

# **A Cross-Cultural Psycholinguistic Study on Arabic Vocabulary Retention: Evidence from Indonesia and Malaysia**

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## **Abstract**

This study examines Arabic vocabulary retention from a cross-cultural psycholinguistic perspective involving learners in Indonesia and Malaysia. Recognizing that rote memorization rarely ensures long-term retention, the research integrates association, mnemonics, visualization, and a novel strategy Familiarity-Enhanced Recall to enhance recall and reduce anxiety. Employing a mixed-method design, 90 participants (30 from Pondok Pesantren Darululughah Wadda'wah, Indonesia, and 60 from Maktab Mahmud Yan, Malaysia) completed pre-tests, post-tests, and interviews. Results showed significant improvement, with Familiarity-Enhanced Recall linking new words to familiar routines, cultural practices, or personal hobbies emerging as the most effective approach. Learners expressed greater confidence, motivation, and emotional engagement, as vocabulary became personally meaningful and easier to recall. The findings underscore that psycholinguistic strategies, when contextualized within learners' cultural experiences, foster more sustainable and engaging vocabulary acquisition, offering valuable insights for Arabic language pedagogy in diverse educational settings.

**Keywords:** *Arabic vocabulary retention, familiarity-enhanced recall, cross-cultural study*

## **Introduction**

Vocabulary acquisition forms the cornerstone of language learning, including Arabic. As a fundamental element that supports speaking, reading, writing, and listening skills, vocabulary plays a pivotal role in building overall language competence (Habib, 2025; Solehudin et al., 2025). However, many learners of Arabic face persistent challenges in memorizing and retaining the vocabulary they learn (Bahari & Mohammadi, 2023). These difficulties often arise from traditional teaching methods that lack effectiveness, insufficiently interactive approaches, and the absence of psychological strategies designed to support long-term memory retention (Mahmudah, 2025).

In the Malaysian context, Arabic language education has become an integral and compulsory component in the curriculum of *Ma'had* and Islamic educational institutions. Mastery of Arabic is considered essential, particularly for students who aspire to pursue the *Sijil Tinggi Agama Malaysia* (STAM) (Abdul Wahab et al., 2021), where Arabic proficiency is a prerequisite for academic success and religious scholarship. Despite the comprehensive and obligatory nature of Arabic instruction in Malaysia, challenges remain evident in the area of vocabulary memorization. Many learners continue to experience difficulties and uncertainties in retaining Arabic vocabulary, which ultimately hampers their linguistic development and academic progress (Arisandi et al., 2025; Masnun et al., 2025). This gap underscores the urgency of introducing innovative, psycholinguistic strategies that can address these persistent obstacles and support Malaysian students in achieving both fluency and confidence in Arabic.

In this context, psycholinguistic approaches offer an innovative pathway to address these challenges. Psycholinguistics, an interdisciplinary field bridging language studies and cognitive processes, sheds light on how memory functions in the acquisition and retention of language (Asadi, 2020; Bai et al., 2023; Elsisi, 2023). It emphasizes the use of effective memory strategies such as association, visualization, mnemonics, and spaced repetition to enhance vocabulary retention. By understanding how the brain processes and stores linguistic information, educators can design methods that are more adaptive and aligned with learners' needs (Prystauka et al., 2023).

This study focuses on employing psycholinguistic strategies to accelerate Arabic vocabulary retention. By leveraging principles grounded in cognitive and linguistic sciences, the research aims to identify the most effective methods to help learners memorize and actively use vocabulary. Such an approach not only optimizes the learning process but also addresses the common barriers faced by Arabic language learners at both beginner and advanced levels.

