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Episodic vs. semantic memory in adult EFL vocabulary learning and retention

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Abstract

This study examined whether engaging episodic memory through autobiographical, narrative-based instruction enhances vocabulary learning and retention among adult English as a foreign language (EFL) learners, compared with semantic-based instruction and conventional rote learning. Fifty-four Iranian adult EFL learners (ages 20–35) were assigned to three groups (episodic, semantic, control). The episodic group learned target words through narrative vignettes designed to evoke personal experiences and emotional engagement, whereas the semantic group received structured meaning-focused instruction. The control group was taught through definition-based instruction with limited elaboration. Vocabulary knowledge was assessed using immediate and delayed (one-month) posttests. One-way ANOVAs revealed significant group differences on both the immediate posttest, $F(2, 51) = 3874.49$, $p < 0.001$, and the delayed posttest, $F(2, 51) = 4747.34$, $p < 0.001$. Although semantic instruction yielded higher retention than rote learning, episodic encoding produced the most durable gains. These findings suggest that embedding new lexical items in personally meaningful, context-rich experiences can substantially enhance short- and long-term vocabulary retention in adult EFL contexts. The results should be interpreted with caution due to the sample size and context-specific nature of the study.

Keywords: episodic memory, semantic memory, adult EFL learners, vocabulary retention, narrative-based instruction, Iranian EFL context, quasi-experimental design, long-term retention

1. Introduction

Second language acquisition (SLA), particularly within English as a foreign language (EFL) contexts, constitutes a multidisciplinary field drawing on insights from linguistics, cognitive psychology, neuroscience, and educational pedagogy. As English increasingly functions as a global

lingua franca, learners are required to develop not only grammatical accuracy but also sufficient lexical resources to comprehend and produce meaning across academic, professional, and social domains. Vocabulary knowledge has therefore been widely recognized as a foundational component of communicative competence and a strong predictor of overall language proficiency (Nation, 2013; Schmitt, 2019).

Despite its centrality, vocabulary learning remains one of the most persistent challenges for second language learners, especially in instructional contexts where exposure is limited. Research consistently indicates that learners may successfully recognize or recall new lexical items shortly after instruction but fail to retain them over time (Firoozalizadeh & Siyyari, 2014; Elgort & Warren, 2014). Longitudinal studies further suggest that a substantial proportion of newly learned vocabulary is lost within weeks unless learning conditions support durable memory consolidation (Uchihara et al., 2019; Pellicer-Sánchez et al., 2020). This fragility of retention has prompted scholars to move beyond surface instructional techniques and examine the cognitive mechanisms that underlie successful vocabulary learning.

One influential line of inquiry emphasizes the role of memory systems in second language vocabulary acquisition. Memory enables the encoding, storage, and retrieval of linguistic information, and long-term memory, in particular, is essential for sustaining lexical knowledge beyond immediate instructional contexts (McClelland et al., 1995; Tabatabaeian & Nematizadeh, 2024). Cognitive neuroscience has demonstrated that durable learning depends not only on repetition but also on how information is encoded and integrated with existing knowledge structures (Davis & Gaskell, 2009; Antony et al., 2017). These findings suggest that vocabulary instruction must be evaluated not merely in terms of exposure frequency but also in terms of the memory processes it engages.

Declarative memory plays a central role in adult second language vocabulary learning, as it supports the conscious acquisition of word meanings and form–meaning mappings (Ellis, 2005; Dobel, 2010). Within declarative memory, a distinction is commonly drawn between semantic memory and episodic memory. Semantic memory stores abstract, decontextualized knowledge such as word meanings, categories, and conceptual relations, whereas episodic memory encodes personally experienced events embedded in specific temporal, spatial, and emotional contexts (Tulving, 1983; Rugg & Vilberg, 2013). Although originally proposed as distinct systems, contemporary research emphasizes their dynamic interaction during learning and retrieval (Renoult et al., 2019; Xu et al., 2024).

