The Effect of Memrise on Vocabulary Learning and Listening Comprehension among Iranian Intermediate EFL Learners: A Mixed-Methods Study

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ABSTRACT

This mixed-methods study investigated the effect of the Memrise application on Iranian intermediate English as a Foreign Language (EFL) learners' vocabulary learning and listening comprehension. The study involved 60 participants, with 30 in the experimental group using Memrise and 30 in the control group engaging in traditional textbook-based instruction. The data were collected through pre-tests and post-tests assessing vocabulary learning and listening comprehension, along with semi-structured interviews and classroom observations to capture learners' experiences. Quantitative data were analyzed using independent samples t-tests, while qualitative data were analyzed via inductive coding with MAXQDA 20. The results showed significant improvements in both vocabulary learning and listening comprehension for the experimental group compared to the control group. Qualitative findings highlighted key features of Memrise, including its user-friendly interface, gamification, and authentic content, while also identifying challenges such as technical issues and limited vocabulary coverage. Learners expressed increased motivation, confidence, and enjoyment in using the app, though frustrations with technical glitches were noted. In addition, classroom observations supported these findings, revealing high levels of engagement and participation throughout the intervention. The study suggests that Memrise can be an effective tool for enhancing vocabulary and listening comprehension in EFL contexts, though technical and content limitations should be addressed for optimal learning experiences.

Keywords: Listening comprehension, Memrise application, vocabulary learning

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1. Introduction

In the interconnected globalized world, mastering the English language has become essential for successful interaction in academic and professional settings (Hingne, 2013). As the global lingua franca, English is widely used across various sectors (Sofyan, 2021), driving the growing demand for high-quality English language instruction, especially in non-native settings (Llurda, 2004). Traditional methods in English as Foreign Language (EFL) often rely on rote memorization and strict grammar rules. To meet current demands, these approaches must evolve toward dynamic, learner-centered methods that develop practical language skills and sub-skills (Sharma, 2023; Solihabonu, 2024). Among these, vocabulary and listening comprehension are foundational for effective communication (Heidari Shahreza, 2021; Stæhr, 2009).

In other words, a strong vocabulary base is crucial for understanding and producing language, while listening comprehension enables learners to interpret and respond to spoken language in real time (Trang, 2020). In this regard, Schmitt (2000) emphasizes that "lexical knowledge is central to communicative competence and to the acquisition of a second language" (p. 55). Furthermore, Krashen (1985) highlights the critical role of listening in acquiring comprehensible input, a foundational aspect of language learning, while Pourhosein Gilakjani and Ahamadi (2011) assert that listening is also central to the broader communication process. Together, these perspectives underscore the significance of listening, emphasizing its dual role in facilitating both language acquisition and effective communication. However, many EFL classrooms continue to employ traditional, teacher-centered methods that fail to engage students effectively or address their diverse learning needs (Alqahtani & Alhamami, 2024; Atai et al., 2017; Gámez, 2015). This gap in instruction has sparked interest in technological solutions, particularly Mobile-Assisted Language Learning (MALL), which offers interactive and flexible platforms for self-regulated language practice (Kukulska-Hulme & Shield, 2008).

The deployment of mobile phones for language acquisition goes beyond app development or usage habits. It reflects a broader shift in Computer-Assisted Language Learning (CALL), shaped by decades of technological evolution (Bax, 2003; Rahmannia & Babaie Shalmani, 2023). The strategic integration of technology into pedagogical frameworks holds considerable potential to reconceptualize traditional models of second language instruction (Alipour et al., 2024; Pourhosein Gilakjani & Rahimy, 2019). As articulated by Heflin et al. (2017), digital learning tools have not merely extended learners' engagement with educational tasks but have also enhanced their attitudes toward mobile-based learning experiences. Consequently, the incorporation of MALL as a pedagogical modality fosters substantive and reciprocal engagement between instructors and learners (Gabarre et al., 2016). In order to remain pedagogically relevant within an increasingly digitalized global context, it is imperative that both teachers and students cultivate advanced technological literacy.

The prevalence of mobile devices supports the installation of a multitude of applications, creating expansive opportunities for learners to access educational materials that promote independent and self-directed learning. Scholars have consistently emphasized the educational value of these applications, asserting that they not only foster the development of core language skills but also deepen learners' understanding of the sociocultural contexts in which the target language operates (Burston, 2014). In addition to linguistic advancement, such applications facilitate engagement with tasks that are collaborative, immersive, and pedagogically rich. As supported by prior research, this blend of interaction, task-based learning, and cognitive engagement is crucial in fostering general language acquisition (Afshari & Taghipour Bazargani, 2025; Skehan, 2003).

Among these, Memrise, a widely used mobile app, leverages gamification, spaced-repetition, and authentic audio content to improve language learning (Zhang, 2019). It integrates videos as a key feature, offering authentic language input through short clips of native speakers. These videos allow learners to hear the language used in real-world contexts, helping them improve their listening comprehension and pronunciation. Together with its other gamified features, like competition, community, and exercise systems, Memrise creates a comprehensive and engaging language learning environment (Karanfil & Özet, 2021).

This study is significant for English teachers, learners, and material developers because it shows how Memrise can enhance both vocabulary and listening comprehension. By combining tests, interviews, and classroom observations, it provides a clear picture of how learners engage with mobile-assisted language learning. The findings may offer

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practical guidance for teachers on integrating digital tools, help learners understand how to use apps effectively for self-directed learning, and inform material developers about designing engaging, technology-based language learning resources.

1.1 Statement of Problem and Purpose of the Study

English language education in Iran is hindered by significant pedagogical and infrastructural challenges, limiting the development of communicative competence among learners (Gholaminejad & Raeisi-Vanani, 2021). Despite increasing demand for English proficiency, many schools and language institutes still rely on traditional, teacher-centered methods. These methods emphasize grammar translation, rote memorization, and form-focused instruction, while neglecting practical language skills and the dynamic nature of real-world communication (Parsaiyan & Gholami, 2023; Safarzadeh & Taghipour Bazargani, 2023; Vardanjani, 2013). Overcrowded classrooms further exacerbate these challenges by reducing opportunities for meaningful interaction and hindering the use of learner-centered, task-based approaches (Orina et al., 2021; Tshangana et al., 2023).

