Most previous empirical studies have not addressed the intersection of vocabulary learning and speaking performance when using WhatsApp as a facilitation and scaffolding tool. Furthermore, there is a lack of studies exploring the connection between vocabulary learning and speaking performance[38]. These insights guide researchers to assess WhatsApp's potential in improving EFL learners' vocabulary intake and spoken language skills.

## 2.2. Vocabulary and Speaking Performance

Relatively few studies have examined the influence of vocabulary knowledge on the development of verbal or spoken fluency, despite substantial research on vocabulary instruction in the EFL context. Studies by Koizumi[39], Hilton[40], Milton et al.[41], Koizumi and In'nami[38], Li and Lorenzo-Dus[42], Lateh et al.[43], and Uchihara and Saito[44, 45] have focused on this topic. Schmitt[3] confirmed that mainstream research has largely investigated the connection between receptive and productive vocabulary. Surprisingly, current literature includes only one study by Disalva and Mary[45] on using M-learning applications to enhance spoken vocabulary.

Disalva and Mary[45] aimed to improve management students' vocabulary using the Word Up mobile application. Although the study showed statistically significant results in vocabulary tests, it faced several methodological issues. The study mentioned conducting personal interviews but did not include speaking tests or comparing pre- and post-test results. The interviews only reflected learners' perceptions of the application's use. Additionally, learners were expected to learn and practice vocabulary independently.

Previous studies by Koizumi[39] and Hilton[40] have shown that vocabulary plays a crucial role in developing speaking skills. Koizumi[39] identified two key points: first, the study enhanced the vocabulary-based speaking performance of Japanese novices in English without pre-task preparation time; second, it established a correlation between the quantity of productive vocabulary and task accuracy. These studies demonstrated that vocabulary instruction significantly impacts fluency and precision in speaking performance, underscoring vocabulary's importance in speaking skills.

However, other studies failed to establish a clear link between EFL learners' vocabulary and speaking abilities. For instance, Lateh et al.[43], Milton et al.[41], and Uchihara and Saito[44] did not find a notable connection between vocabulary and speaking abilities, though they validated the relationship between comprehension and productive knowledge. Notably, these studies did not address the fluency of oral skills. Despite these limitations, they suggest that vocabulary knowledge can enhance communication capabilities among EFL learners. This paves the way for exploring the role of vocabulary through comprehensible input, such as flashcards via WhatsApp, to improve speaking performance. The key research questions are:

1. How does the WhatsApp application affect EFL learn-

ers' vocabulary enrichment?

2. What is the effect of vocabulary acquisition via WhatsApp on the speaking proficiency of EFL learners?

# 3. Methodology

Many factors influence the selection of a research design; researchers intentionally and consciously choose to ignore or accept elements of a claim that either support their views or refute others[46]. Ingham-Broomfield[47] asserted that one must consider the methodology selection in light of anticipated results to obtain profound and nuanced research findings. The current investigation employed a quantitative research methodology to examine the influence of WhatsApp on the enhancement of students' spoken vocabulary proficiency and speaking performance. A quasi-experimental research design was used to collect the data.

## 3.1. Population and Sampling

All participants were of Saudi nationality, and Arabic was their first language. The Foundation Year program requires students to attend at least 85% of the lectures in a semester; otherwise, they cannot sit for their final exams if their absence exceeds 15% without an official excuse. The participants' ages ranged from 17 to 20 years. All participants were male Foundation Year students, distributed into different levels—foundation, elementary, and intermediate—by the university's administration based on a placement test. The present study involved 60 male EFL learners from two pre-formed intact groups. Due to administrative constraints, the researchers could not select the participants. Two elementary-level intact groups were chosen for the experiment, and the experimental and control settings were assigned to these groups at random. Consent forms were provided to both groups for participation in the experiment.

**Table 1** presents the sample distribution of the individuals involved in the current investigation.

**Table 1.** Distribution of the participants.

| Groups | Number of Students |
|---|---|
| Experimental | 30' |
| Control | 30 |

## 3.2. Instruments

The debate has largely centered on the use of tested instruments for data collection in research studies. Utilizing pre-existing instruments versus developing new ones has specific implications. Bastos et al.[48] criticized the decision to create a new instrument, arguing that this approach fails to address the shortcomings of existing instruments. The need to develop novel instruments arises when there are no suitable alternatives for assessing a particular phenomenon and existing tools have significant and well-defined limitations. If a suitable instrument is available, it is advisable to consider using a pre-existing one due to its established validity and reliability[48–50]. Given these considerations, the researcher chose to employ pre-existing instruments for this study. To collect data, vocabulary and speaking tests were used.