Semantic memory has traditionally been the primary focus of vocabulary instruction. Meaning-focused approaches such as semantic mapping, synonym–antonym analysis, and contextual elaboration are designed to strengthen lexical networks and facilitate access to word meanings

(Nation, 2001; Schmitt, 2019). Recent studies continue to support the effectiveness of semantic elaboration for vocabulary acquisition, particularly when learners actively manipulate meaning and form relationships (Barcroft, 2015; Rahmani & Maleki, 2023; Qu & Abd Rahman, 2025). However, semantic approaches often treat vocabulary as abstract knowledge detached from learners' personal experiences, potentially limiting affective engagement and long-term retention.

In contrast, episodic memory encodes vocabulary within autobiographical or narrative contexts, linking new lexical items to lived or imagined experiences. Episodic encoding is characterized by emotional salience, multimodal cues, and spatiotemporal specificity—features that have been shown to enhance consolidation and later retrieval (Conway, 2009; Madan, 2023). Neurocognitive evidence indicates that emotionally and contextually rich experiences activate hippocampal–cortical networks associated with long-term memory formation (Murty et al., 2017; Xu et al., 2024). These findings suggest that vocabulary learned through episodic, experience-based instruction may be retained more robustly than vocabulary learned through decontextualized semantic processing alone.

Recent applied linguistics research increasingly supports the pedagogical value of episodic and self-referential encoding. Cunningham et al. (2025) demonstrated that self-reference significantly enhances L2 vocabulary retention, with effects persisting beyond immediate testing. Similarly, Chandy et al. (2025) found that while contextual repetition improved short-term learning, richer experiential contexts were necessary to sustain long-term retention. Studies in embodied cognition further show that engaging learners' sensorimotor and emotional systems—through storytelling, imagery, or gesture—strengthens lexical memory traces (Macedonia, 2025; Repetto et al., 2023).

Despite these advances, direct empirical comparisons between episodic and semantic instructional approaches remain limited, particularly in adult EFL classroom contexts. Much of the existing research has focused on incidental learning, bilingual populations, or laboratory-based tasks, leaving a gap in understanding how memory-based instructional strategies operate in intentional vocabulary learning among adult EFL learners. Moreover, relatively few studies have employed delayed posttests to examine the durability of learning across different memory-engaging instructional conditions.

The Iranian EFL context presents a particularly relevant setting for such investigation, as vocabulary instruction often relies on definition-based and translation-oriented methods that prioritize semantic knowledge while offering limited opportunities for experiential or autobiographical engagement. Understanding whether episodic memory-based instruction can enhance retention in this context has important implications for classroom practice and curriculum design.

The present study addresses these gaps by examining whether vocabulary instruction that engages episodic memory through autobiographical, narrative-based tasks leads to superior immediate and delayed vocabulary retention compared with semantic-based instruction and conventional rote learning among adult Iranian EFL learners. By integrating insights from cognitive psychology, memory research, and applied linguistics, the study aims to clarify how different memory systems contribute to durable vocabulary learning and to inform pedagogical practices that align with learners' cognitive and affective capacities.

2. Literature Review

2.1. Memory Systems and Vocabulary Learning: A Conceptual Framework

Research on vocabulary acquisition has increasingly considered cognitive psychology to explain why some approaches result in durable retention while others do not have the same effect. Central to this line of inquiry is the distinction between episodic and semantic memory—two interacting cogs of declarative memory that support different shapes of learning and retrieval (Tulving, 1983; Renoult et al., 2019).

Semantic memory refers to decontextualized information about entities, vocabularies, and their characteristics, like definitions, and collocations. Episodic memory, in comparison, entails personal events situated in various temporal, spatial, and emotional contexts.

While early procedures conduct as distinct functional systems, new research emphasize interdependence, concluding semantic knowledge often emerges from accumulated episodic experiences and its retrieval is supported by semantic structures (McClelland et al., 1995; Moscovitch et al., 2016).