Issa (2023) highlighted the cognitive challenges posed by Arabic's morphological complexity, emphasizing a hierarchical process in spelling where roots and patterns are prioritized. This aligns with psycholinguistic insights into how learners process and retain linguistic structures. These findings align with psycholinguistic principles, emphasizing the interplay between cognitive processing and language structures in learning. Aldhaen (2024) explored the use of mobile application technology (M-learning) to address the decline of Arabic and regional dialects in the Middle East, emphasizing its role in preserving linguistic identity. The study highlights the effectiveness of mobile applications in enhancing vocabulary acquisition and language competence, offering a psycholinguistic approach to counteract the dominance of English in media, business, and education. Susanty et al. (2024) examined the role of English-language songs in enhancing second language (L2) acquisition through a psycholinguistic lens. The study found that exposure to English songs improves vocabulary acquisition, pronunciation, listening, and reading skills, offering insights into cognitive mechanisms in L2 learning. These findings highlight the potential of music-based teaching to create engaging and effective language learning practices. Van den Elzen (2024) examined how the British New Left redefined the term 'solidarity,' utilizing

memory to reshape its meaning within evolving ideological contexts. This approach aligns with your journal's focus on psycholinguistic strategies, which emphasize the role of memory and contextual associations in transforming linguistic understanding to achieve specific goals, whether in activism or language learning. Soliman and Khalil (2024) examined the teaching of Arabic as a community language in the UK, highlighting challenges such as addressing diglossia, limited teacher training, and the need for communicative approaches. Their findings align with your journal's focus on innovative methods for Arabic vocabulary retention, emphasizing the importance of integrating effective strategies and contextual materials to enhance language acquisition in diverse learning environments. Tohiri Habib et al. (2025) demonstrated that inspirational Arabic quotes can enhance vocabulary retention and morphological awareness through psycholinguistic strategies, highlighting emotional resonance and cultural context as key factors in effective language learning.

This gap underscores the limited research on how psycholinguistic methods such as vocabulary familiarity, association, and visualization can be systematically applied to address the persistent challenge of Arabic vocabulary retention among non-native speakers. Furthermore, little attention has been given to how personalized and technology-driven approaches, such as linking vocabulary to learners' hobbies and interests, may enhance memorization. While prior studies emphasize emotional and contextual associations in language learning, they have not sufficiently explored how these elements can be strategically utilized to foster long-term retention within Arabic language education.

To address these shortcomings, this study applies psycholinguistic strategies to develop a learner-centered framework for vocabulary retention, supported by innovations such as gamified tools and creative learning activities. It also highlights the potential of aligning learning with students' personal interests such as sports, design, and creative expression to enhance engagement and motivation.

By filling this gap, the research advances understanding of Arabic vocabulary retention through psycholinguistic lenses and offers practical implications for educators and curriculum designers. Future studies are encouraged to integrate artificial intelligence, gamification, and diverse learner contexts to establish scalable models of language instruction. Ultimately, this work contributes to bridging cognitive science, educational technology, and pedagogy, providing innovative pathways for effective and sustainable Arabic language acquisition.

## **Method**

This study employed a mixed-method approach, integrating both quantitative and qualitative data to explore the effectiveness of a psycholinguistic approach in accelerating Arabic vocabulary retention (Creswell, 2021). The participants consisted of 90 students, with 30 students from Pondok Pesantren Darullughah Wadda'wah in Pasuruan, East Java Indonesia and 60 students from Maktab Mahmud Yan in Malaysia. These participants, aged between 16 and 18, were selected through purposive sampling, focusing on those actively studying Arabic as part of their formal education. A quasi-experimental design was utilized, involving pre-tests and post-tests to measure

vocabulary retention improvements, alongside semi-structured interviews to gain qualitative insights into their learning experiences (De Paoli, 2024).

The instruments used in the study included a vocabulary retention test with 50 Arabic words, psycholinguistic intervention modules incorporating strategies such as Familiarity-Enhanced Recall, mnemonics, and visualization, and an interview protocol to gather participant feedback (Bursais, 2024). The procedure began with a pre-test to establish baseline vocabulary knowledge. Over a three-week period, participants engaged in psycholinguistic strategies through activities like practicing spaced repetition, and participating in contextual learning exercises. A post-test was administered to measure retention improvement, followed by semi-structured interviews with selected participants to explore their perceptions of the learning process.