## 3.3. Reliability

Various measures can be used to confirm the reliability of the tools. Reliability estimation can involve methods such as the split-half method, Cronbach's alpha, the Guttman formula, Kuder-Richardson, and the Rulon method[51]. The Kuder-Richardson formula was employed to assess the reliability of the vocabulary test. The Kuder-Richardson formula is considered the most appropriate for measuring test reliability in cases where responses are scored as one mark for a correct answer and zero for an incorrect response or a yes/no answer[51]. A Kuder-Richardson value of .70 or above is deemed reliable[52]. The reliability of the vocabulary test in the current study was above .70, meeting the accepted standard for the Kuder-Richardson formula.

For the speaking test, rater agreement was used to ensure reliability. Inter-rater reliability is determined when two raters are involved[53]. Agreement between raters can be assessed using methods such as Cohen's Kappa, Pearson correlation, Bland-Altman, and regression[54]. In this study, Bland-Altman agreement was used to evaluate the reliability of the speaking task (**Table 2**). The Bland-Altman plot was employed to assess the consistency of the methods. Data points closer to the plotline indicate a greater degree of agreement, as indicated by the Analyse-it® software[55].

**Table 2.** Summary of the findings of the reliability of the current study.

| No | Instrument | Statistical Test Used | Reliability Value |
|---|---|---|---|
| 1. 5 | Vocabulary test (Pre-Control) | KR-20 | 0.81 |
| 2. 6 | Vocabulary test (Post-Control) | KR-20 | 0.79 |
| 3. 7 | Vocabulary test (Pre-Experimental) | KR-20 | 0.87 |
| 4. 8 | Vocabulary test (Post-Experimental) | KR-20 | 0.87 |
| 5. 9 | Speaking Test Split Half Method | | |
| 6. 10 | Pre speaking Experimental | Bland Altman | Df=0.19<br>*(difference closer to "0" shows agreement) |
| 7. 11 | Pre-speaking Control | Bland Altman | Df=0.13 |
| 8. 12 | Post Speaking Experimental | Bland Altman | Df=0.18 |
| 9. 13 | Post speaking Control | Bland Altman | Df=0.21 |

## 3.4. Procedure

To provide treatment for the students, the researcher created and administered a WhatsApp group. Teaching sessions were conducted for both groups by the researcher. This approach helped reduce any teacher-related influences on the experiment, as the researcher could subconsciously treat the experimental and control groups differently[56]. The researcher instructed the students on how to use the WhatsApp group, explaining its norms to the experimental group participants, and used only English as the language of instruction. Vocabulary cards were distributed to the experimental group via WhatsApp twice weekly for eight consecutive weeks before the class day. Students were required to create additional sentences using the target words in the WhatsApp group. To engage multiple senses, learners had to view other students' words, pictures, and example sentences. Subsequently, the researcher asked the students to discuss a specific topic in class. **Figure 1** illustrates the flow chart of the experimental group.
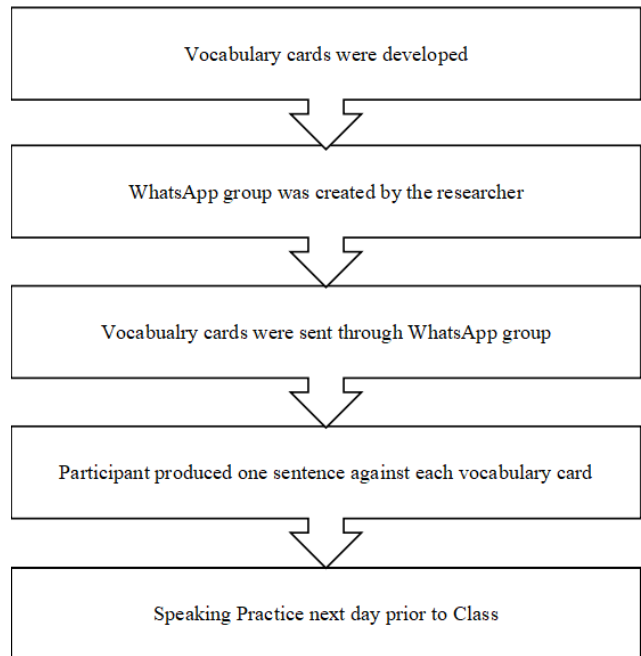
## 3.5. Control Group