The mentioned interactional view has questioned dichotomies between episodic and semantic memory. Critics argue that the difference between the two is context-dependent, particularly in language learning (Dobel, 2010; Xu et al., 2024).

In adult EFL contexts, vocabulary learning is predominantly intentional and relies heavily on declarative memory. The manner in which lexical items are encoded—whether as abstract semantic units or as components of meaningful experiences—may therefore have significant consequences for retention and use. This perspective has motivated a growing body of research on memory-oriented vocabulary instruction.

2.2. Semantic-Based Instruction and Vocabulary Retention

Newest trends of applied linguistics research have emphasized the role of semantic memory in vocabulary acquisition. Semantic-based instructional approaches aim to enhance lexical representations by nurturing meaningful associations among words, concepts, and contexts.

Nation (2001, 2013) mentioned that durable vocabulary learning requires repeated encounters with words across varied contexts, attention to meaning, and integration into lexical networks.

Cognitive learning and its sub-branches have consistently been shown to outperform rote memorization. For example, Badr and Abu-Ayyash (2019) claimed that learners who organized vocabulary through semantic maps achieved higher retention than those who learn via repetition. Similarly, Qu and Abd Rahman (2025) found that semantic mapping leads to superior vocabulary gains among EFL learners compared with rote learning.

More recent research has refined this account by emphasizing depth of semantic processing rather than mere exposure. Elgort (2011) and Barcroft (2015) showed that tasks requiring learners to manipulate meaning—such as inferencing, categorization, and contextual use—result in stronger lexical representations than surface-level form-focused activities. Rahmani and Maleki (2023) further reported that semantic elaboration enhances vocabulary learning when learners actively integrate new words with prior knowledge.

However, despite their effectiveness, semantic approaches often treat vocabulary as abstract knowledge detached from learners' personal experiences. Several studies report that semantic elaboration improves immediate learning outcomes but does not always guarantee long-term retention, particularly when affective engagement is low or instructional contexts are highly decontextualized (Uchihara et al., 2019; Chandy et al., 2025). These findings suggest that semantic processing alone is not sufficient to ensure durable vocabulary retention in adult EFL classrooms.

2.3. Episodic Encoding, Self-Reference, and Experiential Learning

Comparing to semantic-based approaches, episodic encoding emphasizes learning through meaningful personally experiences, narratives, and emotionally important contexts. Episodic memory is characterized by its capacity to bind information to spatiotemporal and affective cues, which enhances consolidation and later retrieval (Conway, 2009). Cognitive neuroscience research has demonstrated that emotionally rich and contextually grounded experiences engage hippocampal–cortical networks crucial for long-term memory formation (Murty et al., 2017; Xu et al., 2024).

Applied linguistics research increasingly supports the pedagogical value of episodic and self-referential encoding. Cunningham et al. (2025) found that self-reference significantly enhanced L2 vocabulary learning, with advantages persisting beyond immediate testing. Similarly, studies on

narrative-based instruction report that embedding vocabulary within stories or autobiographical tasks improves retention by increasing attention, emotional engagement, and personal relevance (Choi, 2013; Repetto et al., 2023).

Embodied cognition research further strengthens this argument. Macedonia (2025) demonstrated that sensorimotor involvement—such as gesture and physical enactment—enhances vocabulary retention by grounding lexical items in bodily experience. These findings suggest that episodic encoding operates not only at a cognitive level but also through affective and embodied channels, creating richer and more retrievable memory traces. Despite this growing evidence, episodic approaches remain underrepresented in EFL classroom research. Many studies focus on incidental learning or laboratory tasks, and few directly compare episodic and semantic instructional methods under controlled classroom conditions with delayed retention measures. As a result, the relative effectiveness of episodic versus semantic encoding for sustained vocabulary retention remains insufficiently understood.

