

## THE EFFECT OF COGNITIVE VOCABULARY LEARNING STRATEGIES ON VOCABULARY RETENTION IN ESP AND EGP CONTEXTS

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### Abstract

*Being at the core of second language proficiency, good knowledge of vocabulary is essential in both EGP and ESP contexts. This paper<sup>3</sup> investigates the effectiveness of cognitive vocabulary learning strategies (VLS), focusing on their impact on vocabulary retention. Research data were collected from 296 learners of English as a second language through a vocabulary test measuring of their vocabulary size and a questionnaire eliciting self-reported VLS use, followed by a quasi-experiment assessing the effect of more conscious VLS application on learners' language performance. Results indicate a statistically significant positive relationship between the use of cognitive strategies and vocabulary size. However, cognitive strategies were not associated with the highest levels of vocabulary achievement. The findings suggest that vocabulary retention is most effectively supported through a combination of cognitive processing and socially mediated learning practices.*

**Keywords:** cognitive vocabulary learning strategies (VLS), vocabulary retention, vocabulary acquisition, English for Specific Purposes (ESP), English for General Purposes (EGP)

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### Introduction

Vocabulary acquisition has long been recognized as a fundamental component of language learning, influencing learners' ability to comprehend input and produce meaningful output in communication. In both general and specialized language contexts, vocabulary knowledge supports academic performance, professional communication, and overall communicative competence. With increasing attention directed toward learner autonomy and strategic learning,

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vocabulary learning strategies (VLS) have become a central topic in second language acquisition research.

Among various language learning strategy types, cognitive VLS occupy a prominent role because they involve direct mental manipulation of lexical items through repetition, note-taking, organization, and rehearsal. These strategies are commonly used by learners across proficiency levels and educational contexts. However, questions remain regarding the extent to which cognitive VLS alone contribute to vocabulary retention and whether their effectiveness differs between ESP and EGP learning environments.

The present study aims to examine the effect of cognitive VLS on vocabulary retention and to determine whether the choice of strategies is related to the amount of acquired vocabulary. Additionally, the study explores whether learners in ESP and EGP contexts differ in their strategic preferences and learning outcomes.

## **Theoretical Background**

### ***Vocabulary Acquisition***

Vocabulary has been defined in various ways, ranging from the total number of words in a language to the set of lexical items known and used by an individual for effective communication (Burns, 1972; Hornby, 1995; Diamond and Gutlohn, 2006). A common distinction differentiates receptive vocabulary, referring to words learners recognize, from productive vocabulary, referring to words actively used in speaking and writing (Harmer, 1991; Webb, 2005; Neuman and Dwyer, 2009).

Vocabulary acquisition is generally understood as a cognitive process involving mental operations through which learners acquire, store, and retrieve lexical knowledge (Schmitt, 1997; Yule, 2006). Vocabulary mastery, therefore, extends beyond knowledge of meaning and form to include appropriate contextual use. Early research contrasted definition-based vocabulary learning with contextual learning approaches (Clarke and Nation, 1980), while later studies demonstrated that vocabulary retention outcomes may depend more on repetition and exposure frequency than on learning method alone (Mondria, 2003; Foster and Saenko, 2025).

Contemporary perspectives integrate cognitive and usage-based approaches, emphasizing repeated encounters with lexical items, meaningful input, and interaction as essential factors in vocabulary development (Webb and Nation, 2017; Schmitt et al., 2019). Vocabulary knowledge is frequently explained through the concept of the mental lexicon, where lexical items are interconnected through phonological, semantic, and syntactic associations (Aitchison, 2003; Walldén, 2024). In second language learning, lexical development is initially influenced

by the first language, gradually becoming more autonomous with increased proficiency and exposure (Jiang, 2000; Wolter, 2006).

Current research recognizes vocabulary acquisition as both a cognitive and socially mediated process. Internal processing mechanisms such as storage and retrieval interact with communicative use, motivation, and learner engagement, all of which influence successful vocabulary retention (Ellis, 2015; Peters and Webb, 2018, Mariappan, 2025).