Additionally, the limited exposure to English outside of the classroom, coupled with a lack of informal English input through media or social interaction, restricts learners' ability to consolidate their knowledge (Abdzadeh & Baker, 2020; Dashtestani, 2016). These issues are particularly pronounced in the teaching of vocabulary, where instruction is often confined to decontextualized memorization and translation exercises, making it difficult for learners to retain and apply vocabulary in real-world contexts (Gerami & Noordin, 2013). Similarly, listening comprehension remains underdeveloped in EFL contexts, with learners struggling to understand native speech and cope with different accents, primarily due to limited exposure to authentic spoken English and a lack of effective listening strategies (Ghaderpanahi, 2012; Jamil & Suezdy, 2018; Sun, 2024). Furthermore, teachers often lack the resources and time to incorporate interactive listening activities into their teaching, exacerbating the gap between classroom instruction and real-world communicative demands (Nushi & Orouji, 2020).

In light of these challenges, there is a growing need to explore innovative methods that can enhance vocabulary and listening skills while supporting teachers in overcoming traditional instructional limitations. MALL, particularly game-based applications such as Memrise, offers a potential solution. More specifically, numerous studies have examined the effectiveness of Memrise in enhancing vocabulary acquisition across diverse educational contexts, consistently reporting positive outcomes in learner motivation, achievement, and engagement. For instance, its application has been associated with significant improvements in vocabulary scores and learner motivation in both university and school settings (Abarghoui & Taki, 2018; Fathi et al., 2018; Nuralisah & Kareviati, 2020). Also, while Memrise has been widely recognized as an engaging and effective tool for vocabulary development, its use has largely been investigated only within the domain of vocabulary learning. Moreover, most of the existing studies have relied heavily on quantitative approaches, primarily through pre- and post-tests, without delving into learners' actual interaction with the app or exploring their perceptions and engagement in depth. As a result, there remains a significant research gap regarding how learners experience Memrise and how it may influence other language skills, such as listening comprehension.

This study examines vocabulary learning and listening comprehension together because these two skills are closely interrelated. Vocabulary knowledge strongly predicts learners' ability to comprehend spoken input (Uchihara & Clenton, 2023), while listening provides the primary channel for encountering and consolidating new vocabulary (Li & Zhang, 2019; Vidal, 2003). Furthermore, mobile-assisted tools present vocabulary in authentic audiovisual contexts, naturally linking lexical development to listening practice. Investigating these variables jointly thus offers a more comprehensive understanding of how digital applications influence EFL learning. Therefore, the purpose of this study is to investigate the effect of Memrise on vocabulary learning and listening comprehension, integrating tests, interviews, and observations.

2. Literature Review

2.1 Theoretical Framework

Serving as the conceptual foundation of this study, the SAMR model, originally conceptualized by Puentedura (2006), provides a systematic framework for evaluating the pedagogical integration of digital technologies in language

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education. Particularly relevant to the domain of MALL, the model situates mobile technologies within the broader paradigm of CALL, while delineating the evolving pedagogical roles these tools assume. While early iterations of CALL emphasized static, desktop-based interactions within controlled instructional settings, MALL reflects a shift toward more ubiquitous, personalized, and learner-centered modalities (Kukulska-Hulme & Shield, 2008). The SAMR model, by categorizing technological implementation across a continuum, from enhancement (Substitution and Augmentation) to transformation (Modification and Redefinition), facilitates a critical understanding of not only the presence of technology in educational contexts, but also the extent to which it reconfigures the nature of learning tasks, learner agency, and pedagogical outcomes (Puentedura, 2006). Figure 1 demonstrates the stages of the SAMR model, adapted from Puentedura (2006).

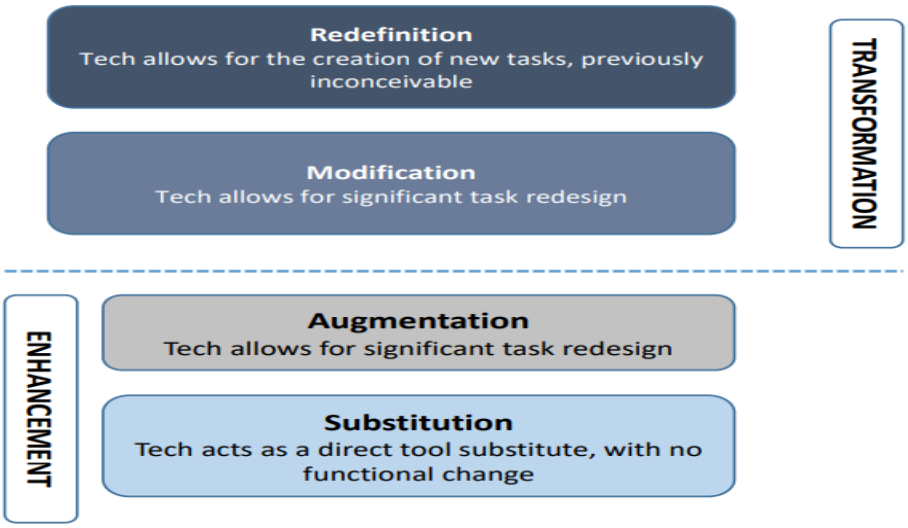

Figure 1. Four stages of the SAMR model

As illustrated in Figure 1, the Substitution stage represents the initial level of technology integration, where digital tools are used to replace traditional methods without altering the core task (Lyddon, 2019). The next stage, Augmentation, still falls within the enhancement category but introduces added features that improve the learning process (Puentedura, 2006). For instance, digital flashcards equipped with instant feedback or built-in pronunciation guides offer more engagement, while still keeping the fundamental task unchanged.

Modification marks a shift toward transformation, where technology facilitates more significant changes in the design and execution of learning activities. In MALL environments, this could involve collaborative vocabulary-building exercises through online platforms, real-time group interactions, or the integration of multimedia resources to enrich listening practice. At the final stage, Redefinition, technology enables learning experiences that would otherwise be impossible in traditional settings (Puentedura, 2006). This structured model provides an ideal framework for examining the impact of mobile-assisted language learning tools, such as Memrise, on language acquisition, because it facilitates a nuanced analysis of whether these technologies are merely refining existing practices or whether they are fundamentally reshaping the way vocabulary and listening skills are developed.

2.2 Empirical Studies

A growing body of research has examined the impact of MALL applications such as Memrise on English vocabulary acquisition, with several studies reporting positive outcomes in various educational contexts. For example, Nguyen et

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al. (2023) conducted a mixed-methods study in a Vietnamese college and found that students who used Memrise alongside traditional instruction significantly outperformed those taught using conventional methods. Learners also reported higher motivation and interest in vocabulary learning. However, technological challenges, such as unstable internet access and inadequate mobile devices, particularly in rural areas, hindered the full integration of the application. Similarly, Fathi et al. (2018) examined Iranian EFL learners and reported that Memrise not only improved vocabulary acquisition but also enhanced learners' self-regulatory capacity in vocabulary learning. While these findings are valuable, the study did not extend its analysis to listening skills or examine how learners actually engaged with Memrise during instruction.

