Int. j. adv. multidisc. res. stud. 2026; 6(2):31-40

Received: 13-01-2026
Accepted: 23-02-2026

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Effects of the Memrise Platform on Vocabulary Learning Among Vietnamese Grade 10 EFL Learners

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Abstract
Vocabulary knowledge plays a decisive role in the development of communicative competence in secondary EFL education; however, vocabulary instruction in many Vietnamese high schools continues to rely heavily on repetition-based exercises that often lead to limited retention and superficial processing. This study therefore investigates the effectiveness of the Memrise platform, a mobile-assisted learning application integrating spaced repetition and gamified practice, in enhancing vocabulary acquisition among Grade 10 students at The Asian International School in Vietnam. A pre-test–post-test quasi-experimental design was implemented with two intact classes (N = 58) over a ten-week intervention period, in which the experimental group received Memrise-supported instruction while the comparison group followed conventional textbook-based activities. Vocabulary achievement was measured using equivalent pre-test and post-test instruments, and semi-structured interviews were conducted with selected students from the experimental group to explore their learning experiences. Statistical analysis revealed that the Memrise group achieved significantly greater vocabulary gains than the comparison group, indicating a measurable instructional advantage. Interview findings further suggested increased engagement, perceived autonomy, and improved confidence in lexical recall, particularly due to structured review cycles and interactive task design. Collectively, the results support the pedagogical value of Memrise as a supplementary vocabulary tool in Vietnamese upper-secondary EFL contexts, while indicating the need for future research on long-term retention across broader educational settings.

Keywords: Memrise Platform, Vocabulary Learning, Mobile-Assisted Language Learning, Gamification, Self-Determination Theory

1. Introduction

Vocabulary knowledge is an essential component of second language proficiency because it constrains comprehension, production, and the ability to participate in school-mediated academic communication. Yet, in many Vietnamese upper-secondary classrooms, vocabulary instruction still relies heavily on decontextualized routines such as copying word lists, completing textbook drills, and memorizing bilingual equivalents. In practice, these routines can yield short-lived recognition without ensuring durable recall or flexible use in speaking and writing. The present study is motivated by a recurring instructional pattern observed among Grade 10 learners at The Asian International School: despite years of English study, many students report rapid forgetting after instruction and demonstrate limited access to newly learned items during communicative tasks. This local concern is consistent with Vietnamese evidence that conventional vocabulary practices often fail to sustain attention and autonomy, thereby weakening retention and self-regulated review behaviors (Nguyen *et al*., 2023) [20].

Against this background, mobile-assisted language learning has emerged as a prominent pedagogical direction because mobile applications can distribute practice across time and settings, provide immediate feedback, and support individualized pacing. Reviews and trend analyses indicate that mobile learning and game-related design features have become central foci in technology-enhanced language learning research, reflecting a broader shift toward learner-centered, multimodal, and engagement-sensitive pedagogies (Hasumi & Chiu, 2024; Okumuş Dağdeler, 2023) [10, 23]. At the level of learning mechanisms, two design principles have received sustained empirical attention in vocabulary learning: spaced repetition and gamification. Spaced repetition is theoretically motivated by consolidation and retrieval practice accounts and operationally realized through scheduled review at expanding intervals, which is expected to strengthen long-term retention. Gamification, in turn, is

expected to increase persistence by embedding points, levels, and progress feedback that render repeated practice less aversive and more goal-directed. Recent syntheses and empirical reports converge in suggesting that mobile vocabulary learning is most promising when these principles are integrated in a structured manner rather than offered as incidental "extra practice" (Teymouri, 2024; Vnucko & Klimova, 2023) [27, 28].

Within this landscape, Memrise is a widely used platform designed for vocabulary learning through interactive flashcards, spaced repetition cycles, multimedia prompts, and gamified progression. Comparative app-focused research has described Memrise as a representative MALL tool whose interface and task design aim to sustain engagement while supporting repeated retrieval (Essafi *et al*., 2024) [8]. Empirical studies across contexts have reported positive associations between Memrise use and vocabulary gains, as well as improvements in learner autonomy and affective responses to vocabulary learning (Nguyen & Vo, 2021; Zohoorian *et al*., 2022) [21, 30]. In the Vietnamese context, Nguyen *et al*. (2023) [20] documented vocabulary advantages and heightened motivation among learners using Memrise relative to conventional approaches, indicating that the platform may be especially beneficial where classroom routines remain memory-heavy and teacher-centered. Complementing this line, work on game-based or gamified learning in language education has linked digital game elements to higher engagement and motivational outcomes, which are plausibly consequential for sustained vocabulary review (Nadeem *et al*., 2023; Vnucko & Klimova, 2023) [19, 28].

Despite this growing evidence base, several research gaps remain when the target population is Vietnamese Grade 10 learners in formal school settings. First, much of the Memrise literature has been conducted with tertiary students or adult learners, limiting developmental and curricular generalizability to upper-secondary learners whose autonomy, exam pressures, and classroom dependency differ systematically from university cohorts (Okumuş Dağdeler, 2023; Nguyen *et al*., 2023) [23, 20]. Second, existing studies often privilege achievement outcomes while under-specifying how learners interpret the platform's affordances in relation to conventional instruction. Consequently, the field still lacks context-sensitive qualitative evidence that explains *why* students persist with app-based review and *which* features they perceive as instructionally decisive, especially in Vietnamese high school environments. Third, even when school-based studies are available, designs are frequently heterogeneous in exposure duration, control conditions, and assessment timing, making it difficult to infer whether observed gains plausibly reflect structured retrieval support rather than novelty effects or unequal practice opportunities (Teymouri, 2024) [27]. Finally, within Vietnam, evidence from international high school settings remains scarce, even though these settings typically feature higher device access and more intensive English exposure, which may condition both uptake and outcomes.

To address these gaps, the present study investigates the effectiveness of Memrise as a supplementary vocabulary learning tool among Grade 10 EFL learners in Vietnam using a pre-test–post-test quasi-experimental design and follow-up interviews. The quantitative strand estimates whether Memrise-supported instruction yields significantly greater vocabulary gains than conventional textbook-based practice over a ten-week period. The qualitative strand elicits students' perceptions of Memrise in comparison with conventional methods, with attention to engagement, perceived usefulness, and the experience of repeated review. By combining outcome evidence with interpretive accounts, the study aims to provide a more instructionally actionable explanation of how Memrise functions within an authentic school ecology.

