



Are EFL Students Aware of Their Learning Styles and Vocabulary Strategies?

Boualem BENGHALEM

Faculty of Letters, Languages and Social Sciences, University of Ain Temouchent, Algeria.

boualem.benghalem@univ-temouchent.edu.dz

Małgorzata KAMIŃSKA

Faculty of Modern Languages, University of Applied Sciences, Nysa, Poland.

malgorzata.kaminska@pans.nysa.pl

Abstract

This study investigates the relationship between vocabulary learning strategies and learning styles among English Philology students in Poland. A total of 215 students from three universities participated. Language proficiency levels were assessed using the LexTale test, revealing that most students were at the B2 level. A questionnaire was administered to evaluate students' learning styles and vocabulary learning strategies. Results indicated that kinaesthetic learners had a strong tendency to interact with native speakers, while reader/writer learners favoured flashcards. Auditory learners preferred mapping and word grouping, and visual learners opted for part-of-speech analysis. However, none of these preferences were statistically significant, suggesting that students' strategies did not align with their declared learning styles. This study is part of a broader research project investigating vocabulary learning among Polish EFL students. The dataset allowed for multiple analyses, resulting in two articles: the present study on learning styles and a second on proficiency levels and strategy use. By dividing the data, each article offers a focused exploration of key factors affecting vocabulary acquisition. Findings highlight the need for pedagogical interventions to help students identify and adopt vocabulary learning strategies aligned with their learning styles. Future research should explore how strategy training can enhance vocabulary learning outcomes.

Keywords: Vocabulary learning strategies, Learning styles, LexTale test, English Philology students, Language proficiency.

Received: 14 January 2025

Revised: 09 March 2025

Accepted: 18 April 2025

1. Introduction

Language learning is a complex process influenced by various cognitive, social, and environmental factors. Among these, learning styles and strategies play a crucial role in shaping how learners acquire and retain vocabulary, which is fundamental to language proficiency (Oxford, 1990; Schmitt, 2000). Understanding the relationship between learning styles and vocabulary acquisition strategies can provide valuable insights into effective language teaching methodologies and learner autonomy.

Vocabulary acquisition is a critical component of second language (L2) learning, with research emphasizing the role of *learning strategies* and *learning styles* in shaping learners' proficiency and outcomes (Oxford, 1990; Cohen & Macaro, 2007). Learning styles—such as visual, auditory, kinaesthetic, and reading/writing preferences (VARK model; Fleming & Mills, 1992)—reflect how learners process information, while learning strategies represent deliberate actions to enhance vocabulary retention (e.g., flashcards, word grouping, or interaction with

native speakers). Understanding the interplay between these constructs is essential for optimizing pedagogical approaches and learner autonomy.

Vocabulary learning strategies (VLS) have been widely recognized as essential tools that learners employ to facilitate the acquisition, retention, and retrieval of new words. These strategies vary according to individual learning preferences, which are commonly categorized into visual, auditory, kinaesthetic, and reading/writing styles (Fleming & Mills, 1992). While some learners benefit from visual aids such as mind maps and flashcards, others may rely on auditory reinforcement, group discussions, or mnemonic devices to enhance their vocabulary retention (Nation, 2001). Identifying which strategies align with specific learning styles can help educators develop tailored instructional approaches that cater to diverse learner needs.

The significance of learning styles in language acquisition has been extensively explored in educational research. However, there remains a need for empirical studies that examine the specific interplay between learning styles and vocabulary acquisition strategies, particularly in the context of second or foreign language learning (Cohen & Macaro, 2007). Investigating this relationship can provide educators with evidence-based strategies to enhance language instruction and optimize vocabulary learning outcomes.

Previous studies have explored the relationship between learning styles and strategy use, yet findings remain inconsistent. For instance, the study of Padidar et al. (2015) revealed a strong relationship between individual learning styles and effective vocabulary learning and retention. EL Yazidi (2023) found a significant positive relationship between auditory learning styles and the use of technological applications for vocabulary acquisition.