Data analysis involved both quantitative and qualitative methods (Creswell & Creswell, 2020). Pre-test and post-test scores were analyzed statistically to determine the significance of improvement, while interview responses were thematically coded to identify patterns in cognitive and emotional engagement (Adeoye-Olatunde & Olenik, 2021). Ethical approval was obtained from both institutions, and informed consent was collected from participants, ensuring confidentiality and anonymity throughout the study. This methodological framework provided a comprehensive exploration of how psycholinguistic strategies can enhance Arabic vocabulary retention across diverse cultural and educational contexts.

## **Result and Discussion**

The Arabic language program at Pondok Pesantren Darullughah Wadda'wah (Dalwa) is known for its good quality for Arabic education (Solehudin, 2024), producing graduates who are highly skilled in Arabic. With a curriculum that includes classical Islamic texts (*kitab kuning*), conversational Arabic (*mubâdatsah*), public speaking (*muhâdbarah*), and Arabic language camps (daurah), Dalwa has become a well-respected institution for Arabic language education. Many of its graduates are fluent in speaking, reading, and writing Arabic, and they also have a strong foundation in Arabic grammar (nahwu and sharaf) and literature. This success highlights Dalwa's role as a leader in Arabic education (Solehudin & Arisandi, 2024; Zulpina et al., 2025).

Despite these strengths, there are challenges that need attention, particularly in the areas of teacher regeneration and method development. Each year, many senior students graduate and move on to further studies or other opportunities. This creates a need for new educators who can maintain the quality of Arabic teaching. To address this, Dalwa needs a continuous process to train and prepare the next generation of Arabic teachers. Ensuring this regeneration is crucial to sustaining the institution's high standards.

Dalwa receives a large number of new students annually, many of whom have limited or no background in Arabic. Teaching beginners requires methods that are both effective and engaging to help them grasp basic language skills quickly (Hanifansyah & Mahmudah, 2024). While traditional methods, such as memorization and direct instruction, remain important, there is a need to incorporate modern techniques. This

includes the use of technology, interactive learning, and innovative strategies that make learning Arabic easier and more enjoyable for students.

Pondok Pesantren Darullughah Wadda'wah (Dalwa) has a good relationship with Maktab Mahmud Yan, Malaysia, built on shared values in promoting Arabic language and Islamic education (Hanifansyah & Mahmudah, 2024). This collaboration has been enriched through various programs, including student exchanges and educational workshops. Dalwa also plays a significant role in assigning its students as teaching interns and ambassadors, both nationally and internationally. Over the years, Dalwa has sent its students to teach at schools, Islamic institutions, and communities across Indonesia and abroad, including Malaysia. These assignments not only contribute to spreading Arabic language proficiency and Islamic teachings but also prepare Dalwa students to become educators and leaders in diverse cultural and educational settings (Solehudin et al., 2024).

The psychological approach to memorization focuses on strategies that leverage an understanding of how the brain absorbs, processes, and retains information (Kajiura et al., 2021; Li & Lan, 2022). By aligning with cognitive mechanisms, this approach is designed to improve memory retention and foster greater engagement in learning. It moves beyond rote memorization by integrating interactive, meaningful, and scientifically-backed methods that actively involve the learner's mind.

