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# Effect of Audio-Visual Mnemonic Technique on English Vocabulary Learning and Retention among Grade VIII Learners

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**ABSTRACT**

This study set out to see whether an audio-visual mnemonic technique could help Grade VIII learners pick up and hold onto English vocabulary better than the traditional paraphrase-and-memorise approach most classrooms rely on. The question mattered because vocabulary taught through translation and memorisation alone is often recognised on a test but poorly retained once time has passed. Using a pre-test–post-test control-group design, 54 learners were matched on their pre-test scores and split into two equal groups of 27, with treatment then assigned at random to one group. Over eight weeks, four 40-minute sessions a week, the experimental group worked through 640 vocabulary items using audio-visual mnemonic instruction, while the control group learned the same words by paraphrasing or translating them into simple English and memorising the result. A 50-item multiple-choice test, developed for the study, was used at three points — before treatment, right after it, and again four weeks later to check retention. The results were fairly clear-cut. On the post-test, the experimental group came out ahead of the control group ($M = 21.37$, $SD = 4.06$ vs. $M = 17.96$, $SD = 3.48$), a difference confirmed by an independent-samples t-test, $t(52) = -3.31$, $p = .002$. The advantage held up over time as well: even after controlling for post-test performance, an ANCOVA showed a significant group effect on the four-week retention scores, $F(1, 51) = 68.92$, $p < .001$, partial $\eta^2 = .575$ — a large effect. Taken together, these findings suggest that the audio-visual mnemonic technique gave learners a real edge over the traditional method, both in how much vocabulary they picked up and how much of it stuck a month later. This supports the broader case for building audio-visual mnemonic activities into vocabulary instruction, rather than relying on translation and memorisation alone.

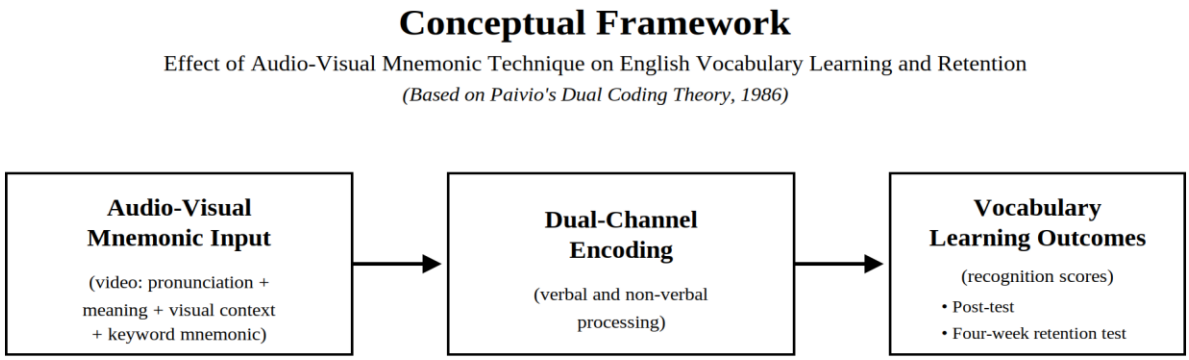
## Introduction

Vocabulary knowledge sits at the heart of second and foreign language learning: without an adequate stock of words, learners have little to draw on for listening, speaking, reading, or writing. But learning a word in the moment is not the same as being able to use it later — a learner may recognise or recall a newly taught word immediately after a lesson, only to find it slips away once time has passed. Vocabulary learning, then, is not just a matter of first exposure; it also depends on whether that knowledge is retained and can be retrieved when it is needed (Webb, 2007).

The term *mnemonic* itself derives from the Greek "Mnemosyne," the goddess of memory (Higbee, 1987), reflecting the long-standing recognition that memory can be deliberately strengthened through technique rather than left to unaided repetition. In this study, vocabulary enhancement refers to improvement in the retention, recall, and use of vocabulary; the traditional method refers to paraphrasing or translating a word into simple English followed by rote memorization; and the audio-visual mnemonic technique refers to instruction delivered through video, in which learners hear a word's correct pronunciation, receive its paraphrased meaning, see it used in a real-life situation, and are finally given a keyword mnemonic to strengthen the memory link.

This concern is especially pressing in English as a Foreign Language (EFL) setting, including secondary-grade classrooms in Pakistan, where learners often have little chance to encounter or use English outside the classroom (Afzal, Zubair, & Zaka, 2026). Vocabulary is still commonly taught through translation, explanation, and repeated memorisation — methods that can support initial learning well enough, but that leave open the harder question of whether the words stay usable over time.