However, gaps persist in understanding whether learners consciously align their strategies with their preferred styles, particularly in understudied contexts such as tertiary-level English Philology students in Poland.

This study aims to analyse the associations between different learning styles and vocabulary learning strategies among language learners. Through a quantitative research approach, the study seeks to identify patterns and correlations that may inform pedagogical practices. The findings will contribute to the existing body of literature on language learning strategies and offer practical implications for educators, curriculum designers, and language learners. By understanding how individual learning preferences influence strategy selection, this research aspires to support more effective and personalized language learning experiences.

This study addresses these gaps by examining the following research question:

- How do vocabulary learning strategies correlate with learning styles declared by Polish learners of English?

To answer the following research question, the following hypothesis is proposed:

- Students' declared learning styles do not correlate with their choice of vocabulary learning strategies.

2. Literature Review

2.1 Vocabulary Learning Strategies in Second Language Acquisition

Vocabulary learning strategies (VLS) are essential components of second language acquisition (SLA) and have been widely studied in language learning research (Schmitt, 2000; Nation, 2001). According to Oxford (1990), VLS can be categorized into direct strategies, which involve active engagement with vocabulary (e.g., memorization, repetition, keyword method), and indirect strategies, which focus on creating favourable conditions for learning (e.g., seeking exposure, interacting with native speakers). Schmitt (1997) further classified VLS into discovery strategies, which help learners acquire new words, and consolidation strategies, which assist in retaining vocabulary over time. Research suggests that effective vocabulary learning is closely

linked to the strategic approach learners adopt based on their cognitive preferences (Cohen & Macaro, 2007).

2.2 Learning Styles

Learning styles refer to individual preferences in acquiring and processing information and have been extensively explored in educational psychology (Fleming & Mills, 1992). The VARK model (Visual, Auditory, Reading/Writing, Kinaesthetic) is one of the most widely used frameworks for categorizing learning styles (Fleming, 2001). Visual learners prefer diagrams, charts, and written instructions; auditory learners benefit from listening to explanations and discussions; reading/writing learners excel with text-based materials; and kinaesthetic learners engage better with hands-on activities. Studies suggest that matching instructional methods to students' learning styles can enhance retention and engagement (Reid, 1995; Pashler et al., 2008). However, some researchers argue that learning styles are flexible rather than fixed and that a combination of strategies may be most effective (Coffield et al., 2004).

2.3 The Relationship Between Learning Styles and Vocabulary Learning Strategies

Research by Oxford and Crookall (1990) suggests that strategy use varies not only by learning style but also by factors such as proficiency level, motivation, and cultural background. Different learning styles influence the choice of vocabulary learning strategies (VLS) in nuanced ways, as individual preferences and cognitive tendencies shape how learners approach vocabulary acquisition.

Auditory Learning Style:

Learners with a preference for auditory methods often favour strategies that involve listening, such as using audio resources or technological applications like language-learning apps. A study involving Moroccan EFL learners found a significant positive correlation between auditory learning styles and the use of technology for vocabulary acquisition (EL Yazidi, 2023). This suggests that auditory learners benefit from integrating tools that align with their preference for sound-based input.

Visual Learning Style:

Visual learners tend to prefer strategies such as using flashcards, diagrams, or written materials to associate words with images or text. While specific correlations between visual styles and VLS were not highlighted in the studies, visual strategies are widely recognized as effective for learners who process information better through visual means (Different Learning Styles—What Teachers Need to Know, 2001).

Kinaesthetic Learning Style:

Kinaesthetic learners may rely on interactive and hands-on activities, such as role-playing or physically engaging with vocabulary through games or movement. Although no direct correlation was reported in the studies reviewed, kinaesthetic approaches are often recommended for learners who thrive on active engagement (Different Learning Styles—What Teachers Need to Know, 2001).

Combination of Strategies:

Many learners use a mix of strategies regardless of their dominant learning style. For instance, combining discovery strategies (e.g., guessing word meanings from context) with memory strategies (e.g., repetition) has been shown to enhance vocabulary retention and usage (Ayana et al., 2024, EL Yazidi, 2023). This flexibility allows learners to adapt their approaches based on task demands and contexts.