One day before the class session, the control group received targeted vocabulary cards. To avoid the Hawthorne effect, this ensured uniformity in material provision for both control and experimental group students. Polio and Friedman[56] asserted that it is crucial to treat both groups equally, ensuring they spend the same amount of time on the task. Before entering the formal classrooms, students were asked to read the vocabulary cards and write a sentence for each card on a piece of paper. **Figure 2** illustrates the control group's flow chart.
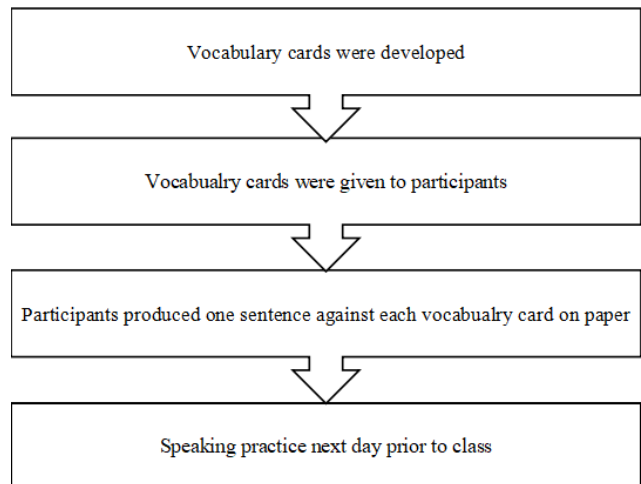


**Figure 1.** Flow chart of the experimental group.



**Figure 2.** Flow chart of the control group.

## 3.6. Data Analysis

The students' pre-test and post-test scores were compared to assess vocabulary learning before and after the intervention. We employed t-tests and paired t-tests for analyzing vocabulary and speaking data. According to Creswell[57], t-tests are used for categorical data in experimental research design. Additionally, a t-test is appropriate for data analysis if the data distribution is normal[58]. We used both t-tests and paired t-tests to interpret and analyze the vocabulary and speaking test data. A dummy variable was calculated to verify the effect size of the intervention.

## 3.7. Results

A pre-test was conducted before the commencement of treatment in the first week of the intervention, and a post-test was administered after the completion of the treatment. **Table 3** displays the results of the paired t-test.

The control group's average difference between the pre- and post-treatment scores was −0.19. The standard deviation for the variances between the pre- and post-intervention scores in the control group was 0.13. The t-statistic for this comparison was −8.15, and the p-value was 0.00 (<0.05). This indicates a significant difference in the control group's pre- and post-intervention vocabulary performance. Consequently, we concluded that the control group's vocabulary performance significantly changed from pre- to post-intervention, suggesting that the use of vocabulary cards had a substantial effect on enhancing learners' vocabulary. The t-statistic for the experimental group was −15.93, with a p-value < 0.05 (significant), indicating a significant difference in vocabulary skills between the pre- and post-intervention phases. The data analysis demonstrates a notable improvement in vocabulary learning among the participants in the experimental group compared to the control group. Although the control group showed some improvement on the post-test, the variance in their results was not as pronounced as that observed in the experimental group.

## 3.8. Speaking Pre- and Post-Testing (t-Statistic)

A t-test was employed to analyze the variances between pre-intervention and post-intervention speaking performance scores, as well as the differences between the experimental and control groups. **Table 4** presents the results of the paired t-test for the speaking pre-test and post-test scores of both the control and experimental groups.

The analysis of the t-statistic revealed an average difference of −1.175 between pre- and post-intervention scores, with a p-value less than 0.05 (p < 0.05), indicating statistical significance. These results support the acceptance of the alternative hypothesis, demonstrating that the learners' speaking skills significantly improved from pre- to post-intervention. The negative t-statistic value suggests an enhancement in the learners' speaking skills in the post-intervention phase for the control group. Data analysis shows that the experimental group experienced a substantial improvement in speaking skills compared to the control group. Although the control group also showed improvement in their post-test performance, the difference was less pronounced than that observed in the experimental group.

## 3.9. Measuring of Speaking Performance

We applied the simple regression technique, as previously discussed in the vocabulary testing scenario, to the speaking performance scores to assess the intervention's impact using SPSS. This section presents and elaborates on the results. The effect size of the intervention on speaking performance is displayed in **Table 5** and was measured using a dummy variable.