### ***ESP Context***

Language teaching is commonly understood as an interaction between language, learning, teaching, and context (Stern, 1983). English for Specific Purposes (ESP) is characterized by its pragmatic orientation, aiming to prepare learners for communication within specific professional or academic domains. Unlike English for General Purposes (EGP), which focuses on broad communicative competence, ESP instruction is closely linked to particular discourse communities, genres, and communicative conventions (Flowerdew and Peacock, 2001; Belyaeva, 2015; Georgieva, 2015; Stefanova, 2021).

Definitions of ESP vary. Some researchers consider ESP an extension of general language competence built upon a shared linguistic core (Bloor and Bloor, 1986), while others emphasize the contextualized nature of language and the importance of domain-specific discourse practices (Corder, 1993). Contemporary perspectives adopt a balanced view, recognizing general language competence as a foundation for the acquisition of specialized vocabulary and discourse structures (Basturkmen, 2005).

Vocabulary plays a central role in ESP instruction. Distinctions are commonly made between general vocabulary, semi-technical vocabulary, and highly specialized terminology (Dudley-Evans and St John, 1998). Studies have shown that discipline-specific texts and communication contain substantial proportions of technical vocabulary, presenting challenges for learners and instructors alike (Chung and Nation, 2004, Katsarska, 2024). Recent ESP research emphasizes needs analysis, authenticity of materials, corpus-informed instruction, and learner autonomy as key factors in effective vocabulary development (Basturkmen, 2021; Hyland, 2022; Basturkmen, 2025).

### **Vocabulary Learning Strategies and Cognitive Strategies**

Vocabulary learning strategies represent deliberate actions taken by learners to facilitate vocabulary acquisition, storage, and retrieval. Oxford (1990) categorized learning strategies into direct and indirect types, while Schmitt (1997) proposed

a taxonomy specifically addressing vocabulary learning strategies, including determination, social, memory, cognitive, and metacognitive strategies.

Cognitive VLS involve mechanical and procedural processing of lexical items, such as repetition, writing words several times, using vocabulary lists, note-taking, and verbal rehearsal.

**Table 1:** Cognitive vocabulary learning strategies

<b>Cognitive strategies to repeat and use mechanical means to study vocabulary</b>	Verbal repetition
	Written repetition
	Flash cards
	Word lists
	Taking notes in class
	Using the vocabulary section in your text book
	Listening to audio recordings of word lists
	Putting English labels on physical objects
	Keeping a vocabulary notebook

*Source:* Schmitt (1997, p. 208).

These strategies support memory consolidation of lexical items through repeated exposure and practice. Although cognitive VLS are widely used due to their simplicity and accessibility, research increasingly suggests that deeper processing and interaction may enhance long-term retention more effectively than repetition alone (Ellis, 2015; Peters and Webb, 2018; Mariappan, 2025).

## **Methodology**

### ***Participants and Research Instruments***

The study included 296 freshman undergraduate students enrolled in ESP and EGP courses at level B2. Empirical data were collected using three instruments: a placement test, a vocabulary test measuring vocabulary size and a questionnaire assessing self-reported use of vocabulary learning strategies. The placement test (Mitkovska et al., 2013) which consists of 46 items arranged according to difficulty assigns levels: A1 –C. Participants' vocabulary size was measured using the Vocabulary Size Test 14000 (Nation and Beglar, 2007), which assesses the total receptive vocabulary size of learners. The test consists of 140 multiple-choice items divided into 14 sections, with 10 words representing each 1,000-

word family level. The questionnaire assessing strategy use was designed by Easterbrook (2003) and collects information on vocabulary learning strategy preferences using a Likert scale. The instrument is based on Schmitt's taxonomy of vocabulary learning strategies (Schmitt, 1997, p. 208). The effectiveness of cognitive VLS was further examined through a specially designed experiment investigating participants' familiarity with vocabulary learning strategies and determining whether their performance improved after purposely employing strategies with which they were previously unfamiliar.