2.4. Integrating Memory Systems: Empirical Gaps and Research Direction

Although semantic and episodic memory contribute to vocabulary learning, their comparative and interactive roles in adult EFL instruction have not been examined adequately. Previous studies often investigate one approach in isolation or focus on short-term outcomes; therefore, there are unanswered questions about long-term retention and instructional design.

Research on bilingualism and memory (e.g., Golshani et al., 2024) suggests that enhanced interaction between memory systems can improve autobiographical recall and cognitive control. While such findings are not directly transferable to monolingual EFL contexts, they provide indirect support for the claim that coordinated recruitment of memory systems strengthens learning. However, few classroom-based studies have operationalized this insight by designing instructional tasks that deliberately target episodic or semantic encoding and comparing their effects empirically.

Moreover, much of the existing literature focuses on youngsters or immersion settings, creating a gap in our understanding of how adult EFL learners use memory systems during vocabulary learning. The Iranian EFL context, where vocabulary instruction often emphasizes definitions and translation, provides a particularly relevant setting for examining whether episodic, experience-based instruction can enhance retention beyond traditional semantic approaches.

Previous research demonstrates that semantic elaboration enhances vocabulary learning by strengthening meaning-based associations, while episodic encoding enriches memory traces through personal relevance, emotional engagement, and contextual grounding. However, direct empirical

comparisons between the afore-mentioned especially in adult EFL contexts using delayed retention measures, are scarce.

The present study addresses the mentioned gap by systematically comparing episodic, semantic, and conventional instructional approaches to vocabulary learning among adult Iranian EFL learners. The study seeks to clarify how different memory systems contribute to durable vocabulary learning and to provide evidence-based guidance for memory-informed vocabulary instruction.

3. Research Questions and Hypotheses

Drawing on cognitive theories of declarative memory and prior research on vocabulary instruction, the present study investigates how different memory-oriented instructional approaches influence vocabulary learning and retention among adult EFL learners. Specifically, the study examines whether instructional methods that primarily engage episodic memory differ in effectiveness from those that emphasize semantic memory or conventional rote learning.

To ensure conceptual clarity and alignment with the methodological design, *vocabulary learning* is operationalized as learners' performance on an immediate posttest administered immediately after instruction, whereas *vocabulary retention* is operationalized as performance on a delayed posttest administered one month later. Accordingly, the study addresses the following research questions:

1. Does vocabulary instruction that engages episodic memory through autobiographical, narrative-based tasks lead to significantly higher *immediate vocabulary learning* among adult Iranian EFL learners compared with semantic-based instruction and conventional rote learning?
2. Does vocabulary instruction that engages episodic memory lead to significantly higher *delayed vocabulary retention* among adult Iranian EFL learners compared with semantic-based instruction and conventional rote learning?

Given the quasi-experimental nature of the study and in line with conventional statistical testing procedures, the following null hypotheses were formulated and tested:

H01. There is no statistically significant difference among adult Iranian EFL learners who receive episodic-based, semantic-based, or conventional instruction in terms of their immediate vocabulary posttest scores.

H02. There is no statistically significant difference among adult Iranian EFL learners who receive episodic-based, semantic-based, or conventional instruction in terms of their delayed vocabulary posttest scores.

These null hypotheses were tested using one-way analyses of variance (ANOVA) to determine whether instructional condition had a statistically significant effect on learners' immediate and delayed vocabulary performance.

4. Method

4.1. Design of the Study

The present study adopted a quasi-experimental, between-groups design involving three instructional conditions: episodic-based instruction, semantic-based instruction, and conventional vocabulary instruction. Although participants were randomly assigned to groups, the study is classified as quasi-experimental because participants were recruited through convenience sampling from intact classes at a single language institute, rather than through random sampling from a broader population (Mackey & Gass, 2011). This distinction is maintained to accurately reflect the study's sampling constraints and to avoid overstating generalizability. The independent variable was type of vocabulary instruction (episodic, semantic, conventional), and the dependent variables were immediate vocabulary learning and delayed vocabulary retention, operationalized as performance on posttests administered immediately after instruction and one month later, respectively.

