Journal of Academic Language & Learning
Vol. 19, No. 2, 2025, 16-34. ISSN 1835-5196
https://journal.aall.org.au/index.php/jall/article/view/1035

Word part strategy in L2 academic English: Exploring Finnish university students' use of vocabulary learning strategies and morphological awareness

Anna Reini

Department of Language and Communication Studies and Centre for Multilingual Academic Communication, University of Jyväskylä, Jyväskylä, Finland.

Email: anna.e.reini@jyu.fi

(Received 4 April, 2025. Published online 9 August, 2025.)

The word part strategy can hypothetically be effective in acquiring academic vocabulary, which is chiefly constructed using morphologically complex structures. However, not much is known about this association as little information exists on the word part strategy in the academic context among L2 English learners. Consequently, this study focused on the use of vocabulary learning strategies and its relationship with receptive morphological knowledge in learning L2 academic English vocabulary. 694 Finnish university students' intentional strategy use and performance in tasks measuring receptive morphological knowledge were examined with quantitative methods. The findings showed that intentional strategy use was associated with the students' receptive morphological knowledge. The findings also suggested that students who used strategies requiring analytical skills had higher levels of morphological awareness and skills needed in the word part strategy. Before Finnish students can use the word part strategy independently, the results suggested that the required amount of explicit pedagogical focus on the strategy depends on how they are currently engaging with words. These findings can be exploited for developing L2 English teaching at the university level and providing useful information to further research on advanced English learners' vocabulary learning and strategy use.

Key Words: learning strategies, word part strategy, morphological knowledge, vocabulary learning, academic vocabulary.

1. Introduction

In vocabulary learning, recognizing the smallest meaningful parts in words and the way they contribute to the overall meaning requires *morphological awareness.* It refers to the knowledge of morphemes, or word parts, and the ability to analyse and use morphological structures (Kuo & Anderson, 2006). Developing morphological awareness is a fundamental part of vocabulary growth as it develops the depth of vocabulary knowledge and creates profound associations with other members of a word family (Hayashi & Murphy, 2010). In L2 English vocabulary research, L2 learners' vocabulary knowledge has generally been divided into breadth and depth, and morphological knowledge has been considered to contribute to the depth of word knowledge (Nation,

2020; Read, 2000). Even though L1 English speakers acquire the morphological system of English chiefly spontaneously, for L2 learners the learning task is much more demanding, yet necessary (Bauer & Nation, 2020).

To support the development of morphological awareness, metacognitive strategies are essential. Metacognitive strategies involve reflecting on language use, making connections across languages, and using existing linguistic knowledge to support new language learning (for further information, see Jessner, 2018). Specifically, metacognitive strategies include analysing word parts, which helps learners understand and use morphological structures more effectively. Furthermore, language learners who are aware of language as a system (*metalinguistic awareness*) and who can regulate and reflect on their learning processes (*metacognitive strategies*) can employ learning strategies more effectively (Pennycook, 2001). In vocabulary learning, this aspect can be approached with *lexical awareness*, which encompasses vocabulary knowledge and use from an analytical approach (Nation, 2008; Xue, 2021). Further, the analytical approach, which includes analysing word parts, requires an intentional focus on the systems and patterns between words, which also guides the attention towards explicitly analysing semantic relationships and etymology as well as the connections words have across languages (Nation, 2008). In the word part strategy, words are first divided into parts, and then, using the meaning of the parts, the meaning of the whole word is determined (Nation, 2022). For example, *morphology* can be broken down into *morpho-* and *-logy*, and by using the meanings of these parts (*morpho-* = 'shape'; *-logy* = 'study of'), learners can more efficiently understand and remember the meaning of the entire word.

However, little research information exists on advanced L2 learners' use of analytical approaches to learn English vocabulary and how these approaches could benefit the acquisition of academic vocabulary. The current study therefore explores how academic vocabulary acquisition could be enhanced with morphological knowledge and awareness by drawing learners' attention toward word structures and parts. By examining university students' use of vocabulary learning strategies and how the strategy use relates to receptive morphological knowledge and the skills needed in the word part strategy, this research aims to answer the following questions:

1. How are Finnish university students currently engaging with unfamiliar lexical items in English from a strategic vocabulary learning perspective?
2. What is the students' level of receptive morphological knowledge in English?
3. How do engagement with unfamiliar words and intentional use of L2 English vocabulary learning strategies contribute to receptive morphological knowledge and the skills needed to utilize the word part strategy in learning academic vocabulary?

2. Morphological awareness in strategic L2 vocabulary learning

Schmitt and Schmitt (2020) state that, among advanced learners, intentional focus on vocabulary in almost all cases causes better and faster learning outcomes. As Nation and Meara (2020) explain, there are four significant learning strategies that aid in learning unfamiliar words: (1) guessing from context clues, and using (2) word cards, (3) word parts, and (4) dictionaries. Nation and Meara (2020) add that all four learning strategies are useful when learning high-frequency vocabulary but crucial when acquiring low-frequency vocabulary. However, not much is known about how advanced learners use strategies to acquire low-frequency multimorphemic words, although a considerable amount of research has been conducted to examine the relationship between breadth and depth of vocabulary knowledge with vocabulary learning strategies (e.g., Gu & Johnson, 1996; Kojic-Sabo & Lightbown, 1999; Moir & Nation, 2002; Schmitt, 2008, 2010).