Further support for the benefits of Memrise in vocabulary instruction is seen in other studies as well. Nuralisah and Kareviati (2020) found that Memrise improved vocabulary achievement and boosted student motivation among Indonesian secondary school learners. In another study, Taebenu and Katemba (2021) explored gender differences in vocabulary development and found that while Memrise benefited both male and female learners, female students showed significantly greater gains. Likewise, Esmaeili and Shahrokhi (2020) investigated the role of Memrise in teaching English collocations to Iranian learners and demonstrated its effectiveness in both acquisition and retention. However, this study also pointed to systemic limitations in the Iranian education system, where mobile devices are often restricted, and traditional methods continue to dominate.

Recent research has continued to build evidence of Memrise's effectiveness in vocabulary learning. Erlinda (2024), for example, employed a one-group pre-test/post-test design with first-year students and confirmed significant vocabulary improvement after Memrise-based instruction. Similarly, Ismardianti (2023) applied a pre-experimental design with second-year students and found statistically significant gains in vocabulary knowledge following six Memrise-based sessions, with learners' scores improving from "very poor" to "good." Wu (2019), working with Estonian 10th graders, combined pre- and post-tests with interviews to show that Memrise not only supported vocabulary gains but also fostered positive learner perceptions of its usefulness. Complementing these empirical studies, Aprizal and Wachyudi (2024) conducted a synthesis of 20 previous studies and concluded that Memrise's gamified interface and spaced repetition design promote motivation, autonomy, and retention, though technical limitations and learner preferences influence outcomes.

In addition to vocabulary-focused research, a smaller body of work has addressed listening comprehension. Fadillah (2023) provided one of the few studies that examined listening comprehension, reporting a significant positive effect of Memrise on the listening skills of Indonesian high school students. Also, Widyaningrum and Putro (2020) investigated Memrise as a tool for promoting both speaking and listening skills, synthesizing insights from prior research and highlighting its potential for supporting classroom language learning. To the best of the researcher's knowledge, no other empirical studies have directly tested Memrise for listening comprehension. However, broader MALL research offers supporting evidence. Li (2023) conducted a meta-analysis of 20 experimental studies involving 1,218 EFL learners and found a moderate-to-large overall effect size ($g = 0.792$) for MALL in developing listening skills, with educational level emerging as a significant moderator. Benlaghrissi and Ouahidi (2023) demonstrated that Moroccan secondary school students who used the English Listening Step by Step app significantly outperformed peers in listening comprehension, confirming MALL's potential for enhancing listening through app-based instruction. Finally, Susamawathanakun et al. (2025) reported that MALL significantly improved the listening achievement of Thai undergraduates compared with traditional instruction, with students also expressing high satisfaction while experiencing minor technical difficulties.

Despite the promising findings across these studies, several critical gaps remain. Most research has focused primarily on vocabulary acquisition (Aprizal & Wachyudi, 2024; Erlinda, 2024; Esmaeili & Shahrokhi, 2020; Fathi et al., 2018; Ismardianti, 2023; Nguyen et al., 2023; Nuralisah & Kareviati, 2020; Taebenu & Katemba, 2021; Wu, 2019). Far fewer studies have examined the impact of Memrise on listening comprehension (Fadillah, 2023; Widyaningrum & Putro, 2020). This gap limits the understanding of how mobile apps like Memrise may support broader language skills. Second, although some studies have adopted mixed-methods approaches (Nguyen et al., 2023), they have primarily relied on interviews and post-tests, and have not incorporated classroom observations. This omission limits insights into how learners interact with the app in real-time educational contexts. The present study combines quantitative testing with qualitative interviews and observations to provide a more comprehensive understanding of both performance outcomes and learner experiences. By addressing listening comprehension alongside vocabulary learning

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and incorporating direct classroom observation, a method absent from prior Memrise studies, this research fills a significant gap in the literature and offers a more holistic view. Therefore, in response to the identified gaps, this study proposes the following research questions:

1. Does Memrise have a statistically significant effect on Iranian intermediate EFL learners' vocabulary learning compared to conventional methods?
2. Does Memrise have a statistically significant effect on Iranian intermediate EFL learners' listening comprehension compared to conventional methods?
3. What do Iranian intermediate EFL learners report about their experiences with Memrise?
4. How do Iranian intermediate EFL learners engage with Memrise during vocabulary exercises and listening comprehension as observed in the classroom?

3. Methodology

3.1 Participants

The participants in this study consisted of 60 EFL learners, aged between 20 and 27 years, all enrolled in two language institutions in Tehran, Iran. A convenience sampling technique was employed to recruit participants based on their availability and willingness to engage in the study. The sample was drawn from two pre-existing, intact classes, each consisting of 30 students. To ensure equivalence in English proficiency across the groups, all participants underwent the Quick Oxford Placement Test (QOPT), with the results confirming that all learners fell within the intermediate proficiency range, thereby establishing homogeneity between the groups. Following this, the two classes were randomly assigned to one of the two study conditions, with one class selected as the experimental group (n = 30), using Memrise as a tool for language learning, and the other as the control group (n = 30), continuing with the conventional teaching method. Moreover, 15 students from the experimental group voluntarily opted to participate in the interview sessions, contributing qualitative insights into their experiences with Memrise.

3.2 Research Instruments

3.2.1 Homogeneity test

In this study, the QOPT was employed to determine participants' language proficiency. Since the QOPT is a standardized test, its reliability and validity have been well-established in previous research. The test consists of 60 questions designed to assess grammar, vocabulary, and cloze tests, which are crucial for determining overall proficiency. Scores were interpreted to include learners falling one standard deviation below and one standard deviation above the mean, ensuring that all participants were classified within the intermediate proficiency range.

3.2.2 Memrise Application

The Memrise application served as the primary tool for engaging participants with interactive videos and exercises focused on vocabulary and listening comprehension. One of its primary components is spaced-repetition, which helps learners retain and recall vocabulary by identifying knowledge gaps and encouraging timely reviews (Zhang, 2019). Another significant feature is competition, which gamifies the learning process by displaying a leaderboard where learners earn points for correct answers, fostering motivation and consistent practice (Karanfil & Özet, 2021). The app also includes a variety of exercises, such as vocabulary learning, word translation, authentic videos, and pronunciation practice, which help reinforce memory and language acquisition (Tyas & Nurdiawati, 2019). Lastly, the reminder function encourages continuous engagement by sending automatic notifications to prompt learners to review their materials (Fadhilawati, 2016).