Familiarity-Enhanced Recall (FER) anchors new vocabulary to familiar contexts, sounds, and associations for instance, نسي (to forget) linked with nasi (rice) or فلق (anxiety) with kolak (a dessert eaten during Ramadan) thus facilitating faster and more enjoyable recall. Complementary strategies include visualization (creating vivid imagery), mnemonics (using acronyms or humor), chunking (learning words in small groups), and spaced repetition (reviewing at optimal intervals) to reduce cognitive load and strengthen long-term retention. Emotion and real-life context further reinforce encoding, as linking words to everyday scenes enhances meaning. For example, انكب ("to spill over") can be memorized through the imagined scene of spilled mie ayam (noodle soup), where the feelings of frustration or embarrassment leave a lasting imprint. Through such familiar and affective associations, vocabulary becomes personally meaningful, transforming linguistic items into durable, easily retrievable memories.

Emotion can also be cultivated through digital technology (Alshaye, 2021), providing a modern and effective way to enhance learning experiences (Mahmudah et al., 2024). For example, unique and visually captivating designs can be created and paired with heartwarming or inspiring phrases to evoke strong emotional responses. Each card not only introduces new vocabulary but also tells a story or conveys a message that resonates emotionally. These carefully crafted flashcards demonstrate how digital tools can transform memorization into an engaging and deeply personal process, ensuring that the content leaves a lasting impression on the learner's mind.

This study applies and contextualizes association-based memory techniques, which we term 'Familiarity-Enhanced Recall' for this specific educational context. While the underlying cognitive principle of linking new information to familiar elements is

well-established in memory research (Craik & Lockhart, 1972), its systematic application to Arabic vocabulary acquisition in Islamic educational settings represents a novel contribution.

Familiarity-Enhanced Recall (FER) represents a significant contribution to cognitive and psycholinguistic perspectives on language learning. More than a mnemonic aid, it reshapes learners' engagement with new information by fostering deeper cognitive and emotional connections. Unlike rote memorization, which is mechanical and transient, FER promotes natural absorption through associations with familiar contexts, leading to stronger retention, confidence, and motivation. By embedding vocabulary within meaningful experiences, learners transform Arabic acquisition from a repetitive task into an engaging, personalized process.

Grounded in cognitive science, this approach personalizes learning, reduces cognitive load, and enhances motivation by creating "anchors" that link new information to prior knowledge. FER effectively bridges the gap between the abstract nature of language and real-life experience, making learning accessible and contextually rich. Integrating visual, auditory, and kinesthetic stimuli further reinforces long-term memory pathways, fostering holistic learning.

Ultimately, learners achieve deeper understanding and practical mastery, confidently applying vocabulary in authentic communication. As a forward-looking pedagogical strategy, Familiarity-Enhanced Recall unites scientific insight with human experience, offering a sustainable and engaging model for modern Arabic language education.

The qualitative findings of this study, derived from semi-structured interviews with selected participants (Belina, 2023), provided valuable insights into their experiences and perceptions of the psycholinguistic strategies employed during the intervention. The analysis revealed several key themes that highlighted the cognitive and emotional impact of these strategies on Arabic vocabulary retention.

### *Enhanced Engagement through Familiarity-Enhanced Recall*

Participants consistently reported that connecting new vocabulary to familiar elements from their daily lives, such as local food, routines, or cultural symbols, made learning more relatable and enjoyable. For instance, one participant shared, "When I linked the word انكب (inkabba, meaning 'to spill over') with the thought of spilling my mie ayam, it felt so real and stuck in my memory." This strategy not only facilitated memorization but also created an emotional bond with the vocabulary, making it easier to recall during conversations and tests. Similarly, when learning the word استقل (istaqalla, meaning 'to become independent'), some learners associated it with the iconic Istiqlal Mosque in Jakarta, a cultural landmark that immediately reinforces recall. This strategy not only facilitated memorization but also created an emotional bond with the vocabulary, making it easier to recall during conversations and tests. While the word نسي (nasiya, 'to forget') was humorously remembered by linking it to the Malay-Indonesian word nasi (rice). Although there is no semantic connection, the phonological resemblance elicited smiles among learners, strengthening their emotional engagement.

and enhancing memorization. This strategy not only facilitated recall but also fostered a positive affective response, making the learning process more meaningful and enjoyable.