Mnemonic instruction, which links new material to something already familiar in memory, is one established response to this problem. This study is grounded in Dual Coding Theory (Paivio, 1986), which explains why pairing a word with both verbal and visual information can strengthen retention. Applied to instruction, this framework distinguishes three components — **Audio-Visual Mnemonic Input, Dual-Channel Encoding, and Vocabulary Outcomes** — that together describe how such a technique is expected to support learning and retention.




*Note. The framework is based on Paivio's Dual Coding Theory (1986), which posits that information depicted both verbally and visually is encoded through two interconnected systems, leading to stronger memory traces.*

This study was designed to examine whether an audio-visual mnemonic technique is more effective than the traditional method in supporting English vocabulary learning and retention among Grade VIII EFL learners.

**Statement of the Problem**

EFL learners frequently have trouble retaining and recalling newly learned vocabulary over time, as vocabulary acquired through rote memorization and repetition may be remembered temporarily but often fades after examinations. Limited meaningful exposure, insufficient recycling of vocabulary, and exam-oriented learning practices further contribute to weak long-term vocabulary retention (Ameen, 2026). Despite growing recognition that mnemonic and multimodal approaches can support vocabulary learning, most available evidence comes from tertiary-level or Western EFL contexts, while Pakistani school-level classrooms continue to rely primarily on translation and memorization (Afzal et al., 2026). Grade VIII learners at rural, government-sector schools face particular constraints — limited access to multimedia resources and reliance on a single class teacher for all instruction — that make it unclear whether findings from better-resourced settings would transfer. This study examines whether an audio-visual mnemonic technique improves English vocabulary learning and retention, relative to the traditional method, among Grade VIII learners in this setting.

**Research Objectives**

The primary objectives of this study were to:

1. Compare the effect of the audio-visual mnemonic technique and the traditional method on English vocabulary learning.
2. Compare the effect of the audio-visual mnemonic technique and the traditional method on English vocabulary retention.

**Review of Related Literature**

**Vocabulary Knowledge and Instructional Techniques**

Knowing a vocabulary word involves more than recognizing its form: it includes knowing how frequently the word is used, in what grammatical structures it appears, how it combines with other words, and what related word forms share its root (Richards, 1976). Vocabulary models addressing these dimensions, however, have tended to treat them as separate components rather than as an integrated whole (Meara, 1996) a gap that has motivated research into which instructional techniques best support functional, usable vocabulary knowledge rather than isolated word recognition. Survey evidence from EFL teachers supports this shift: techniques presenting words through situations, video scenes, and associative context are rated more effective than translation or isolated explanation alone (Ali, 2016).

**Mnemonic Instruction**

Mnemonic strategies help learners anchor new material to something already familiar, and the keyword method has long been established as a way to apply this to second-language vocabulary: Atkinson (1975) provided the seminal experimental evidence for the approach, and Raugh and Atkinson (1975) demonstrated its effectiveness for Spanish vocabulary specifically. Later classroom research extended this to retention rather than just acquisition. Rodriguez and Sadoski (2000) found that combining context with the keyword method produced the strongest one-week recall among several instructional conditions, and Chiu and Hawkins (2023) found that pairing keyword mnemonics with retrieval practice gave Grade VIII Taiwanese EFL learners an advantage on delayed productive vocabulary. Sarıoğlu and Karatepe (2024) reported a similar pattern with younger EFL learners, who outperformed a sentence-context group on both immediate and delayed vocabulary recognition after mnemonic instruction.

This advantage over rote memorization has also been observed at the high-school level specifically. Behr (2012) compared traditional instruction against two mnemonic techniques — the method of loci and a descriptive-story technique — among high school students learning 45 words, with a delayed test three weeks after intervention; the descriptive-story technique produced the strongest recall, with the loci method close behind, and both outperformed the traditional method. Kayaaltı (2018) similarly found that EFL university students taught vocabulary through a mnemonic technique outperformed a memorization-based control group on both recall and retention, even when instruction was delivered in a language other than the students' first language. Taken together with the findings above, this body of work — spanning high school, university, and now elementary EFL populations — consistently favors mnemonic association over memorization for vocabulary that needs to be retained rather than only recognized in the short term (Amiryousefi & Ketabi, 2011).