Data on overall speaking skills were collected before and after the intervention and combined for analysis. A dummy variable was used, with a value of 1 for data collected after the intervention and 0 otherwise. The coefficient for the post-intervention variable was significant (p < 0.05), indicating that the learners' speaking performance differed significantly before and after the intervention. Moreover, the positive coefficient (0.596) suggests that speaking skills improved by 0.596 units following the intervention. Data analysis showed that learners who engaged in vocabulary rehearsal in the WhatsApp group, produced example sentences, and participated in WhatsApp chat discussions outperformed the control group in both vocabulary and speaking performance. The use of vocabulary cards during the intervention significantly enhanced learners' performance in vocabulary and speaking skills, as demonstrated by the post-test analysis. Overall, learners in the experimental group showed significant improvement in both vocabulary learning and speaking

**Table 3.** Paired samples t-test.

|  |  | Mean | Std. Deviation | t-Stat | d.f | Sig |
|---|---|---|---|---|---|---|
| Pair 1 | Pre-Con—Post-Con | −0.19 | 0.13 | −8.15 | 29.00 | 0.00 |
| Pair 2 | Pre-Exp—Post-Exp | −0.30 | 0.10 | −15.93 | 29.00 | 0.00 |
| Pair 3 | Pre-Con—Pre-Exp | −0.07 | 0.13 | −2.85 | 29.00 | 0.01 |
| Pair 4 | Post-Con—Post-Exp | −0.17 | 0.09 | −10.82 | 29.00 | 0.00 |

**Table 4.** Paired t-test for speaking.

**Paired Samples Test**

|  |  | Paired Differences | | T | Df | Sig. (2-Tailed) |
|---|---|---|---|---|---|---|
|  |  | Mean | Std. Deviation |  |  |  |
| Pair 1 | Pre-Con—Post-Con | −1.17500 | 0.63365 | −10.157 | 29 | 0.000 |
| Pair 2 | Pre-Exp—Post-Exp | −2.23333 | 0.64304 | −19.023 | 29 | 0.000 |
| Pair 3 | Pre-Con—Pre-Exp | 0.15833 | 0.94341 | 0.919 | 29 | 0.366 |
| Pair 4 | Post-Con—Post-Exp | −0.90000 | 1.05577 | −4.669 | 29 | 0.000 |

performance.

# 4. Discussion

The results of the speaking pre-tests and post-tests indicated that the overall speaking performance of Saudi EFL learners in the experimental group improved compared to the control group. The coefficient of the post-beta was significant ($p < 0.05$), indicating that the speaking abilities of learners in the experimental group improved significantly more than those in the control group. After receiving vocabulary cards, the experimental group engaged in speaking discussions through the WhatsApp application and outperformed the control group, which received instruction through traditional classroom methods. These findings align with Krashen's[59] language acquisition theory, emphasizing the importance of comprehensible input for interactive classroom discussions. They also highlight the relevance of the 'i+1 input' paradigm. The use of M-learning in spoken vocabulary proficiency supports Krashen's theory by providing individualized, intelligible information, as Bakori[60] noted. Vocabulary cards with illustrations were effective in aiding vocabulary learning and improving speaking proficiency.

Similarly, these findings are consistent with Ahmad et al.[61], who found that M-learning activities expanded vocabulary through real texts. The study also partially aligns with Syaifudin[62] regarding interactive vocabulary knowledge. Participants in the experimental group found WhatsApp provided convenient, ongoing access to language learning materials, enhancing vocabulary learning and speaking skills. The use of flashcards increased learner involvement and led to improved speaking skills. Vocabulary cards facilitated participation in WhatsApp group discussions, positively impacting vocabulary and speaking skills.

These results reinforce the findings of Andjar-Vaca and Cruz-Martínez[18], who used WhatsApp for text, image, and voice communication, finding a strong relationship between vocabulary knowledge, smartphone chat usage, and improved speaking skills. Hamad[24] also highlighted WhatsApp's role in developing overall language comprehension, though the study lacked experimental data. The current study's findings are partially consistent with Jafre et al.[37], supporting the incorporation of WhatsApp into the learning process to enhance speaking abilities. However, Jafre et al.[37] struggled to determine WhatsApp's overall effectiveness due to having only one experimental group and a limited sample size.