3.2.3 Pre- and Post-tests

The pre- and post-tests were designed to assess the learners' vocabulary and listening comprehension skills before and after the intervention. These tests were based on the mutual intermediate content covered in both the Memrise

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application and the *American English File 2* (AMEF 2) textbook, as the participants were studying AMEF 2 at the time of the study in those institutes. The tests comprised two primary sections: a vocabulary section and a listening comprehension section. Regarding the vocabulary section, both the pre-test and post-test contained 20 multiple-choice vocabulary exercises, which evaluated the participants' grasp of essential vocabulary items. These items were introduced through either Memrise or the AMEF 2 textbook, providing a comprehensive gauge of learners' vocabulary knowledge at the intermediate level. Additionally, the listening comprehension portion in both the pre-test and post-test included 12 tasks with 20 multiple-choice items aimed at assessing participants' ability to understand spoken English. These tasks featured intermediate-level vocabulary, with content reflecting the listening exercises in both Memrise and the AMEF 2 textbook that were fully aligned. Each section (vocabulary and listening) was scored separately, providing a detailed analysis of the learners' progress in each area.

The structure of the pre-test and post-test was the same in terms of format and number of items; however, the content differed to prevent familiarity and ensure a more accurate measure of learning outcomes. To ensure reliability, the test instruments were piloted with a group of 10 intermediate EFL learners who were not part of the main study, and feedback from them helped refine ambiguous items and improve clarity. Additionally, Cronbach's alpha was calculated for each section to assess internal consistency: pre-test vocabulary $\alpha = 0.81$, post-test vocabulary $\alpha = 0.83$, pre-test listening $\alpha = 0.82$, and post-test listening $\alpha = 0.80$, indicating acceptable reliability. Moreover, to enhance content validity, both the pre-test and post-test were reviewed by two experts in language assessment and EFL instruction. These experts evaluated the test items for alignment with the learning objectives, appropriate difficulty level, and overall content coverage, ensuring that the instruments accurately measured vocabulary and listening comprehension relevant to the intervention.

3.2.4 Interview

To gain in-depth qualitative perspectives regarding the learners' experiences with the Memrise application, a semi-structured interview was employed as one of the research instruments. A semi-structured interview is a flexible qualitative data collection method that combines predetermined questions with opportunities for participants to elaborate on their responses (Kallio et al., 2016). The interview consisted of three core items adapted from Rahmannia and Babaie Shalmani (2023), focusing on the learners' engagement with MALL. To enhance the reliability of the interview instrument, a pilot study was conducted with five participants, whose feedback led to revisions in question wording for clarity and consistency. Content validity was ensured through expert review, where two specialists in applied linguistics and language assessment evaluated the relevance, clarity, and alignment of the questions with the objectives. To further strengthen the trustworthiness of the qualitative data, several additional strategies were employed: member-checking enabled participants to confirm the accuracy of the interpretations of their responses; and an audit trail documented coding decisions and theme development, enhancing transparency and confirmability. Finally, the interview items were explicitly linked to the research variables, ensuring that the qualitative data directly addressed the research questions. The final revised interview questions were as follows:

1. Which features of Memrise have you found the most useful?
2. What challenges, if any, did you face while using Memrise?
3. What affective impact do you think Memrise had on your vocabulary learning and listening comprehension?

3.2.5 Observation

To gain a deeper understanding of how Iranian intermediate EFL learners engaged with the Memrise application during vocabulary and listening comprehension activities, classroom observation was employed as a qualitative research instrument. In the present study, the class assigned to the experimental group was observed by the researcher over the course of three instructional sessions. These observations aimed to capture patterns of engagement, usage behavior, and learner interaction during the implementation of MALL through Memrise. A semi-structured observation approach was adopted, allowing for both systematic data collection and the flexibility to document spontaneous and relevant behaviors as they occurred. An observation checklist guided the process, focusing on key indicators of learner

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engagement, which included the frequency and duration of learners' use of the Memrise application during classroom tasks, the overall level of participation in vocabulary and listening activities, and the degree to which learners interacted with one another or asked questions related to the use of the app. In addition, the researcher paid close attention to observable signs of learner motivation, such as attentiveness, enthusiasm, and willingness to complete tasks, as well as any indicators of disengagement or confusion.

To ensure the validity and trustworthiness of the classroom observation data, several strategies were implemented. First, an observation checklist was developed based on the research objectives, focusing explicitly on vocabulary and listening comprehension engagement, ensuring content validity. The checklist was reviewed by two experts in applied linguistics and language teaching to confirm its relevance and comprehensiveness. Second, the researcher maintained a detailed field journal documenting observations, including contextual notes and reflections, which provided an audit trail to enhance dependability. Finally, coding of observed behaviors followed systematic procedures, and the categories were clearly linked to the research variables, ensuring that the observational data accurately represented learner behavior in relation to the objectives.

3.3 Data Collection Procedure

This study adopted a mixed-methods design that combined a quasi-experimental quantitative strand with embedded and sequential qualitative components (Creswell & Plano Clark, 2018). The quantitative strand consisted of pre- and post-tests measuring vocabulary and listening comprehension in both the experimental and control groups. To capture process data, qualitative classroom observations were embedded during the treatment sessions, documenting real-time learner engagement and interaction with Memrise. Following the post-tests, semi-structured interviews were conducted with selected participants to provide an explanatory follow-up, offering deeper insight into learners' experiences and perceptions of the intervention. In this way, the study integrated quantitative evidence of learning outcomes with qualitative insights into learner engagement and attitudes.

After the homogenization of the participants and piloting processes, all 60 participants (30 in the experimental group and 30 in the control group) were administered the pre-test. This test assessed the learners' vocabulary and listening comprehension skills and was based on the mutual intermediate content covered in both the AMEF 2 textbook and the Memrise application. The pre-test included two sections, namely vocabulary and listening comprehension, which was administered in a controlled classroom setting, with each participant given 45 minutes to complete it. Following the pre-test, the intervention phase began. The experimental group engaged with the Memrise application during their regular class sessions, using it as a tool for vocabulary learning and listening comprehension. They were given time to complete exercises on Memrise during each class, with the app's spaced-repetition system helping to reinforce vocabulary retention and the listening tasks targeting spoken language comprehension. These learners interacted with Memrise for four weeks, with a total of eight sessions devoted to the app-based activities, each lasting 75 minutes.