**Audio-Visual and Multimodal Input**

Digital technologies allow vocabulary instruction to combine pronunciation, text, pictures, and context, but more input channels do not automatically produce better long-term learning. Li, Yu, Zhang, and Liu (2022) found that a multimodal group outperformed a comparison group immediately after instruction, but the comparison group pulled ahead on a delayed test a week later — evidence that audio-visual presentation does not guarantee durable retention on its own. Teng (2023), however, found the strongest immediate and delayed gains for vocabulary presented with definitions, word information, and video together, and a meta-analysis by Zhang, Sala, and Gobet (2025) similarly found that combined verbal-and-pictorial input outperformed either alone, particularly for immediate learning. Fung and Oyibo (2024) noted that mnemonic techniques are increasingly built into such technology-based learning environments, reflecting a broader shift toward interactive, multimedia-supported vocabulary instruction. This pattern held even under more basic technology conditions: Emami and Amirghasemi (2022), working with 60 EFL learners in an Iranian language institute, found that a group given access to multimedia and computer resources significantly outperformed a group taught the same words with no such access, on a standard pre-test/post-test comparison. Video-based presentation specifically, rather than multimedia more broadly, has also shown similar benefits: Erliana and Arbain (2020), using a single-group pre-test/post-test design with 25 young learners, found a significant improvement in vocabulary scores after instruction delivered through video clips, using a dependent-samples t-test to confirm the gain.

Findings on audio-visual mnemonic techniques specifically, however, are not uniformly positive. Kilinc (1996), comparing an audio-visual mnemonic technique against a dictionary-based method among university students, found the mnemonic group outperformed the dictionary group on both immediate and two-week delayed recall. By contrast, Raif (1999), comparing a keyword mnemonic technique against dictionary use among secondary-level students, found no meaningful difference between groups on delayed recall after three weeks, with both groups performing poorly — a result the researcher attributed to the technique's limited suitability for longer-term retention. This inconsistency across studies underscores why delayed retention, rather than immediate performance alone, needs to be tested directly rather than assumed.

**Dual Coding and Multimodal Processing**

Sadoski (2005) applied dual coding directly to vocabulary learning, showing how illustrations, imagery, verbal association, and the keyword method all draw on the same interconnected verbal and non-verbal representations. Mayer (2021) offers a complementary account through the Cognitive Theory of Multimedia Learning, which holds that auditory-verbal and visual-pictorial information are processed through separate, capacity-limited channels — helpful when integrated meaningfully, but a risk when overloaded, as Li et al.'s (2022) delayed-test results illustrate.

**Vocabulary Retention over Time**

Whether a mnemonic advantage survives the passage of time is a separate question from whether it helps at the moment of learning, and early mnemonic research addressed this directly. Boltwood and Blick (1970) had learners apply one of several mnemonic techniques to a word-recall task and tested recall immediately, after three days, and again after eight weeks; while recall for all groups declined with each delay, learners using the descriptive-story technique showed the smallest drop and retained a clear advantage over non-mnemonic learners at both the one-week and eight-week marks. Roediger (1980) reported a similar pattern using linking, loci, and peg-word techniques against a repetition-based control group: mnemonic groups outperformed the control group on immediate recall, and although their advantage narrowed slightly after 24 hours, it did not disappear.

Taken together, these findings suggest that a mnemonic advantage is not simply an artifact of novelty at the moment of encoding — it persists, in reduced but still meaningful form, across delays ranging from a single day to several weeks. This is the specific question the present study extends to an audio-visual mnemonic format: whether an advantage documented soon after instruction survives a comparable four-week interval.

## Research Methodology

This study employed a quantitative, random-assignment-with-matching, pre-test–post-test control-group experimental design.

**Population and Participant of the Study**

Government Boys High School Sadiq Abad, Tehsil Lawa, District Chakwal, was selected from among the government boys' schools of the district on the basis of administrative permission and the availability of a sufficiently large Grade VIII cohort to support the study's matched-groups design. All 54 Grade VIII students enrolled there during the 2021–22 academic year were included in the study. Participants were pre-tested, matched into pairs on the basis of their pre-test scores, and divided into two equal groups (n = 27 each), after which the treatment condition was randomly assigned to one group. All 54 participants completed the pre-test, post-test, and four-week retention test, with no attrition across the study period.

**Research Instrument**

The primary data collection tool was a researcher-developed, 50-item multiple-choice vocabulary test, with four response options per item, drawn from the 640 vocabulary items covered during the intervention. The same instrument was administered as the pre-test, post-test, and four-week retention test. The 640 words used in this study were the first 640 words, in sequence, from the 1,800-word pool available in the Vocabsolution.com video series, selected by the class teacher on the researcher's direction rather than through random or curated sampling from the full pool.