1.1 Research questions

1. To what extent does the use of the Memrise platform support vocabulary learning among Grade 10 EFL students compared to conventional teaching methods?
2. What are students' attitudes toward learning vocabulary through Memrise versus conventional methods?

This study contributes to the MALL and vocabulary-learning literature in three ways. Empirically, it extends Memrise research to Vietnamese upper-secondary education with a controlled pre-test–post-test design situated in routine classroom instruction, thereby strengthening contextual validity. Methodologically, it complements test-score evidence with interview-based accounts that clarify perceived mechanisms of impact and conditions for sustained use, responding to calls for more learner-centered explanations in technology-enhanced language learning research (Hasumi & Chiu, 2024; Okumuş Dağdeler, 2023) [10, 23]. Pedagogically, the findings are expected to inform teachers and school leaders about whether and how app-based spaced repetition can be integrated as structured supplementary practice rather than as an optional add-on, particularly in contexts where conventional vocabulary routines have not reliably produced durable recall (Nguyen *et al*., 2023; Teymouri, 2024) [20, 27].

2. Literature Review

2.1 Vocabulary learning in Vietnamese upper-secondary EFL contexts

Vocabulary knowledge constitutes a core determinant of communicative competence because lexical access constrains comprehension and production. In classroom-bound EFL environments, insufficient vocabulary remains a major barrier to academic reading and participation (Mukhtar *et al*., 2023; Biseko, 2025) [18, 2], and lexical knowledge explains substantial variance in reading comprehension (Brooks *et al*., 2021) [3]. Within Vietnamese secondary education, instructional practices continue to prioritize textbook sequencing, bilingual glosses, and discrete-item exercises. Although such practices provide structural clarity, they often fail to ensure durable retention or flexible application (Nguyen *et al*., 2023) [20]. For upper-intermediate learners, particularly those approximating B2 level, the instructional challenge shifts from acquiring high-frequency vocabulary to consolidating abstract, academic, and discipline-specific lexical items. At this stage, superficial memorization may contribute to a proficiency plateau in which learners recognize vocabulary but struggle to deploy it productively.

Contemporary conceptualizations define vocabulary not as isolated word lists but as an integrated system encompassing form, meaning, use, collocation, and morphological relations (Biseko, 2025) [2]. Textbook-based sequencing and recycling significantly influence how effectively learners internalize this system (Mohammad, 2021) [17]. Therefore, vocabulary instruction in upper-secondary bilingual contexts

must move beyond definitional recall toward structured retrieval, contextual exposure, and sustained review.

2.2 Conventional vocabulary instruction

Teacher-led vocabulary instruction can generate measurable post-test gains (Ergashev, 2024) [7]; however, rote-based methods tend to yield weaker long-term retention than contextualized or technology-enhanced approaches (Mediha & Enisa, 2014) [15]. Moreover, conventional pedagogy often limits autonomy and adaptive feedback (Nguyen *et al*., 2023) [20]. This limitation has stimulated interest in mobile-assisted vocabulary learning (MAVL), which integrates spaced repetition, multimodal input, and gamified practice.

Some systematic reviews report positive effects of mobile applications on vocabulary achievement and learner attitudes (Okumuş Dağdeler, 2023; Teymouri, 2024) [23, 27]. Gamified environments enhance engagement (Nadeem *et al*., 2023; Vnucko & Klimova, 2023) [19, 28], and multimodal input can deepen encoding while reducing cognitive fatigue (Li *et al*., 2022) [11]. In Vietnam, Memrise-supported instruction has been associated with improved vocabulary performance and motivation (Nguyen & Vo, 2021; Nguyen *et al*., 2023) [21, 20]. Nevertheless, most evidence derives from tertiary settings, limiting generalizability to upper-secondary learners.

2.3 Mobile-assisted vocabulary learning (MAVL)

Mobile-assisted vocabulary learning has emerged as a significant strand within technology-enhanced language education. Systematic reviews document consistent positive effects of mobile applications on vocabulary achievement and learner attitudes (Okumuş Dağdeler, 2023; Teymouri, 2024) [23, 27]. The pedagogical strength of MAVL lies in its capacity to integrate spaced repetition, multimodal input, gamification, and immediate feedback within a portable and self-paced environment.

Gamified digital environments have been shown to enhance engagement and motivation, particularly among adolescent learners (Nadeem *et al*., 2023; Vnucko & Klimova, 2023) [19, 28]. Moreover, multimodal presentation combining visual and auditory input supports deeper encoding and reduces cognitive fatigue, thereby strengthening retention (Li *et al*., 2022) [11]. Within the Vietnamese context, mobile vocabulary learning has demonstrated measurable gains in achievement alongside improved learner motivation (Nguyen & Vo, 2021) [21].

Nevertheless, the generalizability of MAVL findings to upper-secondary settings remains underexplored. Much empirical work has focused on tertiary learners, leaving developmental and contextual differences insufficiently examined. This gap underscores the need for school-based investigations that combine achievement measures with learner perceptions.

2.4 Memrise

Memrise operationalizes key MAVL principles through three interrelated mechanisms: spaced repetition, multimodal encoding, and gamified progression. Spaced repetition systematically reintroduces lexical items at expanding intervals, a mechanism consistently linked to improved retention in digital vocabulary research (Teymouri, 2024; Zohoorian *et al*., 2022) [27, 30]. Multimodal integration of orthography, audio, and visual cues enhances associative encoding and lexical recall (Li *et al*., 2022) [11]. Gamified elements such as streaks and points foster sustained engagement and intrinsic motivation (Nadeem *et al*., 2023) [19].

Empirical studies across contexts report positive effects of Memrise on vocabulary mastery and learner autonomy (Nguyen *et al*., 2023; Zohoorian *et al*., 2022) [20, 30]. In Vietnamese settings, learners using Memrise outperformed peers receiving conventional instruction and reported higher motivation (Nguyen *et al*., 2023) [20]. However, limitations persist. Digital distractions, uneven connectivity, and the predominance of receptive drills may constrain productive vocabulary development if integration is not pedagogically scaffolded (Nguyen *et al*., 2023; Odiljonova, 2025) [20, 22].