The control group, on the other hand, continued with traditional classroom activities, using only the AMEF 2 textbook for vocabulary and listening practice. The control group received the same amount of instructional time as the experimental group, but their lessons were entirely based on conventional teaching methods such as lecture-based explanations, textbook exercises, and in-class listening activities. No digital tools or mobile-assisted learning technologies were used by the control group during the intervention phase. At the end of the intervention period, both the experimental and control groups were administered the post-test, which was given in a controlled classroom environment, where each participant had 45 minutes to complete the assessment. The post-test allowed the researcher to compare the learning outcomes of the experimental group (who used Memrise) with those of the control group (who used only conventional methods). It is worth mentioning that during the intervention phase, the experimental group was observed in the classroom across three separate sessions, which were held at regular intervals during the intervention period to provide a comprehensive view of how learners engaged with the tool over time.

After the post-test, 15 students from the experimental group volunteered to participate in semi-structured interviews to explore the learners' experiences with Memrise, focusing on their perceptions of its impact on vocabulary learning and listening comprehension. The interviews were conducted individually, either in person or via an online platform, depending on the participants' preferences. Each interview lasted approximately 15–20 minutes, and the responses were audio-recorded with the participants' consent and transcribed for analysis.

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3.4 Data Analysis

To address the quantitative research questions, which analyze the effect of Memrise on Iranian intermediate EFL learners' vocabulary learning and listening comprehension, independent samples t-tests were employed using SPSS 26. The independent variable was Memrise (experimental group vs. control group), and the dependent variables were vocabulary learning and listening comprehension.

For the qualitative data collected through semi-structured interviews and classroom observations, a coding process was conducted using MAXQDA 20. Interviews were transcribed, and key themes related to learners' experiences with Memrise were identified through inductive coding. Observational data from the classroom sessions were also coded to capture learner engagement, behavior, and interaction with Memrise.

4. Results

Before conducting parametric tests for vocabulary and listening comprehension, the normality of all score distributions was assessed using the Shapiro–Wilk test. For the experimental group and control group, all p-values exceeded the significance level of 0.05: experimental vocabulary pre-test ($p = 0.110$), experimental vocabulary post-test ($p = 0.260$), control vocabulary pre-test ($p = 0.105$), control vocabulary post-test ($p = 0.145$), experimental listening pre-test ($p = 0.120$), experimental listening post-test ($p = 0.150$), control listening pre-test ($p = 0.125$), and control listening post-test ($p = 0.160$). These results indicate no significant deviations from normality, confirming that parametric analyses were appropriate for comparing group means.

4.1 The First Research Question

To assess the effect of Memrise on Iranian intermediate EFL learners' vocabulary acquisition, two independent samples t-tests were performed: one on the pre-test scores to confirm group equivalence and another on the post-test scores to evaluate the app's impact. Descriptive statistics for the pre-test and post-test vocabulary scores of both groups are shown in Table 1.

Table 1. Descriptive statistics for pre-test and post-test vocabulary scores by group

Group	N	Pre-test Mean	Pre-test SD	Post-test Mean	Post-test SD
Experimental	30	10.533	1.136	14.433	.223
Control	30	10.566	1.250	11.266	.178

Based on Table 1, both groups had similar pre-test scores (experimental: $M = 10.53$; control: $M = 10.56$), indicating equivalent vocabulary knowledge at the start. After the intervention, the experimental group ($M = 14.43$) using the Memrise app showed notable improvement compared to the control group ($M = 11.26$). Independent samples t-tests were conducted to assess the statistical significance of these differences (Table 2).

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Table 2. Independent samples t-test results for pre-test and post-test vocabulary scores

		Levene's Test for Equality of Variances		**t -test for Equality of Means**					**95% Confidence Interval of the Difference**	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pre-test	Equal variances assumed	.125	.725	-.108	58	.914	-.033	.308	-.650	.584
Post-test	Equal variances assumed	1.655	.203	11.067	58	.000	3.166	.286	2.593	3.739

As indicated in Table 2, Levene's test for the pre-test showed no significant difference in variances between the experimental and control groups (F = .12, p =.72), and the t-test similarly found no significant difference in mean scores (t = -.10, p =.91), suggesting that both groups had equivalent vocabulary knowledge before the intervention. For the post-test, while Levene's test again found no significant variance (F = 1.65, p = .20), the t-test revealed a substantial difference between the groups (t = 11.06, p =.000), emphasizing the positive impact of the Memrise intervention.

4.2 The Second Research Question

The purpose of the second research question was to assess the effect of the Memrise app on Iranian intermediate EFL learners' listening comprehension. To do this, two independent samples t-tests were conducted: one on the pre-test scores to ensure group equivalence before the intervention, and one on the post-test scores to evaluate the impact of Memrise. Table 3 presents the descriptive statistics for the pre-test and post-test listening comprehension scores of both groups.

Table 3. Descriptive statistics for pre-test and post-test listening comprehension scores by group

Group	**N**	**Pre-test Mean**	**Pre-test SD**	**Post-test Mean**	**Post-test SD**
Experimental	30	10.100	1.348	13.300	1.055
Control	30	10.266	1.014	11.000	1.144

As illustrated in Table 3, the pre-test results revealed comparable mean scores for both the experimental (M = 10.10) and control (M = 10.26) groups, indicating that their listening comprehension levels were similar prior to the intervention. In contrast, after the intervention, the experimental group (M = 13.30) achieved a higher mean score than the control group (M = 11.00), suggesting an improvement in listening comprehension. To determine whether these differences were statistically significant, two independent samples t-tests were conducted (Table 4).

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Table 4. Independent samples t-test results for pre-test and post-test Listening Comprehension scores

		Levene's Test for Equality of Variances		**t -test for Equality of Means**					**95% Confidence Interval of the Difference**	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pre-test	Equal variances assumed	1.804	.184	-.541	58	.591	-.166	.308	-.783	.449
Post-test	Equal variances assumed	.147	.703	8.091	58	.000	2.300	.284	1.730	2.869

As shown in Table 4, Levene's test for the pre-test indicated no significant difference in variances between the experimental and control groups (F = 1.80, p = .18), and the t-test also showed no significant difference in their mean scores (t = -.54, p = .59), implying similar listening comprehension levels before the intervention. However, the post-test results revealed a substantial difference between the groups (t = 8.09, p = .000), with the experimental group (M = 13.30) outperforming the control group (M = 11.00). This highlights that the Memrise app had a significant positive impact on the experimental group's listening comprehension.