### ***Data Analysis***

Statistical analysis included descriptive statistics, ANOVA test for the relationship between the proficiency level and the use of VLS, Tukey Post Hoc test for the frequency of used VLS, Spearman's correlation coefficient to examine the relationship between cognitive VLS use and vocabulary size, the Kruskal–Wallis test to determine differences in vocabulary achievement across strategy types, and the t-test to compare ESP and EGP groups.

## **Results**

### ***Influence of learners' proficiency level over their use of VLS***

Based on the result of the placement test, the respondents were distributed in five groups A1 to C as shown in Table 2 below.

**Table 2:** Distribution of respondents according to the results from the placement test

<b>Language level</b>	A1	A2	B1	B2	C	Total
<b>Number of respondents</b>	3	25	58	146	64	296

*Source:* Own research data

The ANOVA results (Table 3) indicated statistically significant differences among learners of different proficiency levels in the use of metacognitive and cognitive strategies, as well as in overall strategy use. Hence, cognitive VLS were selected as the focus of this article. Post hoc comparisons further revealed that learners at the A2 level used metacognitive and cognitive strategies significantly less frequently than learners at higher proficiency levels (B1, B2, and C).

**Table 3:** Correlation between respondents' English language proficiency level and VLS use

Strategy type	Spearman coefficient	p
<b>Metacognitive strategies</b>	<b>7.611</b>	<b>0.000</b>
Determination strategies	1.810	0.127
Memory strategies	2.477	0.044
<b>Cognitive strategies</b>	<b>4.167</b>	<b>0.003</b>
Social strategies	1.344	0.254
Avoidance strategies	0.466	0.761
<b>Total use of strategies</b>	<b>3.588</b>	<b>0.007</b>

Source: Own research data

The differences between A2 learners and those at the highest proficiency level (C) were particularly pronounced, confirming that total strategy use increases alongside language proficiency. These findings suggest that as learners progress to higher levels of language competence, they demonstrate greater engagement with strategies that involve planning, monitoring, evaluating learning, and actively processing language input. Such strategies are commonly associated with deeper cognitive engagement and more effective consolidation of vocabulary knowledge, which may contribute to improved retention and language production.

**Table 4:** Tukey Post Hoc for Cognitive VLS

Tukey Post Hoc for Cognitive VLS		
	Difference between the mean scores	p
A2 – B1	- 0.62321	0.003
A2 – B2	- 0.57498	0.002
A2 – C	- 0.64955	0.001

Source: Own research data

Overall, the results indicate a clear relationship between proficiency development and strategic behaviour, implying that increased awareness and use of metacognitive and cognitive strategies may both support and reflect higher levels of English language proficiency.

### Relationship Between Cognitive Strategies and Vocabulary Size

Participants in this study completed two self-report questionnaires designed to assess their vocabulary learning strategy preferences and frequency of use, as well as their vocabulary size. Spearman’s correlation analysis revealed a statistically significant positive relationship between the use of cognitive VLS and vocabulary size ( $\rho = 0.576$ ,  $p = 0.02$ ). This indicates that learners who reported more frequent use of cognitive VLS tended to demonstrate higher vocabulary achievement.

**Table 5:** Correlation between the amount of acquired vocabulary and self-reported use of cognitive VLS

Cognitive VLS	Number of respondents	Spearman coefficient	p
	296	0.576	0.02

Source: Own research data

These findings support the hypothesis that strategic engagement in vocabulary learning contributes positively to vocabulary acquisition. Increased use of repetition, note-taking, and structured review appears to facilitate vocabulary retention through repeated cognitive processing.

### Frequency of Cognitive Strategy Use

Following Ehrman and Oxford’s scoring system (Ehrman and Oxford, 1989, pp. 5–6), which allocates strategy use into low (mean score 1.00-2.49), medium (2.50-3.49) and high (3.50-5.00), only one strategy – looking at words several times – was reported as highly frequent ( $M = 4.07$ ).