Memrise operationalizes three mechanisms: spaced repetition, multimodal encoding, and gamified progression. Spaced repetition enhances retention (Teymouri, 2024; Zohoorian *et al*., 2022) [27, 30], while integrated text–audio–visual cues support associative encoding (Li *et al*., 2022) [11]. Gamified elements increase persistence and time-on-task (Nadeem *et al*., 2023) [19].

These mechanisms align with four theoretical perspectives. Dual coding theory explains how verbal and visual integration strengthens memory traces (Clark & Paivio, 1991; Liu *et al*., 2020) [4, 13], though excessive multimodality may increase cognitive load (Li *et al*., 2022) [11]. Cognitive load theory clarifies that learning improves when extraneous load is minimized and retrieval is structured (Sweller, 1988; Sweller *et al*., 1998; Sweller, 2011; Liu, 2024) [24, 26, 25 12]. Self-determination theory highlights autonomy and competence as drivers of sustained motivation (Deci & Ryan, 2000; Alamer & Almulhim, 2021; Guay, 2022; Manninen *et al*., 2022; Meihami & Shabani, 2023) [5, 1, 9, 14, 16]. Gamification theory further explains how points and progress indicators indirectly enhance learning by increasing engagement (Deterding *et al*., 2011; Zaric *et al*., 2021; Vnucko & Klimova, 2023) [6, 29, 28]. Collectively, these frameworks suggest that Memrise may enhance vocabulary learning when cognitive efficiency and motivational engagement operate concurrently.

2.5 Identified gaps

Although prior research consistently reports positive effects of Memrise on vocabulary learning, several conceptual and methodological gaps remain. International studies have largely focused on university or adult learners, including upper-intermediate EFL students and specialized ESP cohorts. Consequently, findings derived from participants aged 19 and above cannot be assumed transferable to Grade 10 learners in Vietnamese bilingual international schools, whose cognitive maturity, motivational profiles, and classroom ecology differ substantially. Even studies involving younger learners were conducted in non-comparable contexts, such as lower secondary or non-EFL settings, thereby limiting ecological validity for upper-secondary EFL environments.

Within Vietnam, empirical evidence is similarly concentrated in tertiary education. Existing investigations have examined English majors, medical students, or university cohorts with relatively high autonomy. Secondary-level learners, particularly those in technology-rich international school contexts, remain underrepresented. This demographic gap is significant because digital fluency does not necessarily equate to autonomous vocabulary learning capacity, and instructional mediation may function

differently in adolescent populations.

Methodological limitations further constrain interpretability. Many studies rely on a single pre-test–post-test cycle, small samples, or heavy dependence on self-reported data, which may inflate short-term effects and introduce social desirability bias. Moreover, baseline equivalence is often insufficiently controlled, raising concerns about internal validity when pre-existing vocabulary proficiency is not statistically verified. Longitudinal tracking of vocabulary development across multiple assessment points is also rare, limiting insight into learning trajectories rather than isolated gains.

An additional outcome gap is evident. Previous research frequently prioritizes achievement scores while underexamining learner attitudes in parallel. As motivation and engagement constitute central mediating variables in technology-enhanced learning, separating cognitive outcomes from affective responses obscures explanatory mechanisms.

To address these gaps, the present study targets Grade 10 students in a Vietnamese international school and employs a quasi-experimental pre-test–post-test design complemented by interviews. Baseline equivalence is statistically verified prior to intervention, and vocabulary development is tracked systematically across the instructional period. By integrating objective achievement measures with attitudinal data, the study seeks to provide context-sensitive evidence on whether digitally mediated spaced repetition via Memrise produces both measurable lexical gains and meaningful motivational engagement in an underexplored secondary EFL setting.

2.6 Conceptual framework

The present study is guided by a conceptual framework that distinguishes between independent and dependent variables. Independent variables comprise the affordances of social media platforms—including peer feedback, multimodal content, algorithmic personalization, hashtags, polls, short-form videos, group chats, comments, livestreams, and curated collections—supplemented by contextual factors such as platform type and learner demographics. Dependent variables reflect constructs of vocabulary acquisition, such as authentic input, collaboration, gamification, contextualization, repetition, feedback, personalization, and scaffolding. Importantly, peer collaboration functions as a cross-cutting mediator, linking platform affordances to learning outcomes. This framework, grounded in established SLA theories, provides a systematic foundation for examining how social media may enhance vocabulary acquisition among young Vietnamese learners.

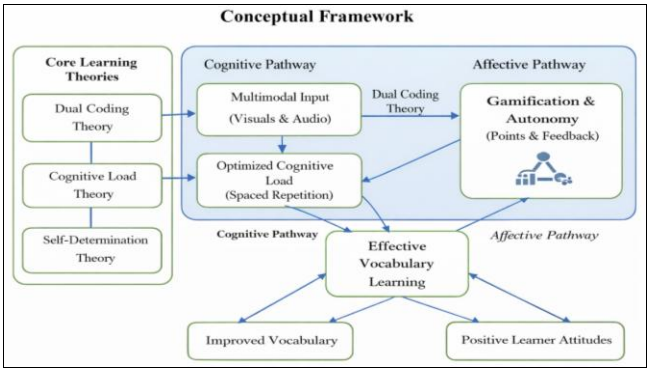

Fig 1: Conceptual framework of the study

The present study integrates cognitive and affective pathways to explain Effective Vocabulary Learning as a mediating construct linking Memrise features to two outcomes: vocabulary achievement and learner attitudes. The cognitive pathway, grounded in dual coding and cognitive load theories, explains how multimodal input and spaced repetition optimize encoding and retrieval. The affective pathway, informed by self-determination and gamification theories, explains how autonomy-supportive and reward-based features enhance engagement. Vocabulary achievement is measured through standardized pre- and post-tests, while attitudes are assessed via perceived usefulness and perceived ease of use. Gender and prior technology experience function as contextual moderators. This integrated model provides a theoretically coherent basis for examining whether Memrise improves both lexical performance and motivational engagement among Grade 10 EFL learners in Vietnam.