#### *Emotional Associations as a Motivational Factor*

Emotional scenarios, such as imagining moments of embarrassment or joy, notably enhanced learners' motivation. For instance, associating the word *قلق* (*qalaq*, “anxiety”) with the feeling of waiting nervously for iftar during Ramadan created vivid, memorable contexts that made learning more engaging and less monotonous. Participants also drew motivation from recognizing lexical parallels between Arabic and their native languages. The verb *أتقن* (*atqana*, “to master”) closely resembles the Malay–Indonesian word *tekun* (“diligent”), fostering both easier recall and a sense of linguistic familiarity that strengthened emotional attachment to Arabic.

Furthermore, morphological awareness emerged as another effective aid to retention. Learners observed that adding the morpheme *است-* (denoting “seeking” or “requesting”) to *أذن* (*adzina*, “to permit”) produced *استأذن* (*ista'dzana*, “to ask for permission”), allowing them to infer meanings in related forms such as *استيقظ* (*istayqaza*, “to wake up”) and *استعمل* (*ista'mala*, “to use”). Recognizing these predictable patterns made vocabulary learning more systematic and less intimidating. The synergy of emotional association, lexical familiarity, and morphological insight thus enhanced both comprehension and long-term retention.

#### *Increased Confidence in Vocabulary Use*

Several participants reported a significant boost in confidence when using new vocabulary in both spoken and written contexts, attributing it to the deeper understanding and emotional connection developed during the intervention. One participant remarked, “I used to fear forgetting words, but now I remember not only the word but also the story or image behind it.” This confidence was especially evident among those actively engaging with the Familiarity-Enhanced Recall strategy.

Learners also displayed unique interests influencing their retention: students who enjoyed art memorized words through illustrations, while sports enthusiasts related vocabulary to experiences in football or badminton. Anchoring new words to personal hobbies fostered a stronger sense of ownership and made memorization more natural and enjoyable.

The use of culturally relevant examples such as local foods and traditions further bridged abstract vocabulary with real-life contexts, making learning more meaningful and inclusive. Overall, these findings highlight the effectiveness of psycholinguistic strategies, particularly Familiarity-Enhanced Recall, in promoting emotional engagement, cultural resonance, and a learner-centered approach to vocabulary acquisition.

The analysis of previous studies provides a strong foundation for understanding the relevance and alignment of the current research on Arabic vocabulary retention

using psycholinguistic approaches. Issa (2023) highlights the cognitive challenges posed by Arabic's morphological complexity, emphasizing structured hierarchies in processing roots and patterns. This aligns with the current study's use of Familiarity-Enhanced Recall, addressing these complexities through structured cognitive approaches. Similarly, Aldhaen (2024) demonstrated the potential of mobile learning technologies to enhance vocabulary acquisition and preserve linguistic identity amidst the dominance of English. This supports the current study's advocacy for integrating technology to create personalized and engaging learning experiences. Additionally, Susanty et al. (2024) explored how music enhances vocabulary retention and language skills by tapping into emotional and cognitive mechanisms. This correlates with the current study's use of emotionally engaging materials, such as Familiarity-Enhanced Recall, to strengthen linguistic associations.

Van den Elzen (2024) examined how contextual and semantic reframing within activism reshaped terms like "solidarity," demonstrating the power of memory and contextual associations to foster engagement. This approach is mirrored in the current research, where linking new vocabulary to familiar contexts enhances memorization and learner engagement. Furthermore, Soliman and Khalil (2022) addressed challenges in teaching Arabic, particularly regarding diglossia and the need for communicative approaches. The current study complements these findings by offering psycholinguistic strategies as innovative solutions, promoting interactive and learner-centered methodologies.