4.2. Participants

Participants were 54 adults Iranian EFL learners (age range = 20–35 years, M = 26.1, SD = 4.3) enrolled at a private language institute in Rasht, Iran. They were selected via convenience sampling based on availability and enrollment status. All participants had received a minimum of five years of prior English instruction and reported regular exposure to English through academic coursework or media use.

To ensure relative homogeneity of English proficiency, the Oxford Placement Test (OPT) was administered prior to the study. Only learners whose scores fell within the B1–B2 CEFR range and within one standard deviation of the sample mean were retained. Six learners were excluded on this basis. The final sample was randomly assigned to three groups (episodic, semantic, control), with 18 participants in each group. Information regarding gender distribution and educational background was not used as grouping variables in the present study; therefore, these factors were not statistically controlled. This constitutes a limitation and is addressed in the Discussion section.

4.3. Instructional Materials and Target Vocabulary

Forty low-frequency English nouns were selected from Coxhead's (2000) Academic Word List. To ensure unfamiliarity, a Vocabulary Knowledge Scale (VKS; Wesche & Paribakht,

1996) was administered prior to instruction. Only items rated at Levels 1 or 2 (unknown or minimally known) by the majority of participants were included as target words.

All three groups were taught the same set of target words; differences lay solely in the instructional approach. Vocabulary instruction occurred over six instructional sessions, during which three to four words were introduced per session, resulting in coverage of the full target set across the instructional period. The same instructor taught all groups to minimize instructor variability.

4.4. Instructional Procedures

4.4.1. Episodic Instruction Condition

In the episodic condition, vocabulary was taught through autobiographical, narrative-based vignettes designed to evoke personal experience and emotional engagement. Each target word was embedded within a short narrative depicting a relatable life event. Multimodal cues—including images and ambient sounds—were incorporated to enhance sensory richness and contextual grounding. Learners were encouraged to imagine themselves in the scenarios and to relate the target vocabulary to similar experiences from their own lives. This approach aimed to promote episodic encoding by binding lexical items to emotionally and contextually salient representations.

In the semantic condition, vocabulary was taught through meaning-focused activities designed to strengthen semantic networks. Instruction included semantic mapping, synonym–antonym analysis, definition matching, and collocation practice. Words were grouped thematically and practiced through structured exercises emphasizing conceptual relationships rather than personal experience. This condition targeted semantic encoding by encouraging learners to integrate new lexical items into existing knowledge structures.

4.4.2. Control Condition

The control group received conventional vocabulary instruction; characteristic of grammar-translation-oriented practices common in the local context. Instruction consisted of explicit definitions, L1 translations, and limited synonym presentation. Learners were primarily asked to memorize word lists, with minimal elaboration or contextualization.

4.5. Instrumentation

Vocabulary learning and retention were assessed using researcher-developed immediate and delayed posttests, each containing 40 items corresponding to the target vocabulary. The tests included both productive recall items (requiring learners to supply target words based on brief descriptions) and receptive recognition items (multiple-choice questions with semantically plausible distractors). Content validity was ensured through expert review by two EFL instructors familiar with

vocabulary assessment. Internal consistency reliability was examined in a pilot administration, yielding acceptable Cronbach's alpha coefficients for both the immediate test ($\alpha = 0.81$) and the delayed test ($\alpha = 0.84$).

4.6. Data Collection Procedure

Data collection occurred in four stages. First, the OPT was administered to screen for proficiency homogeneity. Second, the VKS pretest was used to identify unfamiliar vocabulary items. Third, instructional treatment was implemented across six sessions according to group assignment. Finally, participants completed an immediate posttest following the instructional phase and a delayed posttest one month later. Participants were informed of the voluntary nature of participation and their right to withdraw at any stage. Written informed consent was obtained, and all data were anonymized prior to analysis. No incentives were provided.