4.3 The Third Research Question

The purpose of the third research question was to explore the experiences of Iranian intermediate EFL learners using Memrise. The results of coding process present the key themes, codes, sub-codes, and frequencies based on the qualitative data from the interviews (Table 5).

Table 5. Inductive coding results for interview responses

Theme	Code	Sub-code	Frequency
Memrise features	Ease of use	User-friendly interface, accessibility	12
		easy navigation	10
	Gamification	Points, leaderboard, competition	13
	Authentic content	Real-life audio/video clips	9
		Exposure to native speakers	7
Challenges	Technical issues	Internet connectivity, app crashes	6
	Limited vocabulary range	Limited coverage of vocabulary based on different themes	4
	Time management	Lack of time to complete lessons	5
Affective impact	Motivation	Increased motivation to study	14
		Enjoyable learning experience	12
	Self-confidence	Increased confidence in vocabulary use	10
	Frustration	Stress from technical glitches	3
Vocabulary learning	Retention	Improved vocabulary recall	13
	Application in context	Better use of vocabulary in context	9
Listening comprehension	Improved listening skills	Better understanding of native speech	12

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The coding results, summarized in Table 1, show several key themes, codes, and sub-codes that shed light on the various aspects of Memrise that were valued by the learners, as well as the challenges they faced and the affective impact the tool had on their learning.

4.3.1 Theme One: Memrise Features

A prominent code that emerged from the data was the ease of use of the Memrise application. Twelve learners found the app's user-friendly interface and accessibility to be major strengths, allowing them to quickly and easily engage with its content. For instance, one participant stated, "The app is very easy to use. I can navigate through the lessons without confusion, and I can access it anytime I need to review my vocabulary." This ease of use helped learners feel comfortable with the app, and the ability to access it at any time facilitated a more flexible and personalized learning experience. Additionally, the easy navigation feature of Memrise was also appreciated by 10 learners. One participant noted, "It's so simple to move between different lessons. I never feel lost or frustrated about where to go next." The intuitive structure of the app allowed learners to focus more on learning rather than trying to figure out how to use the app, contributing to a smoother learning process.

Another critical feature that was consistently praised by the participants was gamification. The elements of points, leaderboards, and competition played a significant role in motivating learners to continue their practice which were mentioned 13 times across the interviews. One participant shared, "I love the leaderboard! It keeps me motivated because I can see how well I'm doing compared to others. I always try to get more points to beat my last score." In fact, the competitive aspect of the app created a sense of challenge and achievement, which many learners found encouraging, especially when they could see their progress compared to others. Furthermore, the authentic content in Memrise was also noted as a valuable feature by nine participants. The inclusion of real-life audio and video clips helped learners better understand natural language use and context, as they were exposed to native speakers (n = 7). As one participant explained, "The videos with native speakers really helped me understand how English is spoken in real life. It was much easier to get the correct pronunciation and tone from these videos." This exposure to native speakers allowed learners to hear authentic pronunciation, accents, and colloquial language, which made their learning more applicable to real-world situations.

4.3.2 Theme Two: Challenges

Despite the many positive aspects of Memrise, the data also demonstrated some challenges that learners faced while using the application. One significant issue was technical problems, with internet connectivity and app crashes (n = 6). One participant noted, "Sometimes the app crashes, especially when I am in the middle of a lesson. This can be frustrating because I lose my progress." Such technical difficulties created interruptions in the learning process, diminishing the overall experience for some learners. Another challenge mentioned by four participants was the limited vocabulary range of the app. Although Memrise offers a variety of vocabulary items, some learners felt that the app did not cover more practical vocabulary adequately for those who are interested. One participant commented, "I feel like I need more practical words to push my learning further. The themes can be more varied." This limitation in vocabulary range may have hindered learners who were aiming to expand their knowledge beyond the intermediate level or limited themes.

Moreover, time management proved to be a challenge for five participants. Due to busy schedules, learners often found it difficult to allocate sufficient time to complete lessons. One participant explained, "I would like to use Memrise more, but sometimes I don't have enough time. It's hard to find time during the week to practice regularly." This time constraint impacted the consistency of their learning, despite their interest in using the app.

4.3.3 Theme Three: Affective Impact

The affective impact of Memrise on learners' motivation and confidence was another prominent theme in the interviews. Motivation was the most frequently mentioned sub-code, with 14 learners noting how the app positively influenced their drive to study. A participant shared, "I feel more motivated to study English now. The points and

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achievements in Memrise make me want to keep going." The combination of gamification and personalized progress tracking fueled a sense of accomplishment, which in turn increased their motivation to engage more consistently with the app. Also, the learners reported an enjoyable learning experience, with 12 participants emphasizing how fun and engaging they found the process. One participant mentioned, "I actually enjoy learning with Memrise. It feels like playing a game rather than studying, and that makes it more fun." This positive emotional experience enhanced their willingness to continue using the app, demonstrating how enjoyable learning tools can foster a more productive learning environment.

Self-confidence in language use, particularly in vocabulary, was also reported by 10 learners. Many participants expressed that the frequent exposure to new vocabulary and the ability to practice it through Memrise gave them greater confidence in using the language. One learner explained, "Now I feel more confident when I speak because I know more words and how to use them correctly." This increase in self-confidence was closely linked to the learners' growing competence in both vocabulary and listening comprehension. However, some learners reported feeling frustrated due to technical glitches, with three participants mentioning how this sometimes led to stress. One learner stated, "Sometimes when the app crashes or doesn't load properly, I feel frustrated because I lose my concentration." Despite these frustrations, the overall affective impact of Memrise on motivation and confidence remained largely positive.

4.3.4 Theme Four: Vocabulary Learning

Regarding vocabulary learning, a significant number of participants (n=13) reported marked improvements in their retention of new vocabulary after using Memrise. Central to this enhancement was the app's spaced-repetition system, which encourages learners to revisit words at spaced intervals, reinforcing their retention. One participant mentioned, "I can remember new words much better after using Memrise. The repetition system helps me keep them in my memory." This mechanism not only facilitated the memorization of vocabulary but also ensured that learners retained the words over time. Additionally, Memrise's flashcards and interactive exercises, which combine visual aids and auditory cues, played an important role in helping students solidify their understanding of words. For instance, another participant stated, "The flashcards are very helpful because they show the word and its meaning, and I can hear it being pronounced correctly. It's easier for me to remember it that way."