**Validity and Reliability**

Content validity was established through review by three subject experts, who evaluated the relevance and appropriateness of the test items for Grade VIII learners. Reliability was established using a test–retest procedure with 35 Grade VIII students at Government Boys High School, Kot Gullah, District Chakwal — a different school from the study site, chosen to establish reliability

without contaminating the study sample. The researcher personally administered both the initial test and the retest to this pilot group, with scores analyzed using SPSS. Test–retest reliability, assessed through the intraclass correlation coefficient (ICC), yielded coefficients of .902 for single measures and .948 for average measures; internal consistency, assessed using Cronbach's alpha, yielded a coefficient of .955 — indicating excellent reliability by conventional benchmarks.

**Data Collection and Analysis**

The class English teacher was trained by the researcher over ten days in mnemonic strategies and the procedures for administering the intervention. The experimental group received audio-visual mnemonic instruction using videos from Vocabsolution.com, in which learners heard each word's pronunciation, received its paraphrased meaning, saw it used in a real-life situation, and were given a keyword mnemonic. The control group was taught the same 640 words through paraphrasing or translation into simple English followed by memorization, across four 40-minute sessions per week over eight weeks. All three tests were administered by the class teacher under the researcher's supervision. Post-test scores were compared using an independent-samples t-test, and four-week retention scores were compared using analysis of covariance (ANCOVA), with post-test scores entered as the covariate. Data were analyzed using SPSS (Version 25.0).

**Research Ethics**

Formal permission was obtained from the authorities and then from the management of Government Boys High School Sadiq Abad to conduct the study, and from Government Boys High School Kot Gullah to conduct the reliability pilot testing. Informed consent was obtained from the school headmaster, the class English teacher, and the participating students. The names of all respondents were withheld, and their anonymity was maintained throughout the study.

## Results and Analysis

**Demographic Profile of Respondents**

All 54 participants were male Grade VIII students, aged approximately 12 to 15 years, enrolled at Government Boys High School Sadiq Abad, a rural school in Tehsil Lawa, District Chakwal. Participants came predominantly from average-to-lower socioeconomic backgrounds, and Punjabi was the mother tongue of the majority of students. Participants were matched on pre-test scores and divided into two equal groups of 27 prior to treatment.

**Post-Test Comparison**

**Table 1; Descriptive Statistics of Post-test Vocabulary Recognition Scores (Control and Experimental Groups)**

| Group | N | M | SD |
|---|---|---|---|
| Control | 27 | 17.96 | 3.48 |
| Experimental | 27 | 21.37 | 4.06 |

**Interpretation:** The experimental group scored higher than the control group on the post-test. Levene's test for equality of variances was nonsignificant, $F = 0.522$, $p = .473$, so equal variances were assumed. An independent samples t-test confirmed the difference was statistically significant, $t(52) = -3.31$, $p = .002$, with the experimental group ahead by a mean difference of 3.41 points. In practical terms, this means that after eight weeks of instruction, learners taught through the audio-visual mnemonic technique correctly identified, on average, roughly three more of the 50 target words than learners taught through paraphrasing and memorization — a meaningful gain given that both groups received the same number of instructional sessions and covered the same 640 vocabulary items. This addresses Objective 1: the audio-visual mnemonic technique produced significantly greater English vocabulary learning than the traditional method.

**Retention Test Comparison**

**Table 2;Descriptive Statistics of Retention-Test Vocabulary Recognition Scores (Four Weeks After the Intervention)**

| Group | *N* | *M* | *SD* |
|---|---|---|---|
| Control | 27 | 10.81 | 3.13 |
| Experimental | 27 | 18.19 | 3.78 |

**Interpretation:** The experimental group retained substantially more vocabulary than the control group after the four-week interval. Shapiro–Wilk tests showed no significant departure from normality for post-test ($p = .671$) or retention scores ($p = .071$), and the homogeneity-of-regression-slopes assumption held, $F(1, 50) = 1.95$, $p = .169$, supporting the use of ANCOVA. Controlling for post-test performance, ANCOVA revealed a statistically significant effect of group on retention, $F(1, 51) = 68.92$, $p < .001$, partial $\eta^2 = .575$ — a large effect by conventional benchmarks. Practically, this means the control group's vocabulary knowledge declined more sharply over the four-week gap than the experimental group did, suggesting that the audio-visual mnemonic associations helped learners hold onto word meanings well after instruction had ended, rather than producing a gain that was only temporary. This addresses Objective 2: the experimental group's retention advantage held even after accounting for how much each group had already learned by the end of treatment.