3. Methodology

3.1 Research Design

This study employed a quasi-experimental pre-test–post-test control group design complemented by semi-structured interviews. The design directly addressed two research questions: (1) the extent to which Memrise enhances vocabulary achievement compared with conventional instruction, and (2) students' attitudes toward learning vocabulary through Memrise.

Two intact Grade 10 classes were assigned as the experimental group (Memrise) and the control group (conventional instruction). Random assignment was not feasible due to administrative constraints; therefore, baseline equivalence was established through a standardized pre-test. The intervention lasted ten weeks and was embedded within the regular curriculum (Units 1–4). Both groups received identical learning objectives, instructional time, and target vocabulary. The only difference concerned instructional delivery: the experimental group used Memrise during presentation, practice, and review, whereas the control group followed textbook-based and teacher-led procedures.

Internal validity was strengthened through several controls. First, the same teacher instructed both groups. Second, a teaching fidelity checklist was completed weekly to ensure adherence to lesson plans. Third, students in the control group were instructed not to access Memrise during the intervention period.

3.2 Research participants

The study was conducted at the Asian International School (AIS) in Ho Chi Minh City during the first semester of the 2025–2026 academic year. AIS provides stable internet access and digital facilities, enabling consistent implementation of mobile-assisted instruction.

Participants consisted of 58 Grade 10 students (N = 58), divided equally into the experimental group (n = 29) and control group (n = 29). An a priori power analysis using G*Power ($\alpha = .05$, power = .80, medium effect size $d = .50$) indicated a minimum required sample of 54; thus, the sample size was adequate. Baseline equivalence was verified using an independent samples t-test on pre-test scores ($p > .05$), confirming no statistically significant difference between groups prior to intervention.

Convenience sampling was employed due to the intact class structure. Participation was voluntary, and informed consent

was obtained from students and parents. Ethical approval was granted by the school administration (AIS-ELT-2025-07).

3.3 Research instruments

3.3.1 Vocabulary tests

Vocabulary achievement was measured using one pre-test and one post-test.

The pre-test was administered in Week 1 to establish baseline proficiency. It contained 30 items assessing receptive and productive vocabulary knowledge aligned with the Grade 10 curriculum. Pilot testing with a comparable cohort yielded satisfactory reliability (Cronbach's $\alpha = .82$). Item analysis confirmed acceptable difficulty and discrimination indices.

The post-test was administered in Week 10 and consisted of 30 items drawn strictly from Units 1–4. Task types included multiple-choice recognition, matching, gap-filling, and sentence production to measure both receptive and productive knowledge. Pilot testing produced an internal consistency coefficient of $\alpha = .84$. For productive items, two independent raters scored responses; inter-rater reliability (Cohen's $\kappa = .86$) indicated high agreement.

All tests were administered under standardized classroom conditions with identical timing (20 minutes) and supervision procedures for both groups.

3.3.2 Semi-structured interviews

To address Research Question 2, semi-structured interviews were conducted with eight purposively selected students from the experimental group after completion of the post-test. The interview protocol focused on perceived usefulness, ease of use, engagement, and motivational impact of Memrise compared with conventional methods. Each interview lasted approximately 15–20 minutes and was audio-recorded with consent.

The interview guide was reviewed by two applied linguistics experts to ensure content validity and alignment with the study's theoretical framework. Transcripts were coded thematically using an inductive–deductive approach to identify recurring patterns related to autonomy, engagement, and perceived effectiveness.

3.4 Data analysis

Quantitative data were analyzed using SPSS. Descriptive statistics (means and standard deviations) were computed for both groups. An independent samples t-test was conducted to compare post-test scores, while paired samples t-tests examined within-group improvement from pre-test to post-test. Effect size (Cohen's d) was calculated to determine practical significance.

Qualitative interview data were transcribed verbatim and analyzed thematically. Codes were grouped into higher-order categories reflecting motivational engagement, perceived cognitive support, and learning satisfaction. Quantitative and qualitative findings were integrated at the interpretation stage to provide a comprehensive explanation of both achievement outcomes and learner perceptions.

4. Results

4.1 Data screening and assumptions

Prior to inferential analyses, the dataset was screened for missing values and outliers. Descriptive inspection indicated no anomalous values beyond the scale range (0–10). Given the study's group sizes ($n = 29$ per group), parametric procedures were retained. Normality was evaluated using Shapiro–Wilk tests in SPSS for each group at each time point, and results supported approximate normality ($p > .05$). For between-group comparisons, the homogeneity of variance assumption was examined via Levene's test in SPSS and interpreted alongside the "equal variances not assumed" (Welch) output where necessary.

4.2 Pre-test comparison between groups

To confirm that the control group (CG) and experimental group (EG) were comparable prior to the intervention, an independent-samples t-test was conducted on pre-test scores.

Table 1: Group statistics and Independent samples t-test (Pre-test)

Group	N	Mean	Std. Deviation	Std. Error Mean
Control group (CG)	29	5.17	2.04	0.38
Experimental group (EG)	29	5.07	1.75	0.33

Test	Levene's F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
Pre-test (equal variances assumed)	0.83	0.37	0.20	56	0.83	0.10	0.49	-0.89	1.10

The between-group difference in pre-test means was not statistically significant, $t(56) = 0.20$, $p = .83$. Accordingly, baseline equivalence was supported, and subsequent differences in post-test outcomes were interpreted as plausibly attributable to the instructional condition rather than initial proficiency differences.

4.3 Post-test gains

To evaluate improvement within each group, paired-samples t-tests were performed comparing pre-test and post-test scores.

Table 2: Paired samples statistics and Paired samples test (CG: Pre-test vs. Post-test)

Pair	Mean	N	Std. Deviation	Std. Error Mean
CG Pre-test	5.17	29	2.04	0.38
CG Post-test	6.79	29	1.63	0.30

Pair	Mean Difference (Pre–Post)	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
CG Pre-test – CG Post-test	-1.62	2.72	0.50	-2.65	-0.59	-3.21	28	0.003

The CG improved significantly from pre-test to post-test, t(28) = -3.21, p = .003, indicating that conventional instruction supported measurable vocabulary growth over the ten-week period.