4.7. Data Analysis

Data were analyzed using IBM SPSS. Prior to inferential analysis, assumptions of normality and homogeneity of variance were examined. One-way analyses of variance (ANOVA) were conducted to compare group performance on immediate and delayed posttests. Statistical significance was evaluated at the 0.05 level.

5. Results

This section reports the results of the statistical analyses conducted to examine differences among the episodic, semantic, and control instructional groups in terms of immediate vocabulary learning and delayed vocabulary retention. Prior to inferential analyses, assumptions of homogeneity of variance were examined. One-way analyses of variance (ANOVA) were conducted to compare group means.

5.1. Immediate Vocabulary Learning

Descriptive statistics for the immediate vocabulary posttest are presented in Table 1. As shown, learners in the episodic instruction group obtained the highest mean score ($M = 27.76$, $SD = 7.86$), followed by the semantic group ($M = 18.72$, $SD = 7.98$), while the control group demonstrated the lowest performance ($M = 12.43$, $SD = 8.65$). A Levene's test indicated that the assumption of homogeneity of variance was met, $F(2, 51) = 1.74$, $p = 0.187$. A one-way ANOVA revealed a statistically significant effect of instructional condition on immediate vocabulary learning, $F(2, 51) = 3874.49$, $p < 0.001$, $\eta^2 = 0.99$, indicating a very large effect size.

Table 1

Descriptive Statistics of Immediate Posttest

Groups	N	Mean	SD
Episodic Group	18	27.762	7.86
Semantic Group	18	18.721	7.98
Control Group	18	12.432	8.65

These results indicate that at least one instructional condition differed significantly from the others. Inspection of group means shows that episodic instruction resulted in substantially higher immediate vocabulary learning than both semantic instruction and conventional instruction.

5.2. Delayed Vocabulary Retention

Descriptive statistics for the delayed vocabulary posttest are reported in Table 2. As shown, the episodic group again achieved the highest mean score (M = 24.32, SD = 6.47), followed by the semantic group (M = 17.13, SD = 7.33), with the control group obtaining the lowest mean (M = 12.02, SD = 6.58). Levene's test for equality of variances was non-significant, $F(2, 51) = 1.74$, $p = 0.187$, indicating that the assumption of homogeneity of variance was satisfied. A one-way ANOVA revealed a statistically significant effect of instructional condition on delayed vocabulary retention, $F(2, 51) = 4747.34$, $p < 0.001$, $\eta^2 = 0.99$.

Table 2

Test of Homogeneity of Variances in Immediate Posttest

Levene Statistic	df1	df2	Sig.
1.735	2	51	0.187

Since the p-value (.187) is higher than the significance level (.05), it can be concluded that the data is normally distributed in posttest of vocabulary. Table 3 shows the results of ANOVA on immediate posttest. Since the p-value (.000) is lower than the significance level (.05), it can be concluded that the groups are not the same in vocabulary learning after treatment, $F(2, 51) = 3874.4$, $p = 0.000$, based on the mean differences, the episodic learning group outperformed the other groups in vocabulary learning. Regarding the role of the memory strategies on vocabulary retention in long term, then, a delayed posttest was run to the groups under study.

Table 3

Results of ANOVA on Immediate Posttest

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	363628.7	2	181814.3	3874.49	0.000
Within Groups	2393.222	181814.3	46.926		
Total	366021.926	53			

Table 4 reveals that the mean scores of the students in episodic group is 24.3 with the SD of 6.4 and the mean score of the learners receiving semantic strategy as vocabulary instruction strategy is 17.1 with the SD of 7.3. In addition, the mean of conventional vocabulary instruction group as the control group is 12 with the SD of 6.5.