**Table 6:** Mean scores of cognitive VLS

Cognitive strategies	How do you review vocabulary	I write down the information on a piece of paper	3.08	Medium
		I put in order the information about the vocabulary in a vocabulary notebook.	2.73	Medium
		I make vocabulary cards.	1.98	Medium
		I use the vocabulary lists in the textbook.	2.86	Medium
		I use a vocabulary list like the vocabulary list in the vocabulary books.	3.27	Medium
		I say the word aloud several times	3.3	Medium
		I write the word several times	3.08	Medium

*Continued*

Cognitive strategies	How do you review vocabulary	I say the new words two or three times the first day	3.04	Medium
		I say the new words as I read them the next day, and after that	3.08	Medium
		I look at the word several times	4.07	High
		I memorize L1-L2 / L2-L1 lists	3.09	Medium
		Read the new words two or three times the first day, then do it again a few days after that, a week after that, a month after	2.77	Medium

*Source:* Own research data

The relatively balanced distribution suggests that learners rely on a range of cognitive procedures rather than a single dominant strategy in vocabulary acquisition.

### **Strategy Types and Vocabulary Achievement (A quasi-experiment)**

Previous statistical analysis based on self-report questionnaires primarily reflects respondents' perceptions rather than an objective representation of the learning process. Although such instruments provide valuable insights into learners' beliefs and self-reported preferences, they do not offer evidence regarding the extent to which strategies are consciously understood, appropriately implemented, or effective in facilitating vocabulary acquisition. Furthermore, self-reported data do not reveal whether learners are able to accurately evaluate their own behaviour or interpret their learning practices on numerical scales such as the Likert scale. Consequently, questions remained concerning the proper implementation of vocabulary learning strategies and their actual contribution to vocabulary development.

In order to obtain a more objective perspective, an experiment was designed to examine the effectiveness of cognitive VLS, focusing on vocabulary retention. The aim was to test the functionality of selected strategies, identify those contributing most effectively to vocabulary acquisition, and determine which strategies were perceived as most suitable by the majority of the learners. In addition to quantitative results, the experiment sought to provide qualitative insights into learners' experiences with strategy use. Participants were required to apply specific cognitive VLS during vocabulary learning and were subsequently

tested for vocabulary retention. Short interviews and written comments were collected in order to obtain additional information regarding learners' perceptions of the acquisition process and the perceived efficiency of individual strategies.

Target vocabulary was introduced through a series of texts related to the course curricula and designed for advanced language levels to ensure a sufficient amount of unfamiliar vocabulary. As participants were enrolled in both ESP and EGP courses, the experiment also aimed to explore whether the effectiveness of the strategies employed varied depending on the learning environment. Participants received explicit instructions regarding the strategies to be applied after reading the texts. Vocabulary retention was assessed through two types of tasks – translation and gap-filling – which provided data on both receptive knowledge and productive use of the lexical items.

To facilitate participation and increase the size of the data set, the experiment was conducted online using Microsoft Teams and Microsoft Forms. The experimental procedure consisted of three stages. During the first stage, participants were presented with a text and instructed to identify and list unfamiliar vocabulary without receiving any guidance regarding strategy use. The purpose of this stage was to observe learners' independent learning behaviour and to determine the extent to which they were previously familiar with vocabulary learning strategies. The responses indicated that although many learners employed certain techniques, they were generally unaware of the concept of learning strategies and the benefits of their use for vocabulary development. The majority relied on determination strategies, particularly dictionary consultation (cp. Haimanot et al., 2024), while the use of consolidation strategies was limited. These findings suggested a need for explicit instruction and guided practice in strategy use.

In the second stage, participants were introduced to selected cognitive VLS and instructed to apply them while studying new vocabulary. The tasks included repetition of lexical items, grouping vocabulary according to learners' own logical categories, and proposing subheadings for text paragraphs. Participants also provided written reflections on their experiences. Overall, learners expressed positive attitudes towards repetition and reported that categorizing vocabulary encouraged deeper processing and facilitated memorization. Most participants grouped vocabulary according to grammatical categories, although some attempts were made to organize items semantically. A small proportion of responses indicated either fatigue or lower preference for the strategies, while a minority of learners considered the tasks either too simple for their proficiency level or relatively demanding. Nevertheless, cognitive VLS were generally perceived as effective due to their emphasis on active manipulation and deeper engagement with vocabulary.