Table 3: Paired samples statistics and Paired samples test (EG: Pre-test vs. Post-test)

Pair	Mean	N	Std. Deviation	Std. Error Mean
EG Pre-test	5.07	29	1.75	0.33
EG Post-test	8.24	29	1.90	0.35

Pair	Mean Difference (Pre–Post)	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
EG Pre-test – EG Post-test	-3.17	2.04	0.38	-3.95	-2.40	-8.39	28	< .001

The EG demonstrated a markedly larger gain, t(28) = -8.39, p < .001. In practical terms, the magnitude of improvement in the EG exceeded that of the CG, consistent with the proposed cognitive and motivational affordances of Memrise (multimodal input, structured review, and engagement mechanisms).

4.4 Between-group effectiveness: Post-test comparison

To address Research Question 1, an independent-samples t-test compared CG and EG post-test scores.

Table 4: Group statistics (Post-test) and Independent samples t-test (Post-test)

Group	N	Mean	Std. Deviation	Std. Error Mean
Control group (CG)	29	6.79	1.63	0.30
Experimental group (EG)	29	8.24	1.90	0.35

Test	t	df	Sig. (2-tailed)	Mean Difference (CG–EG)	Std. Error Difference	95% CI Lower	95% CI Upper
Post-test (equal variances assumed)	-3.11	56	0.003	-1.45	0.47	-2.38	-0.52

Post-test performance differed significantly between groups, t(56) = -3.11, p = .003, with the EG achieving higher scores than the CG. The mean difference was -1.45 points (CG–EG), and the 95% confidence interval did not include zero, indicating a reliable advantage for Memrise-supported instruction. Using pooled standard deviation, the between-group effect size at post-test was large (Cohen's d ≈ 0.82), suggesting educationally meaningful impact under the present classroom conditions.

In short, these quantitative results support the claim that Memrise-enhanced learning can yield stronger vocabulary outcomes than conventional instruction, particularly when baseline equivalence is established and the outcome measure is aligned with the taught lexical content.

4.5 Interviewees' attitudes toward the use of the Memrise platform

To complement the quantitative findings, follow-up semi-structured interviews were conducted with ten students from the experimental group after the intervention. The interviews aimed to clarify how learners experienced Memrise in classroom-based vocabulary learning and to triangulate whether students' subjective perceptions converged with the observed achievement gains. The analysis yielded three overarching themes: (1) general attitudes toward Memrise, (2) perceived learning benefits, and (3) perceived drawbacks. Table 30 summarises the thematic structure and participant distribution.

Table 5: Interview themes on Memrise use (n = 10)

Themes	Sub-themes	Main findings	Participants
General attitude	Interest and enjoyment	Increased interest and motivation; engaging, enjoyable, comfortable learning experience supported by multisensory input and task variety	S1–S2–S3–S4
Perceived benefits	Learning and affective support	Improved vocabulary acquisition through review cycles; reduced anxiety and tension; perceived support for long-term retention	S5–S6–S7
Perceived drawbacks	Attention and task fatigue	Distraction from game-like elements and excited peers; perceived repetitiveness and occasional boredom	S8–S9–S10

Overall, the interview evidence indicates a predominantly positive stance toward Memrise, with students associating the platform with a more relaxed classroom climate and greater willingness to engage in vocabulary practice. At the same time, a minority of participants pointed to implementation-related challenges, particularly attentional distraction and task repetitiveness. Thus, the qualitative strand largely reinforces the direction of the quantitative results while specifying conditions that may attenuate the platform's benefits.

4.5.1 Students' general attitudes toward Memrise

Students 1 to 4 expressed consistently favourable attitudes toward Memrise as an in-class vocabulary tool. A salient feature of these accounts was the affective tone: Memrise was repeatedly framed as "calmer," "enjoyable," and "less stressful" than workbook-based tasks. For instance, Student 1 reported that using Memrise helped her "feel calmer during lessons," and Student 2 similarly emphasised that app-based activities "felt relaxing" and made lessons "less stressful," which led her to prefer Memrise over workbook tasks. These statements suggest that the platform altered the emotional experience of vocabulary learning by reducing perceived pressure and making practice feel more approachable.

In addition to affect, students highlighted learning-related reasons for their positive stance. Repeated exposure through review cycles was widely recognised as helpful for recall. Student 1 noted that words appeared "repeatedly," which made them "easier to remember," and Student 3 similarly explained that vocabulary "keeps appearing during the review stages," so repetition supported memory. In these accounts, repetition was not treated as mechanical drilling; rather, it was described as structured recurrence that strengthened retention over time.

A further contributor to positive attitudes was the app's multisensory design. Students valued the combination of pictures, audio models, and short tasks, which they perceived as supporting clearer understanding and more meaningful association. Student 4 noted that words were linked with "pictures, audio, or short clips," enabling her to

connect new items "with something meaningful," while Student 1 described the integration of "pictures, sounds, and review reminders" as "clearer and more natural" than reading from the textbook alone. These comments indicate that learners perceived multimodal presentation as facilitating encoding and making vocabulary practice less abstract.

Finally, the interviews suggested early signs of learner agency. Student 3 described saving difficult words and reviewing them when Memrise "reminds" her, and Student 2 similarly reported saving or writing down difficult items to check again. Such remarks imply that Memrise may have supported more proactive review behaviours, which students interpreted as increased control over their learning. Minor challenges were acknowledged in passing (e.g., occasional lapses in focus or forgetting words), but these were framed as manageable and did not displace the overall positive appraisal.

4.5.2 Students' attitudes toward the benefits of using Memrise

Students 5 to 7 elaborated on specific benefits of Memrise and, in doing so, provided explanatory depth for the observed improvement in vocabulary outcomes. Three benefits were prominent.

First, Memrise was perceived as reducing anxiety and tension in vocabulary learning. Student 5 stated that Memrise "reduced my anxiety" and made lessons more enjoyable than conventional worksheet-based practice, which he described as "a bit boring." This perception is important because it indicates that the platform's contribution was not limited to cognitive rehearsal; it also shaped the emotional conditions under which rehearsal occurred.

Second, students reported increased motivation and engagement. Student 6 explained that using the app "changed my mood in a positive way" and sometimes helped him recall words he had forgotten. Here, affective uplift and retrieval support were reported together, suggesting that enjoyment and perceived progress may have jointly strengthened persistence in practice.