Conversely, the current study's findings differ from Weissheimer et al.[63], where the ineffectiveness of WhatsApp integration was attributed to differing treatment techniques and non-uniform supplies across groups. The current study shows that WhatsApp is beneficial for implementing M-learning in EFL and integrating technology within Saudi Arabian educational institutions. WhatsApp offers comprehensive and interactive input, reducing mental blocks and making language learning enjoyable. Its ubiquity enhances the blended learning environment, increases engagement, and fosters mobility, crucial elements in mobile learning

**Table 5.** Results of the dummy variable.

| Coefficients | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | T | Sig. |
| 1 | (Constant) | 5.883 | 0.147 | | 40.048 | 0.000 |
| | Post | 1.175 | 0.208 | 0.596 | 5.656 | 0.000 |
| a. Dependent Variable: ConOverall | | | | | | |

theory[64]. As Karakose et al.[65] demonstrated, M-learning provides continuity in education, especially in unprecedented situations like COVID-19. These insights can aid EFL students and teachers in effective content delivery. However, instructors must carefully plan activities to avoid distractions, as Papadakis and Kalogiannakis[66] found that many mobile apps prioritize entertainment over instructional content.

## 5. Conclusion

The study confirmed that vocabulary is crucial for speaking proficiency, with the M-learning application playing a key role in helping learners retain and use new words, thereby enhancing their speaking performance. Integrating WhatsApp as an interactive tool has the potential to improve vocabulary and speaking skills among Saudi EFL learners. The findings contribute to global literature on M-learning and vocabulary cards, demonstrating WhatsApp's utility for both learners and instructors. The ability to provide additional materials and utilize technology for language learning is valuable, but careful instructional design is essential to avoid technological distractions. The experiment showed that learners needed guidance to fully grasp tasks, and using picture-based vocabulary cards improved the effectiveness of WhatsApp group discussions.

The study revealed that WhatsApp supports vocabulary development for speaking performance, with significant improvements in the experimental group attributed to the application's use. The extended use of pictures, ease of WhatsApp, and cognitive engagement helped learners retain new words, leading to better scores on speaking post-tests and during subsequent discussions. These insights suggest that incorporating technology like WhatsApp into EFL classes can enhance learning, guiding policymakers and instructors to improve syllabi effectiveness.

Additionally, the study highlights that vocabulary is fundamental to mastering the four core language skills. Effective retention and usage of words are crucial aspects of L2 learning, with Schmitt (2010) noting that vocabulary application involves procedural language use. The study illustrates that familiarity with words enhances language usage, making vocabulary acquisition a continuous process. Ultimately, learners who used WhatsApp outperformed those taught with traditional methods, demonstrating superior spoken proficiency.

## 6. Pedagogical Implications

M-learning programs, such as WhatsApp, offer a variety of pedagogical benefits for L2 lessons. By integrating WhatsApp, language students can enhance their vocabulary retention and practice, as the platform supports long-term word recall and reinforces learning. Incorporating WhatsApp as a supplementary tool in L2 instruction can be advantageous; for instance, it can facilitate vocabulary practice, enable grammar teaching through group discussions, and allow for the distribution of assignments and language tasks. Additionally, WhatsApp can be used to provide students with reading materials in advance, supporting a more effective and engaging learning experience before traditional instruction begins. However, the study exploring these benefits focused on a crucial aspect of speaking skill development and had several limitations: it was restricted to one campus, used pre-existing groups due to managerial issues, and included only male learners.

## 7. Recommendations for Future Research

The current investigation highlights the effectiveness of using WhatsApp to support foundation year learners in improving their vocabulary acquisition for speaking pro-

ficiency. The study found that learners achieved positive outcomes; however, to expand the results' applicability, the content on WhatsApp needs to be dynamically designed to address a diverse range of learners. The initial study was limited to male students from a foundation year program in Saudi Arabia, so future research should include both genders to fully explore WhatsApp's benefits. The study also identified the effectiveness of using pictures on vocabulary cards, suggesting that incorporating video clips and additional images could further enhance vocabulary learning and speaking proficiency. To optimize WhatsApp's effectiveness, careful planning of vocabulary activities is essential. Future research should explore different participant groups based on interests, availability, and background, and consider using a larger sample size to better understand the impact of M-learning on enhancing learning experiences and reducing anxiety associated with new learning methods.

## Author Contributions

R.M.I.K.: Conceptualization, methodology, writing—original draft; M.A.A.: Data collection, analysis, writing—review and editing; N.R.M.R.: Supervision, validation, writing—review and editing.

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## Institutional Review Board Statement

Not applicable.

## Informed Consent Statement

Informed consent was obtained from all participants prior to their inclusion in the study.

## Data Availability Statement

The data supporting the reported results are not available due to privacy or ethical restrictions.

## Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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