2.4 Empirical Studies on Learning Styles and VLS in EFL Contexts

Numerous empirical studies have explored the impact of learning styles on vocabulary acquisition in English as a Foreign Language (EFL) context.

Padidar et al. (2015) employed Oxford Placement Test (2007) and Davis's Questionnaire (1997) to reveal participants' language proficiency and learning styles. The study showed that

while all Iranian EFL learners performed similarly on the Oxford Placement Test, those identified as visual, auditory, and kinaesthetic learners outperformed others in both immediate and delayed post-tests. Notably, visual learners exhibited the highest gains, indicating a strong relationship between individual learning styles and effective vocabulary learning and retention.

A study involving 200 EFL learners in Morocco conducted by EL Yazidi (2023) found a significant positive relationship between auditory learning styles and the use of technological applications for vocabulary acquisition. This suggests that learners who prefer auditory methods tend to integrate technology into their learning process. However, other learning styles did not show strong correlations with specific vocabulary strategies, indicating that the relationship may vary based on the type of strategy employed.

Minda & Perdana (2023) investigated the impact of visual, auditory, and kinaesthetic learning styles on English vocabulary acquisition among high school students. The study aimed to examine the relationship between students' learning styles and their vocabulary achievement. Using a questionnaire, researchers classified students into three learning styles: visual (28%), auditory (26%), and kinaesthetic (46%). Additionally, students took a test to assess their vocabulary proficiency, categorizing them into high (20%), moderate (68%), and low (12%) levels. Pearson Product-Moment Correlation was used to analyse the contribution of learning style levels (X variable) to vocabulary achievement (Y variable). The results showed a positive correlation, indicating that students with a high learning style category also had higher vocabulary achievement, while those in lower categories performed worse. This suggests that students' preferred learning styles significantly influence their vocabulary learning outcomes.

Dehghani (2021) examined the correlation between learning styles and vocabulary learning among Iranian undergraduate EFL learners. The findings suggest that while most participants who identified themselves as auditory learners based on the VARK learning style questionnaire addressed to them, those with visual and multimodal learning styles performed better on vocabulary test.

The study of Sakale & Ayoub (2024) investigated how vocabulary learning strategies (VLS) align with learning styles to promote reflective thinking among university students during reading comprehension tasks. Results revealed that students predominantly adopted a multimodal approach, integrating various learning styles. While a moderate positive correlation exists between students' learning preferences and their use of preparation phase strategies.

2.5 Summary

While previous research highlights the importance of learning styles and VLS in language acquisition, there is still a need for further investigation into how these two variables interact in diverse EFL learning contexts.

The reviewed studies reveal that while learning styles have been linked to variations in vocabulary learning strategies in several EFL contexts, there is a notable gap regarding how these relationships manifest among Polish university students. Prior research has primarily focused on correlations between learning styles and overall vocabulary achievement or the integration of technological tools. Yet it has not sufficiently explored how learners' self-reported learning styles correspond to the specific vocabulary strategies they choose to employ. Examining this issue may provide the answer to the question of whether learners are aware of their preferred learning styles?

3. Methodology

3.1 Research Design

This study employed a quantitative research design to examine the relationship between learning styles and vocabulary learning strategies among English Philology students in Poland. The study used a questionnaire-based survey to collect data on students' learning preferences

and strategies. Additionally, a standardized lexical proficiency test, LexTale (Lemhöfer & Broersma, 2011), was administered to assess participants' vocabulary knowledge and proficiency level. The data were analysed using descriptive and inferential statistical methods.

3.2 Participants

The study involved 163 students of English Philology from three Polish universities: University of Applied Sciences in Nysa (n = 51), University of Wrocław (n = 56), and Częstochowa University of Technology (n = 56). The participants were enrolled in various levels of study and voluntarily took part in the research.