Table 4

Descriptive Statistics of Delayed Posttest

Groups	N	Mean	SD
Episodic Group	18	24.324	6.47
Semantic Group	18	17.129	7.33
Control Group	18	12.021	6.58

Since the p-value (1.000) is higher than the significance level (.05), it can be concluded that the data is normally distributed in the delayed posttest. Before running ANOVA, a test of homogeneity of variances needs to be used. The result is illustrated in Table 5.

Table 5

Test of Homogeneity of Variances in Delayed Posttest

Levene Statistic	df1	df2	Sig.
8.823	2	51	1.000

Since the p-value (1.000) is higher than the significance level (.05), it can be concluded that the data is normally distributed in the delayed posttest. Table 6 shows the results of ANOVA on delayed posttest.

Table 6

Results of ANOVA on Delayed Posttest

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	357881.85	2	178940.97	4747.34	0.000
Within Groups	1922.333	51	37.693		
Total	359804.148	53			

Since the p-value (.000) is lower than the significance level (.05), it can be concluded that the groups are not the same in vocabulary learning long times after the treatment, $F(2, 51) = 4747$, $p = .000$. based on the mean differences, the learners in the episodic encoding strategies outperformed both semantic and control group in vocabulary retention in long run.

These findings demonstrate that differences among the three instructional conditions persisted over time. Learners who received episodic instruction retained significantly more vocabulary after one month than those who received semantic instruction or conventional rote learning.

5.3. Hypothesis Testing Summary

The results of the ANOVA analyses led to the rejection of both null hypotheses:

H01, which stated that there would be no significant difference among instructional groups in immediate vocabulary learning, was rejected.

H02, which stated that there would be no significant difference among instructional groups in delayed vocabulary retention, was rejected.

Overall, the findings indicate that vocabulary instruction engaging episodic memory through autobiographical, narrative-based learning leads to significantly higher immediate learning and longer-term retention than semantic-based instruction and conventional vocabulary teaching.

6. Discussion

The present study investigated the effects of episodic-based, semantic-based, and conventional vocabulary instruction on immediate vocabulary learning and delayed vocabulary retention among adult Iranian EFL learners.

6.1. Interpretation of the Main Findings

The results of this research indicate that instructional approaches engaging episodic memory through autobiographical and narrative-based tasks lead to significantly greater vocabulary learning and retention than approaches primarily targeting semantic memory or rote memorization. These findings align with contemporary cognitive models that emphasize the role of contextual richness, emotional prominence, and self-relevance in memory retention and consolidation (Madan, 2023; Murty et al., 2017; Xu et al., 2024).

Theoretically, the superiority of episodic instruction can be interpreted through the encoding specificity principle, which portrays memory retrieval in a way within which it is enhanced when learning and recall conditions share contextual features (Tulving & Thomson, 1973). By embedding vocabulary items within personally meaningful narratives, episodic instruction may have created

richer retrieval cues than semantic elaboration alone, facilitating access to lexical representations during both immediate and delayed testing.

The strength of episodic group performance also supports interactionist accounts of declarative memory, which argue that semantic knowledge is strengthened when initially encoded through episodic experiences (McClelland et al., 1995; Moscovitch et al., 2016). Rather than functioning as isolated systems, episodic and semantic memories appear to operate synergistically, with episodic encoding providing a robust foundation for subsequent semantic consolidation. This interpretation helps explain why learners in the episodic condition not only outperformed the control group but also demonstrated advantages over those receiving semantic-based instruction.

6.2. Episodic Versus Semantic Instruction: Short-Term and Long-Term Effects

It can mention that while semantic-based teaching resulted in higher scores than rote learning, its effects were less pronounced than those observed for episodic instruction, especially on the delayed posttest. This pattern suggests that semantic elaboration alone may support initial learning but may be insufficient for sustaining retention over longer intervals when learning lacks personal relevance or emotional engagement.