The word part strategy is particularly applicable to learning English as an L2. That is, approximately 60% of English low-frequency multimorphemic words are constructed using morphemes that derive from Greek, Latin, or French (Nation & Meara, 2020). This process of word construction has caused numerous English words to include affixes and roots, creating the overall meaning

of words, and they can thus be exploited using the word part strategy (Nation, 2008). The word part strategy is beneficial to learning both high- and low-frequency words in English, but it is especially beneficial for acquiring academic words, which mostly include morphologically complex structures (Nation, 2022).

The word part strategy and awareness of morpheme meanings can be used to improve the recognition and retention of word meanings (Webb & Nation, 2016). In order to use the word part strategy, Nation (2008, 2022) states that learners need to: (1) recognize word parts, (2) connect a relevant meaning to the parts, and (3) understand how these meanings contribute to the meaning of the words they are used in. These steps are also included in the dimensions that form receptive morphological knowledge. More specifically, the three dimensions that are required to use receptive morphological knowledge in L2 vocabulary learning are: (1) recognizing the morphemes used in a complex word, (2) recognizing other words with the same morphemes, and (3) understanding morpheme meanings and how, when combined, they create a new but interrelated meaning (Nation, 2022).

Previous research has found evidence of the relationship between morphological knowledge and L2 English language proficiency and vocabulary knowledge (e.g., Mochizuki & Aizawa, 2000; Mäntylä & Huhta, 2014; Schmitt & Meara, 1997), but the analytical approach to vocabulary learning and word part learning strategy have received relatively little attention in past research. The few studies existing on the matter (e.g., Bubchaiya & Sukying, 2022; Crosson et al., 2020; Wei, 2015) have nonetheless provided us with evidence of the benefit to not only general L2 vocabulary learning but also to L2 English academic vocabulary acquisition.

More specifically, Wei (2015) compared the effectiveness of the word part technique with the keyword method and self-strategy learning by examining 121 Chinese, first-year university students. Using word-form recognition, meaning recognition, and translation tests, the results indicated that the word part technique was superior to the keyword technique in L2 English vocabulary learning. Bubchaiya and Sukying (2022) examined how word part strategy instruction affected vocabulary acquisition by examining 52 Thai primary school students. The results showed that vocabulary acquisition was positively affected by word part strategy instruction. In another study by Crosson et al. (2020), a direct relationship between vocabulary knowledge and morphological knowledge was discovered. After having 80 15-minute lessons on academic vocabulary and using Latin roots in morphological analysis, the authors found evidence of direct effects between morphological analysis skills and academic vocabulary knowledge among 169 multilingual adolescent English learners with varying L1s.

Even though the word part strategy has received little attention in past studies, research evidence exists on the use of vocabulary learning strategies in general, how the strategies are used by L2 learners, and their effect on learning. For instance, Schmitt (1997) examined the use of vocabulary learning strategies and their perceived usefulness among 600 L1 Japanese students. The findings indicated that the students overused many *mechanical strategies*, which are strategies focusing on form and consolidating meaning mainly through repetition and memorization. *Deep processing strategies*, on the other hand, demand active manipulation of linguistic elements and promote meaningful engagement with words and their meanings (Schmitt, 2007, 2008). Deep processing strategies include strategies such as imagery, guessing, analysing word parts, and using words in sentences (Schmitt, 1997, 2008).

Past studies have also been able to identify the types of vocabulary learning strategies that are frequently used by L2 learners, although the specific strategies have varied. A common result in the large-scale studies examining the use of vocabulary learning strategies among L2 English-speaking university students (Gu & Johnson, 1996; Schmitt, 1997) is that the students favored mechanical strategies over more complex ones requiring deep processing. Language proficiency has also been linked to the skills that are required in using strategies involving language analysis; past research has commonly depicted less proficient learners as passive in their approach to

vocabulary learning (Gu, 2003; Plonsky, 2011), whereas deep processing strategies are generally used only by advanced learners (Schmitt, 2007).

Overall, as Schmitt and Schmitt (2020) point out, there does not exist one umbrella term to refer to all the possible ways of involvement with lexical items. It seems that almost anything that generates more attention, manipulation, or time with words augments vocabulary acquisition. Therefore, Schmitt (2008) proposed the term *engagement* because anything that contributes to more versatile engagement with words should improve vocabulary acquisition. Svalberg (2009) explains that language engagement involves active and meaningful interaction with language. She adds that language awareness can therefore be both an outcome and a resource for engagement, which in turn enhances the learning process.