The final stage of the experiment consisted of a delayed vocabulary test administered one month after the completion of the strategy practice phase. The test included a random selection of unfamiliar vocabulary identified by the majority of participants, thereby reducing the influence of short-term memorization and providing a clearer overview of long-term retention. The experimental process concluded with a discussion of vocabulary learning strategies aimed at increasing learners' awareness of metacognitive reflection and the importance of strategic learning.

The results of the vocabulary tests were analysed statistically, providing a quantitative representation of the effectiveness of the tested strategies. At the same time, participants' comments and reflections supplied the qualitative data necessary for a more comprehensive understanding of their vocabulary learning processes. Overall, the experiment offered a more detailed insight into the efficiency of different strategies while simultaneously addressing a broader pedagogical objective – raising learners' awareness of the role of vocabulary learning strategies in individual language development.

**Table 7:** Results from Kruskal-Wallis test

STRATEGY TYPE	MEAN	STD. DEVIATION
General	25.8	10.51
Memory	28.8	8.72
Cognitive	23.0	12.16
Metacognitive	19.8	10.39
Social	27.0	5.80
KRUSKAL-WALLIS TEST		
Chi - Square	67.011	
df	6	
p	0.000	

*Source:* Own research data

The Kruskal–Wallis test revealed statistically significant differences in vocabulary achievement across strategy types. Although memory and social strategies were associated with higher mean ranks on the vocabulary test<sup>4</sup>, cognitive VLS showed a positive relationship with vocabulary size ( $\chi^2 =$

<sup>4</sup> Although this paper focuses primarily on cognitive VLS, it is based on a larger-scale study that examined all types of vocabulary learning strategies. Interpreting the Kruskal–Wallis test results without considering the values associated with other strategy types would have resulted in an incomplete and potentially misleading interpretation; therefore, a broader perspective was adopted here.

67.011,  $df = 6$ ,  $p < 0.001$ ). Elekaei et al. (2020) reported cognitive VLS to be more effective than metacognitive strategies as well. This indicates that learners achieving higher vocabulary scores tended to employ a broader combination of strategies involving emotional regulation and interaction.

### ***ESP and EGP Comparison***

The t-test analysis showed no statistically significant differences between ESP and EGP learners in the use of cognitive VLS.

**Table 8:** ESP and EGP learning influence on the strategy choice

Strategy type	Learning context	Number of respondents	M	SD	t	p
Cognitive VLS	EGP	28	3.06	1.08	0.823	0.411
	ESP	268	2.94	0.69		

*Source:* Own research data

This suggests that cognitive processing mechanisms underlying vocabulary learning function similarly across general and specialized language contexts. Differences between ESP and EGP learners appear to relate more to vocabulary content and communicative demands than to strategy selection itself.

### **Conclusion**

The present study examined the role of cognitive VLS in vocabulary retention within ESP and EGP learning contexts. The findings confirm that cognitive VLS, including repetition, note-taking, and structured review, contribute positively to vocabulary acquisition and are associated with larger vocabulary size. These results support the view that active cognitive processing facilitates the encoding and consolidation of lexical knowledge and remains an important component of vocabulary learning.

At the same time, the results indicate that cognitive strategies alone do not lead to the highest levels of vocabulary achievement. Learners demonstrating stronger vocabulary performance tended to employ a broader range of strategies, particularly memory and social strategies, suggesting that vocabulary retention benefits from interaction and meaningful and contextualized use of the lexical items. The absence of significant differences between ESP and EGP learners

further suggests that the underlying cognitive mechanisms of vocabulary learning function similarly across learning contexts, while differences in outcomes may be influenced more by vocabulary type and communicative demands than by strategy selection itself.

Pedagogically, the findings highlight the importance of integrating cognitive strategies with communicative and socially mediated learning practices in vocabulary instruction. Rather than relying exclusively on repetition-based approaches, effective teaching should promote strategic awareness and encourage learners to combine cognitive processing and reflection with interaction and contextualized language use. Future research may expand on these findings by examining longitudinal effects of combined strategy use and exploring how explicit strategy instruction influences long-term vocabulary retention across different proficiency levels and disciplinary contexts.

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