Furthermore, real-life scenarios and videos featured in Memrise were frequently mentioned by nine participants as helpful for applying newly learned vocabulary in practical contexts. One learner noted, "I've noticed that I can now use some of the words I've learned in real conversations. It feels like I'm actually learning the language, not just memorizing words." These authentic videos with native speakers allowed learners to see how vocabulary is used in natural conversations, providing context that made learning more meaningful and applicable outside the classroom.

4.3.5 Theme Five: Listening Comprehension

In terms of listening comprehension, 12 participants indicated noticeable improvements in their ability to understand native speech after using Memrise. The app's authentic listening exercises, which feature native speakers in various contexts, were highlighted as key to developing better comprehension skills. As one participant explained, "The listening exercises helped me understand native speakers better, especially when they speak quickly or use slang." The integration of real-life audio clips and video scenarios allowed learners to experience language in a dynamic, practical manner, which made the learning process more engaging and realistic.

4.4 The Fourth Research Question

The purpose of the fourth research question was to observe how Iranian intermediate EFL learners engage with Memrise during vocabulary exercises and listening comprehension activities, specifically within the classroom context. The goal was to analyze learners' interaction with the Memrise application during MALL activities, focusing on aspects such as engagement, usage behavior, and participation during the vocabulary and listening exercises. By conducting observations over different sessions (sessions 2, 4, and 6), the researcher was able to collect comprehensive

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data that complemented the qualitative findings from the interviews and the quantitative results from the pre- and post-tests. The results from the classroom observations provide valuable perspectives with regard to how Iranian intermediate EFL learners engaged with Memrise during vocabulary exercises and listening comprehension tasks across three sessions.

4.4.1 The First Observation

In the first observation (session 2), learner engagement was marked by active participation in vocabulary exercises and the use of the app for listening tasks. Learners were observed engaging actively with the vocabulary exercises, which suggests they were focused on building their vocabulary. For instance, the observer noted, "A student was actively typing answers in the vocabulary exercises and immediately replaying the audio when they couldn't catch the pronunciation." This indicated they were paying close attention to the details of the vocabulary being taught. The use of Memrise for listening tasks also seemed effective, as learners interacted with authentic audio and video clips to enhance their listening comprehension skills. The observer wrote, "While the students listened to a native speaker in a video, they appeared focused, nodding their heads as they understood the key phrases. They were engaged with the real-life context provided in the clips, which seemed to help them connect the vocabulary to actual usage." This shows that the learners were not only completing tasks but also utilizing the authentic content for better comprehension. This session primarily reflects the Augmentation stage of the SAMR model, where technology enhances traditional vocabulary and listening exercises by providing immediate feedback and interactive content, but the core tasks remain similar to conventional learning.

Furthermore, peer collaboration and discussions were noted, indicating that learners worked together to clarify doubts or share strategies while using the app. The observer mentioned, "Several students worked together, discussing how to navigate certain lessons. One group was debating the meaning of a phrase in the video and how it could be applied in real conversations, showing peer collaboration." In terms of motivation, the first observation revealed a high level of attentiveness and enthusiasm. Learners showed interest and excitement toward completing tasks, with their focus directed toward achieving success in the exercises. The observer shared, "Students were visibly excited when they completed a task. They would share their scores with each other, demonstrating how the gamification aspect of the app motivated them to keep trying." This motivated attitude likely contributed to their engagement with the learning material, indicating that Memrise's gamified elements, such as points and leaderboards, served as strong motivators for continued participation. The integration of gamified elements here demonstrates how Memrise begins to modify learning interactions, as students actively manage their learning and use collaborative strategies beyond what is typically seen in traditional exercises.

4.4.2 The Second Observation

In the second observation (session 4), active participation in vocabulary exercises and the use of Memrise for listening tasks increased, showing a deepening of engagement. Learners appeared to spend more time on the app, especially on vocabulary exercises, which is consistent with the data from the interviews where learners reported improvement in vocabulary retention. The observer wrote, "during this session, students seemed to spend more time reflecting on their answers, as they actively replayed audio clips and re-read flashcards." One student was observed listening to the same vocabulary word multiple times to reinforce the learning. Interaction among peers continued to play a role, with group discussions and mutual support observed, suggesting that learners were increasingly collaborative in using Memrise. In this regard, the observer described, "In one instance, a group of students were huddled together, pointing at the screen and discussing a vocabulary word's meaning in context. It seemed as though they were helping each other understand the usage of certain words more effectively." In terms of the SAMR framework, this session moves further into the Modification stage, as Memrise not only enhances the learning tasks but allows learners to restructure how they engage with content. The app enables active reflection, repeated practice, and collaborative meaning-making, transforming the typical classroom dynamics. Motivation also strengthened, with learners aiming to improve leaderboard rankings, reflecting learner agency and engagement that surpass traditional classroom limitations.

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Motivation also appeared to be stronger in this session. Learners demonstrated greater enthusiasm, focusing on completing tasks and achieving higher scores. The observer noted, "Students showed clear excitement about completing tasks, especially when they saw their points or their ranking on the leaderboard. It was evident that they wanted to do better and were motivated by the competitive aspect." This is in line with the interview data where learners mentioned that competition and the desire to improve their scores motivated them to continue using Memrise.

4.4.3 The Third Observation

By the third observation (session 6), the learners showed even more active participation in vocabulary exercises and listening tasks. The consistency in participation across the three sessions demonstrates the sustained interest and engagement learners had in using Memrise as a learning tool. The observer stated, "In this session, learners were more confident in their approach to the vocabulary exercises. Several students actively worked through all the tasks without needing to check the time, which was a noticeable increase in their self-regulation and focus compared to the first session." Additionally, learner-learner interaction was noted, where students helped each other with app-related issues, suggesting a growing sense of community and collaborative learning among the participants. The observer commented, "In this session, I noticed one student helping a peer who was having trouble with the app's audio feature. This collaborative interaction wasn't as common in the earlier sessions, which indicates growing comfort with the app and its features."

In terms of motivation, this session saw high enthusiasm and enjoyment of app-based learning activities. Learners appeared highly motivated to continue learning, showing sustained interest and positive feelings about the Memrise app. The observation noted, "Students were visibly excited at the start of the session and frequently commented on how much they enjoyed using Memrise. 'I can't wait to see how many points I get today!' was a common phrase heard among the learners." This is consistent with the findings from the interviews where learners reported increased motivation and enjoyment due to the interactive and gamified nature of the app. This session illustrates progression toward Redefinition in the SAMR model, where learners are not just enhancing or modifying traditional tasks but are transforming their approach to language learning. Memrise facilitates autonomous, collaborative, and self-paced engagement, allowing learners to interact with vocabulary and listening content in ways that would not be possible without the app.