## Discussion

This study examined classroom vocabulary practices against the two core objectives of the research: comparing the audio-visual mnemonic technique against the traditional method for immediate vocabulary learning, and for four-week retention.

**Vocabulary Learning**

The experimental group significantly outperformed the control group on the post-test ($M = 21.37$, $SD = 4.06$ vs. $M = 17.96$, $SD = 3.48$), $t(52) = -3.31$, $p = .002$, supporting Objective 1. This aligns with Chiu and Hawkins (2023), who found that keyword mnemonics combined with retrieval practice helped Grade VIII EFL learners, and Sarıoğlu and Karatepe (2024), who found mnemonic instruction outperformed a sentence-context method on immediate vocabulary recognition. It also echoes findings at other educational levels: Behr (2012) found that mnemonic techniques outperformed traditional instruction among high school students, and Kayaaltı (2018) reported a similar advantage for mnemonic instruction over memorization among EFL university students — suggesting the present study's finding is consistent with a pattern that holds across secondary, tertiary, and now elementary EFL populations, rather than being specific to this one sample. It is also consistent with Zhang, Sala, and Gobet's (2025) meta-analytic finding that combined verbal-and-pictorial input produces stronger immediate learning than either channel alone, and with Emami and Amirghasemi (2022), who found that Iranian EFL learners given multimedia and computer-based vocabulary instruction significantly outperformed learners taught the same words without such access.

However, this advantage was observed within a single class taught by a single teacher, and the effect of the technique itself cannot be fully separated from the teacher's own engagement with a method that was new and unfamiliar to the control condition.

**Vocabulary Retention**

The experimental group also retained significantly more vocabulary four weeks after the intervention, even after controlling for post-test performance, $F(1, 51) = 68.92$, $p < .001$, partial $\eta^2 = .575$ — supporting Objective 2. This is broadly consistent with Chiu and Hawkins (2023), whose study also included a four-week delayed assessment. Fung and Oyibo's (2024) observation that mnemonic techniques are increasingly embedded in technology-based learning environments offers one possible explanation for this durability: unlike a static word list, the audio-visual format gave learners a repeatable, multi-sensory association to draw on well after instruction ended, rather than a single verbal exposure alone.

However, the retention advantage may also partly reflect the multi-sensory novelty of the audio-visual materials rather than the keyword mnemonic mechanism alone, since the intervention combined several elements — pronunciation, visual context, and keyword association — that were not tested separately.

### Conclusions

Based on the empirical findings, this study reaches the following conclusions:

1. **Vocabulary Learning:** The audio-visual mnemonic technique produced significantly greater immediate vocabulary learning than the traditional translation-and-memorization method among Grade VIII learners.
2. **Vocabulary Retention:** The advantage of the audio-visual mnemonic technique persisted after a four-week interval, even after accounting for how much each group had already learned by the end of treatment.

### Recommendations

Based on these findings, the following recommendations are proposed to translate the study's two objectives — improving immediate vocabulary learning and supporting longer-term retention — into classroom practice:

1. **Integrate Audio-Visual Mnemonic Activities into Vocabulary Instruction:** English language teachers should incorporate structured audio-visual mnemonic routines — pairing pronunciation, visual context, and keyword association — into regular vocabulary lessons rather than relying solely on translation and rote memorization. This directly supports Objective 1, since the present study found this combination produced significantly greater immediate vocabulary gains than the traditional method.
2. **Build Spaced Review into Instruction to Support Retention:** Because vocabulary gains alone do not guarantee that words remain accessible weeks later, teachers should schedule periodic review sessions — brief, spaced repetitions of previously taught audio-visual mnemonic material — rather than treating a word as "taught" after a single exposure. This addresses Objective 2 directly, since retention, not just initial learning, was the outcome most likely to erode without reinforcement.
3. **Embed Audio-Visual Mnemonic Resources into Curriculum and Textbooks:** Curriculum developers and textbook boards should consider incorporating contextualized vocabulary activities and QR-linked audio-visual mnemonic materials directly into English textbooks, so that both learning and retention support are available to teachers as a standard resource rather than something an individual teacher must locate or build independently.
4. **Invest in Teacher Training and Classroom Technology Access:** Teacher education and professional development programs should offer explicit training in designing and delivering audio-visual mnemonic activities, since the technique's effectiveness in this study depended on the class teacher receiving structured preparation beforehand. Schools, in turn, should ensure teachers have reliable access to the basic multimedia resources — audio playback, screen or projector access — this kind of instruction requires, particularly in rural and under-resourced settings similar to the one studied here.

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