Third, improved retention was repeatedly attributed to the platform's review cycles. Student 7 stated that Memrise helped him remember words "for a much longer time" because the app brought items back "in different review cycles." This perceived durability of learning corresponds closely to Memrise's spaced review logic and provides a plausible learner-centred explanation for why gains may be stronger than those typically produced by one-off exposure in conventional lessons.

Taken together, these benefit-focused accounts indicate that students experienced Memrise as both an instructional support for memorisation and a motivational scaffold that made sustained review feel feasible and worthwhile.

4.5.3 Students' attitudes toward the drawbacks of using Memrise

Although overall attitudes were positive, Students 8 to 10 identified two recurring drawbacks that qualify the interpretation of Memrise's effectiveness: distraction and repetitiveness.

Distraction was reported as stemming from both the platform design and classroom dynamics. Student 8 noted that game-like elements such as points or streaks sometimes captured attention "too much," making it harder to concentrate on vocabulary itself. Student 9 linked distraction to peer behaviour, explaining that when classmates became "too excited or talking loudly," concentration was disrupted. These comments suggest that gamification may require explicit classroom management and task framing so that competitive features reinforce learning goals rather than divert attention.

The second concern was repetitiveness. Student 10 reported that some exercises felt "quite repetitive," leading to boredom at times. Notably, he still evaluated Memrise as "worthwhile" and, in his view, supportive of vocabulary and pronunciation through examples and practice. This pattern indicates that repetition was recognised as useful but could become motivationally costly if task formats remain too uniform over time.

A final nuance concerned vocabulary load. Student 9 remarked that with "many words," he could remember some items but sometimes forgot others. This comment implies that platform benefits may be moderated by pacing and lexical density in the syllabus, and that structured review alone may not fully offset overload when input quantity exceeds learners' consolidation capacity.

In summary, the interview findings largely converge with the positive quantitative trend by portraying Memrise as engaging, emotionally supportive, and helpful for retention through repeated review. At the same time, the qualitative evidence specifies two implementation constraints, namely distraction and task fatigue, suggesting that Memrise is most effective when teachers manage classroom noise, direct attention toward learning goals, and vary practice routines to sustain engagement across the intervention period.

5. Discussions

5.1 The effectiveness of Memrise platform

The present study sought to determine whether the integration of Memrise into Grade 10 vocabulary instruction produced superior learning outcomes compared with conventional methods and to explore learners' attitudes toward this digital intervention. The findings provide convergent evidence supporting the effectiveness of the Memrise-based approach.

First, baseline equivalence between the experimental group (EG) and control group (CG) was confirmed, as no statistically significant difference emerged in pre-test performance. This strengthens internal validity and allows subsequent differences to be interpreted as instructional effects rather than pre-existing disparities.

Second, both groups demonstrated statistically significant improvement from pre-test to post-test, indicating that vocabulary development occurred under both instructional conditions. However, the magnitude of improvement differed substantially. The CG showed a moderate gain (mean increase = 1.62 points), whereas the EG demonstrated a markedly larger gain (mean increase = 3.17 points). The paired-samples t-test for the EG revealed a highly significant improvement ($p < .001$), and the between-group post-test comparison confirmed a statistically significant advantage for the EG ($p = .003$), with a large effect size (Cohen's $d \approx 0.82$).

These results indicate that Memrise did not merely accelerate short-term recall but produced a substantially stronger cumulative effect over the ten-week period. The consistent post-test superiority of the EG suggests that the intervention enhanced not only exposure but also consolidation and retrieval strength.

5.2 Cognitive mechanisms underlying performance gains

The observed performance pattern is theoretically coherent. The EG's larger gains align with the combined operation of multimodal encoding and structured retrieval practice embedded in Memrise.

From a dual coding perspective, the integration of visual imagery, orthographic input, and audio models likely strengthened associative encoding. Students reported that pictures and sounds helped them connect words to "something meaningful," which supports the claim that multimodal cues facilitate deeper lexical representation rather than isolated memorization.

From a cognitive load perspective, Memrise may have reduced extraneous load by embedding text, sound, and prompts within a unified interface, thereby limiting split attention. Moreover, the platform's structured review cycles appear to have optimized germane cognitive load by promoting repeated retrieval at distributed intervals. The interview data explicitly referenced repeated exposure as a key factor in memory retention, indicating that students perceived spaced repetition as instrumental in long-term recall.

The magnitude of the EG's improvement relative to the CG suggests that structured retrieval, rather than mere exposure, was central to the enhanced outcomes. While conventional instruction provided teacher-led repetition, it lacked algorithmic scheduling of review and adaptive pacing. The differential gain therefore appears attributable to optimized retrieval scheduling rather than content variation.

5.3 Affective and motivational dimensions

The interview findings add explanatory depth by revealing that Memrise altered the affective climate of vocabulary learning. Students consistently described the app as "relaxing," "engaging," and "less stressful" than workbook-based tasks. Reduced anxiety may have indirectly enhanced performance by increasing willingness to practice and revisit items.

Furthermore, learners reported increased motivation and autonomy. Saving difficult words, responding to review reminders, and revisiting items voluntarily suggest emergent self-regulated learning behaviours. These perceptions align with self-determination theory, which posits that autonomy and competence support intrinsic motivation. In this context, immediate feedback and visible progress indicators likely strengthened learners' sense of competence, reinforcing sustained engagement.

Notably, affective responses were not superficial; they were functionally connected to learning outcomes. Students explicitly linked enjoyment with increased practice frequency and perceived retention. Thus, the motivational architecture of Memrise appears to have supported cognitive mechanisms rather than distracting from them.

5.4 Constraints and boundary conditions

Despite the overall positive pattern, the qualitative findings also identified boundary conditions. Some students reported distraction from gamified elements or peer excitement. Others described certain exercises as repetitive. These concerns suggest that the effectiveness of digital tools depends on pedagogical management.

Gamification may enhance engagement when aligned with learning goals but may undermine focus if competitive elements overshadow lexical processing. Similarly, spaced repetition may become monotonous if task formats lack variation. These observations indicate that teacher mediation remains essential; digital platforms do not autonomously guarantee optimal learning conditions.

5.5 Pedagogical and institutional implications

Drawing on the statistically significant vocabulary gains observed in the experimental group (Post-test M = 8.24) associated with the Memrise intervention, several targeted recommendations are proposed for learners, teachers, and school administrators at the Asian International School. These recommendations aim to ensure that digital vocabulary integration remains structured, pedagogically grounded, and sustainable.