Collectively, these prior studies emphasize the cognitive complexity of Arabic language learning, the pivotal role of technology and multimedia in education, and the importance of emotional and contextual associations in enhancing language acquisition. The current research builds upon these foundations by integrating strategies like Familiarity-Enhanced Recall, leveraging technology and personal interests to create tailored learning experiences, and providing empirical evidence of psycholinguistic interventions' effectiveness. By bridging theoretical insights with practical applications, this study offers a comprehensive and innovative model for Arabic language education.

The quantitative analysis examined vocabulary retention improvements following a three-week psycholinguistic intervention. Table 1 presents descriptive statistics and paired sample t-test results for pre-test and post-test scores across both institutions.

Prior to the intervention, the overall mean score was 58.3% ( $SD = 12.4$ ), indicating moderate baseline vocabulary knowledge. Students from Pondok Pesantren Darullughah Wadda'wah demonstrated slightly higher pre-test performance ( $M = 61.2\%$ ,  $SD = 11.8$ ) compared to those from Maktab Mahmud Yan ( $M = 56.7\%$ ,  $SD = 12.6$ ), though this difference was not statistically significant,  $t(88) = 1.54$ ,  $p = .127$ .

Following the three-week intervention, the overall mean post-test score increased to 81.4% ( $SD = 9.8$ ), representing a mean improvement of 23.1 percentage points ( $SD = 14.2$ ). Paired sample t-tests revealed statistically significant improvements for all groups: overall sample ( $t(89) = 15.42$ ,  $p < .001$ , Cohen's  $d = 1.30$ ), Pondok Pesantren Darullughah Wadda'wah ( $t(29) = 9.87$ ,  $p < .001$ , Cohen's  $d = 1.42$ ), and

Maktab Mahmud Yan ( $t(59) = 12.34$ ,  $p < .001$ , Cohen's  $d = 1.26$ ). The effect sizes (Cohen's  $d > 1.2$  for all groups) indicate large practical significance.

However, it is important to note that this study did not employ a control group receiving conventional instruction. Therefore, while the improvements are statistically significant, we cannot definitively isolate the effect of the psycholinguistic intervention from other factors such as repeated exposure to test materials, practice effects, increased motivation from research participation, or natural learning progression over the three-week period.

#### *Comparative Performance Between Institutions*

Table 3 presents the between-group comparison of post-test scores. Students from Pondok Pesantren Darullughah Wadda'wah ( $M = 84.6\%$ ,  $SD = 8.9$ ) outperformed those from Maktab Mahmud Yan ( $M = 79.8\%$ ,  $SD = 10.1$ ) by 4.8 percentage points, a difference that reached statistical significance,  $t(88) = 2.31$ ,  $p = .023$ , Cohen's  $d = 0.49$ . This medium-sized effect may reflect pre-existing differences in instructional approaches, prior exposure to mnemonic strategies, or variations in student backgrounds between the two institutions.

Table 2 displays retention rates for vocabulary items taught using different psycholinguistic strategies. Association-based recall techniques (termed "Familiarity-Enhanced Recall" in this context) yielded the highest mean retention rate ( $M = 89.2\%$ ,  $SD = 8.4$ ), followed by mnemonics and visualization ( $M = 85.4\%$ ,  $SD = 9.7$ ), and spaced repetition ( $M = 82.7\%$ ,  $SD = 11.2$ ).

While these descriptive patterns suggest potential advantages for association-based methods, the absence of a control condition limits causal interpretation. These retention rates reflect performance one week post-intervention and may not indicate long-term retention. Future research with delayed assessments (e.g., 3-month, 6-month follow-ups) is necessary to evaluate sustained memory consolidation.