5. Discussion

This study aimed to investigate the effect of Memrise in enhancing Iranian intermediate EFL learners' vocabulary learning and listening comprehension, utilizing both quantitative and qualitative data. Regarding the first research question, the analysis of vocabulary post-test scores revealed that learners using Memrise significantly outperformed those in the control group, supporting the effectiveness of MALL tools in enhancing these aspects of language learning. This result aligns with several previous studies, such as Fathi et al. (2018), who found that Memrise improved vocabulary acquisition and learner self-regulation. This similarity may be due to the structured, gamified nature of Memrise, which promotes repeated exposure to vocabulary items and encourages learner autonomy, features that were central in both studies. Similarly, Nguyen et al. (2023) reported that Memrise enhanced learners' vocabulary performance compared to traditional methods, further supporting the quantitative findings of the current study. This alignment could be attributed to comparable pre- and post-test designs and the integration of interactive exercises that actively engaged learners during the intervention. Nuralisah and Kareviati (2020) also found positive vocabulary gains among Indonesian secondary school learners, which may reflect the universal motivational impact of gamification and spaced repetition regardless of cultural or educational context. However, unlike these previous studies, the current research triangulated quantitative outcomes with classroom observations and interviews, allowing a deeper understanding of how learners' engagement with gamified features and authentic content directly contributed to improved retention.

In terms of the second research question, learners in the experimental group also showed significant improvement in listening comprehension compared to the control group. While only a few prior studies, such as Fadillah (2023) has reported the Memrise's effect on listening skills, the current findings provide important support for its potential in this

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area. The similarity with Fadillah's (2023) study may stem from both interventions using authentic audio content and short, focused listening exercises, which enhance recognition and comprehension of vocabulary in context. From a theoretical perspective, these improvements reflect the SAMR model: the use of Memrise moves learners from Augmentation—where technology substitutes or slightly enhances traditional listening exercises—to Modification, as learners actively manipulate digital content, revisit exercises through spaced repetition, and interact with authentic audio/video, transforming the way they engage with listening tasks. However, a critical perspective suggests caution: Memrise's listening exercises are primarily vocabulary-driven and short in duration, which may limit the development of higher-level listening skills, such as inference-making or discourse comprehension. Therefore, while learners improved on test-based listening tasks, it remains uncertain whether these gains fully transfer to authentic, extended listening contexts.

The third and fourth research questions revealed that learners found Memrise easy to use, motivating, and effective for improving vocabulary retention and listening comprehension, with classroom observations showing active participation, collaboration, and growing self-confidence. Gamification elements and authentic content encouraged engagement and practical application of language skills. However, learners faced challenges such as technical issues, limited vocabulary coverage, and time management constraints, which occasionally hindered consistent use. The use of gamification features was highlighted as a major motivator for learners to engage with the app, in line with Nuralisah and Kareviati (2020), who emphasized the motivational role of such features in language learning. This similarity may be because both studies leveraged reward systems and progress tracking, which can heighten intrinsic motivation and encourage sustained engagement.

Learners also reported improvements in vocabulary retention, consistent with the findings of Fathi et al. (2018); again, the repeated exposure and spaced-repetition mechanics likely contributed to this parallel outcome. Authentic content, such as real-life videos and native speaker recordings, was particularly appreciated and was perceived to improve listening comprehension, echoing results from Fathi et al. (2018) and Fadillah (2023). The similarity here may be due to the direct alignment of listening tasks with real-world language use, which makes input more comprehensible and engaging. Within the SAMR framework, these qualitative insights illustrate a shift from Augmentation—where Memrise substitutes traditional learning with interactive exercises—to Modification, where learners' agency, self-regulation, and peer collaboration reshape learning activities. Despite these positive outcomes, the qualitative data also highlighted challenges, including technical issues and limited vocabulary range, reflecting concerns in Esmaeili and Shahrokhi (2020) and Nguyen et al. (2023). Over-reliance on gamification sometimes led learners to focus more on earning points than on deeply processing vocabulary, suggesting that motivational features may both facilitate and distract learning—a nuance largely absent in previous studies.

6. Conclusion and Implication

This study provides valuable perspectives into the effectiveness of Memrise in enhancing vocabulary acquisition and listening comprehension among Iranian intermediate EFL learners. The results are practically justified by the SAMR model, which demonstrates how Memrise not only enhances traditional learning methods but also transforms the learning experience. The integration of Memrise goes beyond simply replacing traditional vocabulary exercises (Substitution) or enhancing them with digital tools (Augmentation). Instead, it significantly modifies how learners engage with vocabulary and listening tasks. It incorporates features such as spaced repetition, gamification, and multimedia content, which foster deeper engagement and sustained learning. This reconfiguration of tasks aligns with the Modification stage of the SAMR model, where technology shifts the very nature of the learning activity. Furthermore, the interactive features within Memrise support the Redefinition stage by enabling personalized learning paths and instant feedback—experiences difficult to replicate through traditional methods (Puentedura, 2006). Additionally, this study strengthens the credibility of the results and uniquely contributes to the literature by exploring both the cognitive (vocabulary and listening) and affective (learner motivation and engagement) dimensions of language learning.

The findings have significant implications for language education and the integration of MALL tools in the classroom. Teachers should consider incorporating different MALL applications for different skills to enhance language learning experiences. The study suggests that mobile technologies, when used effectively, can engage learners more deeply,

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motivating them to take an active role in their own learning (Yu et al., 2022). By providing learners with personalized, interactive experiences, such tools help to foster greater autonomy and self-regulated learning. Furthermore, this study highlights the importance of integrating gamification and multimedia content to keep learners engaged and improve retention. Policymakers and educational institutions should support the adoption of MALL technologies by providing training for teachers and ensuring equitable access to devices and internet resources. It is worth noting that, convenience sampling and the use of intact classes may have introduced selection biases. In addition, the intervention was also short-term (four weeks), so long-term effects of Memrise on vocabulary and listening were not examined. Future research should replicate this study with larger, randomized samples across diverse educational contexts. Also, while this study focused on the immediate effects of Memrise, future research should investigate its long-term impact on language proficiency across different MALL tools.

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