5.5.1 For young learners

The results indicate that sustained engagement, rather than short-term enjoyment, drives vocabulary gains in mobile-assisted learning. Therefore, students should adopt disciplined and structured usage patterns when using Memrise. A minimum of three focused sessions per week, each lasting approximately 15 minutes, is recommended to activate the platform's spaced repetition mechanism effectively. Without consistent distributed practice, the cognitive benefits of the system cannot be fully realised.

Students should also shift from passive app interaction to active lexical management. Saving difficult words, revisiting flagged items, and monitoring personal progress logs can enhance self-regulation and strengthen long-term retention. Memrise sessions should be understood as part of a structured learning cycle rather than entertainment.

To promote productive vocabulary use, students should follow an English-only protocol during collaborative Memrise tasks and follow-up discussions. This practice supports the transition from recognition to active recall and contextualised production. Furthermore, learners should engage in brief post-session reflection activities, such as composing original sentences, identifying collocations, or distinguishing near-synonyms, to avoid superficial matching-based memorisation.

5.5.2 For teachers

Teachers play a decisive role in transforming Memrise from a digital tool into a pedagogical mechanism. First, Memrise sets must be carefully aligned with curricular objectives and learners' proficiency levels. Digital sessions should be time-bound (15–20 minutes) to sustain attention and manage cognitive load.

Second, Memrise should be embedded within a structured instructional sequence. For example, teachers may assign Memrise review as pre-class preparation and follow with in-class communicative tasks that require authentic use of newly learned vocabulary. This integration ensures that retrieval practice supports productive language development rather than isolated recognition.

Third, teachers should actively scaffold digital engagement. Pre-task vocabulary previews, post-task contextual checks, and short formative verification activities (e.g., sentence creation or collocation identification) help prevent superficial learning. Teachers should also monitor distraction from gamified elements and reinforce task-focused objectives.

Finally, practical digital protocols are essential. Clear classroom rules, backup offline activities, and Wi-Fi contingency plans should be established to prevent technological disruptions from undermining instructional

flow.

5.5.3 For school administrators

The substantial vocabulary gains observed in this study suggest that Memrise can function as a high-impact supplementary tool within the school's vocabulary program. Administrators should encourage structured digital integration while ensuring quality control. Memrise sets used in classrooms should be reviewed for curricular alignment, age appropriateness, and lexical accuracy.

Institutional support is equally critical. Reliable Wi-Fi infrastructure, adequate device access, and—where feasible—educational licensing should be prioritised to sustain implementation. Additionally, professional development workshops should train teachers in the cognitive principles of spaced repetition and multimodal encoding, enabling principled integration rather than superficial adoption.

However, digital integration must remain balanced. Administrators should ensure that vocabulary learning includes periodic offline production tasks to validate learners' ability to use vocabulary independently of digital prompts.

In summary, the effectiveness of Memrise demonstrated in this study depends not only on platform features but on structured learner behaviour, strategic teacher mediation, and institutional support. When these elements operate in coordination, mobile-assisted vocabulary learning can become a sustainable and cognitively grounded component of upper-secondary EFL instruction.

6. Conclusion

This study set out to determine whether the Memrise application enhances vocabulary acquisition among Grade 10 students at the Asian International School and to examine learners' attitudes toward its integration in comparison with conventional instruction. Across a ten-week quasi-experimental intervention involving 58 students, the findings provide convergent quantitative and qualitative evidence supporting the pedagogical value of structured Memrise integration.

First, although both groups improved over time, the Experimental Group demonstrated a clearly accelerated growth trajectory from Post-test 1 to Post-test 3. Given the established baseline equivalence at pre-test ($M \approx 5.1$), the superior post-intervention performance of the Experimental Group can be attributed to the Memrise-supported treatment rather than pre-existing proficiency differences. The widening achievement gap and the large effect size (Cohen's $d = 1.81$) indicate that the platform generated a substantial cumulative advantage. Unlike the relatively linear progression observed in the Control Group, the Memrise condition appears to have activated distributed retrieval and multimodal encoding processes that strengthened long-term retention rather than short-term memorisation.

Second, the cognitive gains were closely aligned with learners' affective responses. Questionnaire and interview data revealed high levels of perceived usefulness, enjoyment, and ease of use, alongside reduced anxiety during vocabulary learning. Interpreted through the Technology Acceptance Model, these perceptions suggest strong behavioural acceptance of the platform. From a Self-Determination Theory perspective, the app's self-paced structure, visible progress indicators, and gamified features likely supported autonomy, competence, and relatedness, thereby reinforcing sustained engagement. The convergence of achievement gains and positive attitudes suggests that affective engagement functioned as a mediating factor in vocabulary retention rather than a peripheral outcome.

At the same time, minor concerns related to distraction and task repetitiveness highlight the necessity of pedagogical mediation. Digital tools do not operate independently of instructional design. Structured integration, monitoring, and post-task consolidation are essential to ensure that learners engage in meaningful lexical processing rather than surface-level interaction.

To sum up, the study demonstrates that Memrise, when purposefully embedded within the instructional sequence, can outperform conventional vocabulary methods in promoting durable lexical retention while simultaneously enhancing learner motivation. The findings underscore the value of cognitively engineered vocabulary instruction supported by principled digital integration in secondary EFL contexts.