Prior to completing the questionnaire, all participants undertook the LexTale test, which provided an estimate of their vocabulary knowledge and proficiency level. Based on their LexTale scores, participants were classified into CEFR proficiency levels ranging from B1 to C2. To control for proficiency level, only students at B2-C1 were included in the analysis of the questionnaire results. The selection of participants followed ethical research guidelines, ensuring informed consent and confidentiality.

3.3 Research Instruments

Two instruments were used for data collection: the LexTale vocabulary proficiency test, and a learning styles and strategies questionnaire.

1. LexTale Vocabulary Proficiency Test: The LexTale test (Lemhöfer & Broersma, 2011) was administered to estimate participants' vocabulary size and proficiency level. The results were recorded on a percentage scale, with scores classified into CEFR proficiency levels: C2 (91-100), C1 (81-90), B2 (60-80), and A1-B1 (below 59). Higher scores indicated broader vocabulary knowledge and higher proficiency levels.

2. Learning Styles and Strategies Questionnaire: A structured questionnaire was designed to elicit responses on students' preferred learning styles and their frequency of using vocabulary learning strategies. One of the questions asked them to choose their preferred learning style:

- Visual learners (LS1): Preference for written information and visual representation of knowledge.
- Auditory learners (LS2): Preference for learning through listening to lectures or discussions.
- Kinaesthetic learners (LS3): Preference for movement, gestures, and physical activities in learning.
- Reading / Writing learners (LS4): Preference for taking notes and summarizing written material.

The questionnaire included items related to specific vocabulary learning strategies, such as flashcards, word associations, part-of-speech analysis, mapping, and interaction with native speakers. Participants rated the frequency of their strategy use on a 5-point Likert scale ranging from "Never" to "Always."

3.4 Data Collection Procedures

Participants were first administered the LexTale test under controlled conditions. Following the test, they completed the online questionnaire, which was distributed through institutional email lists and learning platforms. The completion time for the questionnaire was approximately 15-20 minutes.

Prior to this research, a pilot study was designed in an attempt to see whether the survey was feasible and to avoid potential problems. A detailed analysis of responses from five students led to modifications of a few questions to make them more intelligible to students. The data collection procedure took place between January and March 2024.

4. Results and Discussion

The collected data were analysed using R programming software (R Core Team 2024). Descriptive statistics were used to summarize the distribution of participants' self-reported

learning strategies and styles. Table 1 presents the distribution of the data after converting the Likert scale into numerical frequency ratings (never = 0, rarely = 1, sometimes = 2, often = 3, always = 4) and aggregating the numbers. The table serves as a contingency matrix, with each cell corresponding to the total frequency ratings assigned to a specific learning strategy by a particular learning style. In essence, higher frequency values indicate more frequent use of a given strategy among learners within that group.