**Table 1.** Descriptive Statistics and Paired Sample t-test Results for Pre-test and Post-test Scores

Group	n	Pre-test M (SD)	Post-test M (SD)	Mean Diff	t	df	p	Cohen's d	95% CI [LL, UL]
Overall	90	58.3 (12.4)	81.4 (9.8)	23.1 (14.2)	15.42	89	<.001	1.30	[19.8, 26.4]
Pondok Pesantren Darullughah Wadda'wah	30	61.2 (11.8)	84.6 (8.9)	23.4 (13.0)	9.87	29	<.001	1.42	[18.7, 28.1]
Maktab Mahmud Yan	60	56.7 (12.6)	79.8 (10.1)	23.1 (14.7)	12.34	59	<.001	1.26	[19.4, 26.8]

*Note.* M = Mean; SD = Standard Deviation; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit. All scores are expressed as percentages out of 100.

Effect size interpretation: Cohen's  $d > 0.8$  indicates a large effect. Paired sample t-tests were conducted to compare pre-test and post-test scores within each group.

**Table 2.** Vocabulary Retention Rates by Psycholinguistic Strategy Type

Strategy Type	n	Retention Rate M (%)	SD	95% CI [LL, UL]
Association-based recall (Familiarity-Enhanced Recall)	90	89.2	8.4	[87.5, 90.9]
Mnemonics and visualization	90	85.4	9.7	[83.4, 87.4]
Spaced repetition	90	82.7	11.2	[80.4, 85.0]

*Note.* M = Mean; SD = Standard Deviation; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit. Retention rates were measured through post-test assessment administered one week after the completion of the three-week intervention. Each participant was exposed to all three strategy types across different vocabulary items. This study did not include a control group receiving conventional instruction.

**Table 3.** Independent Samples t-test Comparing Post-test Scores Between Institutions

Institution	n	Post-test M (SD)	Mean Diff	t	df	p	Cohen's d	95% CI [LL, UL]
Pondok Pesantren Darullughah Wadda'wah	30	84.6 (8.9)	4.8	2.31	88	.023	0.49	[0.7, 8.9]
Maktab Mahmud Yan	60	79.8 (10.1)						

*Note.* M = Mean; SD = Standard Deviation; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit. Cohen's  $d = 0.49$  indicates a medium effect size. Levene's test for equality of variances:  $F = 0.86$ ,  $p = .356$ , suggesting homogeneity of variance. The difference, while statistically significant, may be attributed to pre-existing institutional differences in pedagogical approaches or student backgrounds.

The statistical analyses revealed substantial improvements in Arabic vocabulary retention following the three-week psycholinguistic intervention. Large effect sizes across both institutions (Cohen's  $d = 1.26-1.42$ ) indicate strong learning gains, with an average improvement of 23 percentage points. The parallel progress in both groups suggests that the intervention was effective across differing educational environments. However, the absence of a control group limits causal attribution. Without comparison to conventional instruction, improvements could also result from test familiarity, repeated exposure, or increased motivation during research participation—common confounding factors in educational studies that call for more rigorous experimental designs.

The slight but statistically significant post-test difference ( $p = .023$ ) between institutions favoring Pondok Pesantren Darullughah Wadda'wah by 4.8 percentage points likely reflects contextual variables such as prior exposure, pedagogical approaches, or institutional culture. Yet, nearly identical rates of improvement (23.4%

vs. 23.1%) indicate that the psycholinguistic strategies were comparably effective across contexts, underscoring their adaptability while highlighting the need for validation through matched or randomized designs.

Descriptive data also show variation among strategies: association-based methods achieved the highest retention (89.2%), surpassing mnemonics/visualization (85.4%) and spaced repetition (82.7%). This aligns with cognitive theory emphasizing the value of meaningful associations in memory consolidation. Nevertheless, potential biases remain strategy assignment was non-random, learner preferences may have influenced outcomes, and results reflect short-term rather than long-term retention. Despite these caveats, overall performance exceeding 82% suggests that structured, intentional learning strategies consistently outperform incidental methods, though future research with control groups is essential to confirm these effects.