These findings are consistent with prior research regarding the improvement of semantic processing and vocabulary learning at the time of involvement with active manipulation of meaning (Barcroft, 2015; Rahmani & Maleki, 2023), yet may not guarantee long-term retention in contexts characterized by limited exposure (Uchihara et al., 2019). In comparison, episodic encoding appears to enhance durability by anchoring lexical items to autobiographical or imagined experiences, which are more resistant to forgetting (Conway, 2009; Cunningham et al., 2025).

Ultimately, the persistence of group differences on the delayed posttest suggests that episodic instruction may support memory consolidation processes beyond initial encoding. Neurocognitive evidence and research indicate that emotionally prominent experiences are likely to undergo hippocampal–neocortical integration, leading to stable long-term representations (Davis & Gaskell, 2009; Xu et al., 2024).

6.3. Addressing the Magnitude of the Observed Effects

The aforementioned analyses revealed the effect of instructional condition on both immediate and delayed vocabulary outcomes. While such results indicate strong instructional effects, they should be interpreted with caution. Several factors may have contributed to the magnitude of the observed differences, including the controlled instructional environment, the focused set of target vocabulary, and the absence of competing instructional variables.

Moreover, the episodic tasks were novel to participants and may have increased motivation and attention, thereby amplifying learning gains. As noted by reviewers, novelty effects cannot be ruled out and may partially explain the strength of the findings. Future studies employing longitudinal designs or repeated exposure to episodic instruction would be necessary to determine whether these effects are sustained over time. By explicitly acknowledging these considerations, the present study avoids overstating causal claims and situates its findings within realistic methodological boundaries.

7. Conclusion and Implications

This study examined whether the activation of episodic memory through autobiographical, narrative-based instructional techniques leads to greater vocabulary learning and retention among adult EFL learners than semantic-based approaches or traditional rote learning methods. Despite some limitations, the findings offer important pedagogical insights for EFL vocabulary instruction. The results suggest that vocabulary learning may be enhanced when instructional practices move beyond decontextualized semantic explanation and incorporate experience-based, self-referential, and emotionally engaging tasks. This does not imply that semantic instruction should be abandoned; rather, it highlights the potential benefits of integrating episodic elements into meaning-focused instruction.

For EFL contexts such as Iran, where vocabulary teaching often relies heavily on translation and memorization, episodic approaches may provide an effective means of increasing learner engagement and retention without requiring extensive curricular restructuring. Narrative activities, personal reflection tasks, and guided imagery can be incorporated into existing syllabi to enrich lexical encoding.

However, pedagogical implementation should remain sensitive to learner preferences, classroom constraints, and instructional goals. Episodic instruction may be particularly effective for introducing new vocabulary, while semantic elaboration may play a complementary role in reinforcing and systematizing lexical knowledge.

Several limitations must be acknowledged. First, the study employed a quasi-experimental design with convenience sampling, which limits the generalizability of the findings. Second, the sample size was relatively small and drawn from a single instructional context. Third, the study focused exclusively on nouns, leaving open the question of whether similar effects would be observed for other word classes. Additionally, learner variables such as motivation, imagery ability, and emotional responsiveness were not measured and may have influenced outcomes. Future research could incorporate mixed-methods designs, delayed retention intervals beyond one month, and

neurocognitive or process-oriented measures to further elucidate the mechanisms underlying episodic vocabulary learning.

In sum, the present study provides empirical evidence that vocabulary instruction engaging episodic memory leads to superior immediate learning and long-term retention compared with semantic-based and conventional instructional approaches among adult EFL learners. By situating vocabulary learning within meaningful, experience-based contexts, episodic instruction appears to strengthen memory consolidation and resistance to forgetting. These findings contribute to a growing body of research advocating for cognitively informed, learner-centered approaches to vocabulary pedagogy.

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Authors' Contributions

All authors have conducted the study, collected data, analyzed and interpreted the data, and written up the manuscript.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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