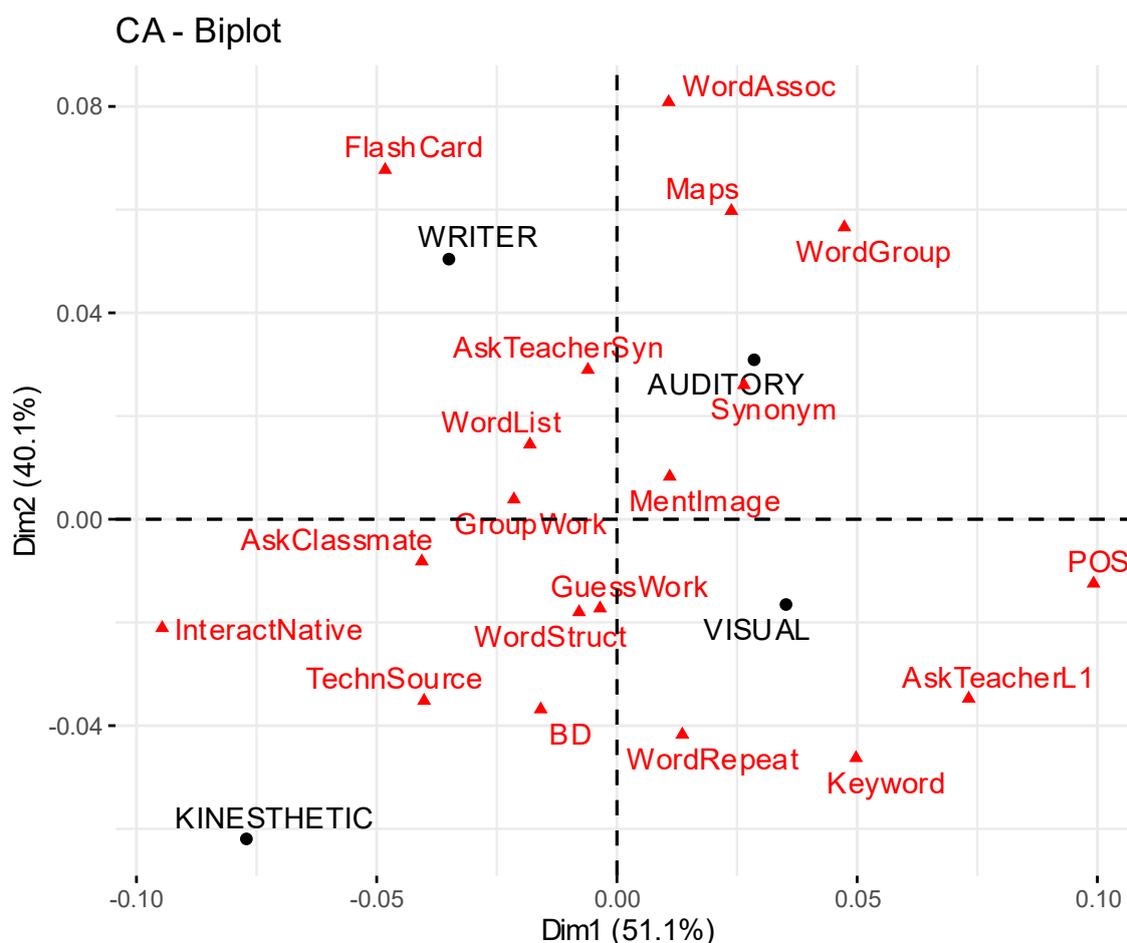
Table 1. Total of frequency ratings for learning strategies and styles.

Strategy	VISUAL	AUDITORY	KINESTHETIC	WRITER
InteractNative	157	35	59	97
GroupWork	140	32	43	80
Maps	96	25	25	56
Synonym	189	42	49	104
MentImage	170	37	47	93
WordAssoc	150	34	37	93
WordGroup	155	35	36	87
Keyword	203	43	55	94
WordRepeat	218	41	62	109
WordList	179	37	52	104
FlashCard	162	34	47	108
TechnSource	255	48	82	141
POS	142	28	31	65
WordStruct	119	26	36	64
GuessWork	233	47	68	125
BD	199	41	62	105
AskTeacherL1	157	30	38	72
AskTeacherSyn	132	29	37	77
AskClassmate	173	38	56	100

The data from Table 1 were visualized using correspondence analysis, a statistical technique for detecting patterns in multivariate data. The results are presented in Figure 1, which displays a biplot where the distances between data points indicate the strength of associations between learning strategies and styles. Data points that are closer together reflect stronger associations, and those further from the center of the plot exhibit the most pronounced relationships.

In Figure 1, the majority of the data point are positioned near the center of the plot, indicating no strong associations. From the plot, it can be deduced that writers favor flash-cards, and kinesthetics are more willing to interact with native speakers. To assess the validity of these findings, further statistical analysis was conducted (see below).

Figure 1. A biplot showing associations between vocabulary learning strategies and styles.



A chi-square test for independence was conducted. The results indicated no significant relationship between learners' strategy use and learning style ($\chi^2 = 23.89, p = 0.9$). In addition, a series of binomial tests was used to determine whether a particular learning strategy was employed by a specific learning-style group more frequently than expected by chance. Each cell in Table 1 was tested individually. This one-sided test calculated the probability that an observed value matched the expected chance probability. The findings, presented in Table 2, indicate that none of the p -values reached the alpha level of 0.05. The closest p -values are found at the intersection of Kinesthetic with Interact Native (0.07), and Writer with Flashcard (0.08). Based on these data, we cannot reject the null hypothesis of no association between preferred learning style and strategy.