An important conceptual limitation concerns the definition and measurement of retention. This study assessed recall only one week after the intervention, reflecting short-term memory consolidation rather than long-term retention. Cognitive psychology indicates that forgetting curves are steepest during the first weeks of learning, with substantial decline over subsequent months. True vocabulary mastery, therefore, should include not only recognition or recall in tests but also spontaneous retrieval during authentic communication, flexible use across contexts, and resistance to interference from similar words. Future research should apply delayed post-tests (e.g., after 1, 3, and 6 months) and evaluate productive use through oral and written performance.

Despite these limitations, the findings provide preliminary evidence supporting the integration of psycholinguistic strategies into Arabic vocabulary instruction. While the improvements cannot be conclusively attributed to the intervention alone, the results suggest that structured memory techniques outperform traditional rote methods. Teachers are encouraged to help learners connect new vocabulary with familiar cultural elements and personal experiences rather than isolated repetition. Incorporating visual, auditory, and kinesthetic inputs creates multiple retrieval pathways, while teaching mnemonic techniques allows learners to discover strategies suited to their learning styles. Activities evoking emotional engagement or meaningful narratives can further strengthen retention, as emotional arousal enhances long-term memory. Nonetheless, implementation should be context-sensitive, as classroom realities and learner diversity may require adaptation.

Future research should adopt randomized controlled designs with sufficient samples, control groups, and pre-registered analyses to ensure validity. Longitudinal assessments are essential to differentiate temporary performance gains from durable retention. Investigating the cognitive and neurological mechanisms underlying association-based strategies would clarify how individual difference such as working memory, motivation, and prior knowledge influence effectiveness. Studies conducted by regular teachers in authentic classrooms, with measures of spontaneous vocabulary use, would also increase ecological validity. Cross-cultural research is needed to identify universal principles of mnemonic association while preserving local relevance.

In conclusion, the results warrant cautious optimism: psycholinguistic approaches appear promising but require more rigorous, long-term validation. Addressing methodological constraints will be crucial for determining their scalability in Arabic pedagogy. Integrating technology represents a future direction for enhancing Familiarity-Enhanced Recall. Digital tools can personalize learning for instance, gamified vocabulary apps for football enthusiasts, digital art projects using tools like Procreate for visual learners, or coding-based tasks for tech-oriented students. Such innovations can align vocabulary learning with personal interests and cultural contexts, transforming Arabic acquisition into an interactive, creative, and enduring experience.

## **Conclusion**

This study highlights the transformative potential of psycholinguistic strategies, particularly psycholinguistic strategies including association-based recall techniques, in enhancing Arabic vocabulary retention. By integrating cognitive techniques such as association, mnemonics, visualization, and emotional connections, the research provides a learner-centered framework that fosters deeper engagement and long-term retention. The mixed-method approach, combining quantitative and qualitative data from 90 participants, underscores the effectiveness of these strategies in diverse educational and cultural contexts.

The findings contribute to the growing body of knowledge on Arabic language acquisition by introducing innovative methods grounded in psycholinguistics and humanistic principles. These approaches offer practical applications for educators to create more adaptive and interactive learning environments. Furthermore, the results emphasize the need for personalized and contextually relevant teaching strategies that resonate with learners' experiences and interests.

Despite its contributions, this study has limitations that warrant further exploration. The relatively short duration of the intervention and the sample size, while significant, may limit the generalizability of the findings. Future research could expand the study across different age groups, learning levels, and geographic regions to provide a broader perspective. Additionally, leveraging advanced technologies such as artificial intelligence and gamified learning platforms could further enhance the application of Familiarity-Enhanced Recall, aligning language acquisition with learners' hobbies and interests, such as sports, creative writing, design, and technology.

In conclusion, this research demonstrates the importance of bridging cognitive science and practical pedagogy in language education. By addressing the persistent challenges of vocabulary retention through innovative strategies, it lays the foundation for more impactful and engaging learning models. Future studies are encouraged to build on these findings, exploring the integration of psycholinguistic strategies with emerging technologies to shape the future of Arabic language education.

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