7. References

1. Alamer A, Almulhim S. Construct validation of self-determination theory in second language scale: The bifactor exploratory structural equation modeling approach. Frontiers in Psychology. 2021; 12: article-732016. Doi: https://doi.org/10.3389/fpsyg.2021.732016
2. Biseko JM. Vocabulary learning in EFL context: Do primary school English subject textbooks provide structured support? Cogent Education. 2025; 12(1). Doi: https://doi.org/10.1080/2331186X.2025.2455047
3. Brooks G, Clenton J, Fraser S. Exploring the importance of vocabulary for English as an additional language learners' reading comprehension. Studies in Second Language Learning and Teaching. 2021; 11(3):351-376.
4. Clark JM, Paivio A. Dual coding theory and education. Educational Psychology Review. 1991; 3(3):149-210. Doi: https://doi.org/10.1007/BF01320076
5. Deci EL, Ryan RM. The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry. 2000; 11(4):227-268. Doi: https://doi.org/10.1207/S15327965PLI1104_01
6. Deterding S, Dixon D, Khaled R, Nacke L. From game design elements to gamefulness: Defining "gamification." In Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments, 2011, 9-15. Doi: https://doi.org/10.1145/2181037.2181040
7. Ergashev RS. Effectiveness of traditional vocabulary instruction for academic vocabulary in Uzbek master's students. Science and Innovation. 2024; 3(11):38-41. Doi: https://doi.org/10.5281/zenodo.14160003
8. Essafi M, Belfakir L, Moubtassime M. Investigating mobile-assisted language learning apps: Babbel, Memrise, and Duolingo as a case study. Journal of Curriculum and Teaching. 2024; 13(2):197-214. Doi: https://doi.org/10.5430/jct.v13n2p197
9. Guay F. Applying self-determination theory to education: Regulation types, psychological needs, and autonomy-supporting behaviors. Canadian Journal of School Psychology. 2022; 37(1):75-92.

10. Hasumi T, Chiu M-S. Technology-enhanced language learning in English language education: Performance analysis, core publications, and emerging trends. Cogent Education. 2024; 11: article-2346044. Doi: https://doi.org/10.1080/2331186X.2024.2346044
11. Li W, Yu J, Zhang Z, Liu X. Dual coding or cognitive load? Exploring the effect of multimodal input on English as a foreign language learners' vocabulary learning. Frontiers in Psychology. 2022; 13, Article 834706. Doi: https://doi.org/10.3389/fpsyg.2022.834706
12. Liu D. The effects of segmentation on cognitive load, vocabulary learning and retention, and reading comprehension in a multimedia learning environment. BMC Psychology. 2024; 12: article-4. Doi: https://doi.org/10.1186/s40359-023-01489-5
13. Liu X, Liu C-H, Li Y. The effects of computer-assisted learning based on dual coding theory. Symmetry. 2020; 12(5), Article 701. Doi: https://doi.org/10.3390/sym12050701
14. Manninen M, Dishman R, Hwang Y, Magrum E, Deng Y, Yli-Piipari S. Self-determination theory-based instructional interventions and motivational regulations in organized physical activity: A systematic review and multivariate meta-analysis. Psychology of Sport and Exercise. 2022; 62:102248. Doi: https://doi.org/10.1016/j.psychsport.2022.102248
15. Mediha N, Enisa M. A comparative study on the effectiveness of using traditional and contextualized methods for enhancing learners' vocabulary knowledge in an EFL classroom. Procedia - Social and Behavioral Sciences. 2014; 116:3443-3448. Doi: https://doi.org/10.1016/j.sbspro.2014.01.780
16. Meihami H, Shabani MB. Examining autonomy, competence, and relatedness in CALL: The case of CALL apps with the most active users. Computer Assisted Language Learning Electronic Journal. 2023; 24(1):222-241.
17. Mohammad T. Vocabulary in EFL/ESL context: An analysis of general English textbook. European Journal of English Language Studies. 2021; 1(1):15-23. Doi: https://doi.org/10.12973/ejels.1.1.15
18. Mukhtar HP, Ali Z, Amal R. The importance of vocabulary in reading among EFL learners. In I-ROLE 2023: International Conference of Research on Language Education. European Proceedings of Educational Sciences, 2023. Doi: https://doi.org/10.15405/epes.23097.61
19. Nadeem M, Oroszlanyova M, Farag W. Effect of digital game-based learning on student engagement and motivation. Computers. 2023; 12(9):177. Doi: https://doi.org/10.3390/computers12090177
20. Nguyen AT, Nguyen TT, Le TT, Phuong HY, Pham TT, Huynh TAT, *et al*. Effects of Memrise on Vietnamese EFL students' vocabulary: A case study at a college in a rural area. The Electronic Journal of e-Learning. 2023; 21(5):450-460. Doi: https://doi.org/10.34190/ejel.21.5.3066
21. Nguyen PBC, Vo TLH. Efficiency of the "Memrise" mobile application in vocabulary learning of EFL students. Journal of Inquiry into Languages and Cultures. 2021; 5(1):129-145. Doi: https://doi.org/10.63506/jilc.0501.129
22. Odiljonova MO. Digital distractions and their effect on language learning procrastination. Research and Education. 2025; 4(3):25-31. Doi: https://doi.org/10.5281/zenodo.15062142
23. Okumuş Dağdeler K. A systematic review of mobile-assisted vocabulary learning research. Smart Learning Environments. 2023; 10(1):19. Doi: https://doi.org/10.1186/s40561-023-00235-z
24. Sweller J. Cognitive load during problem solving: Effects on learning. Cognitive Science. 1988; 12(2):257-285. Doi: https://doi.org/10.1016/0364-0213(88)90023-7
25. Sweller J. Cognitive load theory. In J. P. Mestre & B. H. Ross (Eds.), The psychology of learning and motivation (Vol. 55). Academic Press, 2011, 37-76. Doi: https://doi.org/10.1016/B978-0-12-387691-1.00002-8
26. Sweller J, Van Merriënboer JJG, Paas F. Cognitive architecture and instructional design. Educational Psychology Review. 1998; 10(3):251-296.
27. Teymouri R. Recent developments in mobile-assisted vocabulary learning: A mini review of published studies focusing on digital flashcards. Frontiers in Education. 2024; 9:1496578. Doi: https://doi.org/10.3389/feduc.2024.1496578
28. Vnucko G, Klimova B. Exploring the potential of digital game-based vocabulary learning: A systematic review. Systems. 2023; 11(2):57. Doi: https://doi.org/10.3390/systems11020057
29. Zaric N, Roepke R, Lukarov V, Schroeder U. Gamified learning theory: The moderating role of learners' learning tendencies. International Journal of Serious Games. 2021; 8(3):71-89. https://doi.org/10.17083/ijsg.v8i3.438
30. Zohoorian Z, Noorbakhsh M, Zeraatpishe M. EFL learners' vocabulary achievement and autonomy: Using Memrise mobile application. Indonesian Journal of EFL and Linguistics. 2022; 7(2):233-248. Doi: https://doi.org/10.21462/ijefl.v7i2.487