Table 2. Statistical significance (p -values) of binomial tests examining the relationship between participants' vocabulary learning strategies and styles.

Strategy	VISUAL	AUDITORY	KINESTHETIC	WRITER
InteractNative	0.86	0.59	0.07	0.37
GroupWork	0.65	0.41	0.41	0.48
Maps	0.62	0.2	0.76	0.42
Synonym	0.47	0.37	0.76	0.48
MentImage	0.5	0.44	0.6	0.52
WordAssoc	0.62	0.41	0.87	0.18
WordGroup	0.44	0.34	0.9	0.39
Keyword	0.24	0.38	0.53	0.9
WordRepeat	0.3	0.72	0.41	0.75

WordList	0.6	0.62	0.52	0.35
FlashCard	0.78	0.67	0.64	0.08
TechnSource	0.56	0.83	0.16	0.52
POS	0.15	0.48	0.87	0.8
WordStruct	0.54	0.47	0.4	0.61
GuessWork	0.46	0.63	0.42	0.59
BD	0.51	0.59	0.26	0.68
AskTeacherL1	0.17	0.57	0.73	0.83
AskTeacherSyn	0.6	0.48	0.61	0.37
AskClassmate	0.7	0.52	0.26	0.45

The findings of this study suggest that learners make false assumptions about their preferred learning styles. Students' self-reported learning styles do not match the strategies they declare to use when learning vocabulary.

The findings of the current study contrast with previous research by highlighting discrepancies between learners' self-reported learning styles and their actual strategy use. While Padidar et al. (2015) and Minda and Perdana (2023) demonstrated a strong positive relationship between learning styles (e.g., visual, auditory, kinaesthetic) and vocabulary retention or achievement, the present study suggests that learners' self-perceptions of their preferred styles may not align with their applied strategies. This misalignment diverges from Dehghani's (2021) observation that visual and multimodal learners outperformed auditory learners on vocabulary tests, despite most participants self-identifying as auditory learners.

A limitation of the present research is the possibility that respondents might have provided false or inaccurate responses, an issue which is common in all questionnaire-based studies. Moreover, the questionnaire did not allow learners to declare that they use a combination of learning styles. Insights into this type of information might have helped explained the results.

5. Conclusion

Based on the findings of this study, several recommendations can be made to improve the understanding and application of learning styles in vocabulary acquisition. First, educators should be cautious when relying on students' self-reported learning styles, as the results suggest that learners may not always accurately identify their most effective strategies.

Instead of assuming that students learn best according to their declared preferences, teachers should encourage the use of diverse vocabulary learning strategies that integrate multiple sensory modalities, such as visual aids, auditory exercises, and hands-on activities. This approach aligns with research suggesting that a multimodal learning environment can enhance vocabulary retention and overall language acquisition.

Additionally, future research should consider employing alternative methods, such as observational studies or think-aloud protocols, to assess students' actual learning behaviours rather than relying solely on self-reported questionnaires. Since the current questionnaire did not allow students to declare a combination of learning styles, future studies should incorporate more flexible data collection tools that acknowledge the possibility of multimodal learning preferences. This could provide deeper insights into how students naturally adapt their strategies to different vocabulary learning tasks.

Furthermore, language instructors and curriculum designers should integrate explicit training on vocabulary learning strategies into their teaching practices. Students should be guided to experiment with different techniques and reflect on their effectiveness rather than adhering strictly to perceived learning style categories. This metacognitive awareness can help

learners make more informed decisions about their study habits and improve their overall language proficiency.

Lastly, given the limitation of potential inaccuracies in questionnaire-based research, future studies should complement survey data with experimental designs, pre- and post-tests, or qualitative interviews to verify the relationship between learning styles and vocabulary achievement. By adopting a more comprehensive research approach, scholars can gain a clearer understanding of the factors influencing vocabulary learning and provide more evidence-based recommendations for EFL instruction.

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