Dörnyei (2005) concluded based on past research on learning strategies that a positive learning outcome is not as much connected to certain strategies used as it is to the proactiveness of the learner. *Proactiveness* requires learners to take initiative and actively control their learning by planning, setting specific goals, and implementing strategies to achieve them (Dörnyei, 2005). Dörnyei (2001) contrasts *passive strategies* with more active and engaging strategies that enhance deeper learning and motivation. When compared to learners without strategic knowledge, past research has generally agreed that learners with strategic knowledge develop more successful, creative, and adaptable language learning, which leads to more efficient learning (Tseng et al., 2006). Tseng et al. (2006) therefore argued that self-regulation is a more favorable viewpoint of learner behavior instead of the actual strategies employed.

3. Methodology

3.1. Participants

An email invitation to participate in the study, written in both English and Finnish, was sent to almost all faculties of Finnish universities, from where it was then forwarded to their students. Faculties with uncommon subjects that could be used to identify individual participants were excluded. No personal data that could be used for identification was gathered, making participation in the study anonymous. In the invitation, students with all levels of familiarity with academic English and proficiency in English were encouraged to participate. As a result of this recruitment strategy, it was not possible to examine the participants' English proficiency. However, on average, Finnish university students can be considered advanced learners of English, as they are expected to have reached at least the lower range of the B2 level (B representing an independent user) in the CEFR (Council of Europe, 2001) by the time they complete upper secondary school and enter university (Finnish National Agency for Education, 2019, p. 177).

A total of 721 university students from various universities in Finland across different fields responded to the questionnaire. At the beginning of the questionnaire, respondents were asked about their mother tongue(s), as well as their disciplines and length of university studies. Only respondents whose L1 was Finnish were included in the study, resulting in a dataset that consisted of the responses from 694 Finnish university students.

The degree programmes of the participants, categorized according to the Finnish Government Decree of University Degrees (Act 794/2004, Amendment 594/2020), are presented in Figure 1. Differently from the categorization, language students were separated from students of other subjects in the Humanities category. The language category included 50 English students and 43 students majoring in another language.

Furthermore, 134 (19.3%) of the participants were first-year students, 112 (16.1%) were second-year students, 108 (15.6%) were third-year students, 109 (15.7%) were fourth-year students, 88 (12.7%) were fifth-year students, and 143 (20.6%) had studied six years or more.

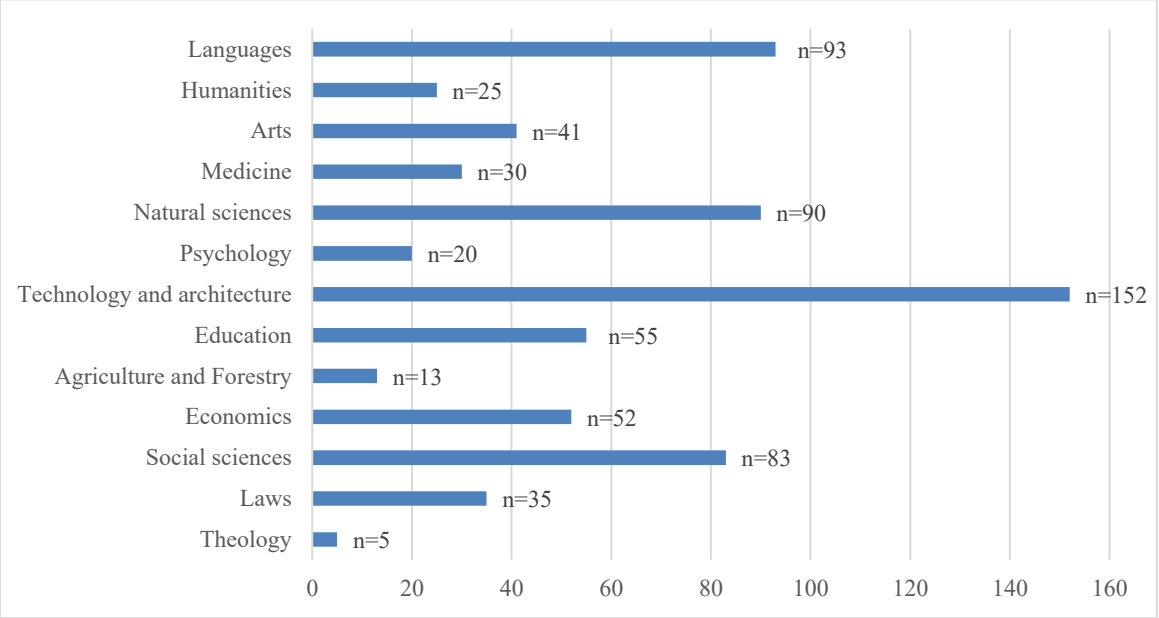

Figure 1. The degree programmes of the participants.

3.2. Data collection

The data set used for the data-driven analysis was collected with questions on vocabulary learning, which were a combination of close-ended and open-ended questions, and measures on receptive morphological knowledge. These are explained in more detail below.

3.2.1. Questions on vocabulary learning

The questions on vocabulary learning were constructed based on Dörnyei's (2005) notion of proactiveness as well as Schmitt's (2008) engagement with words. That is, the participants were asked with a yes/no question if they felt the need to learn more vocabulary and for what purposes they wished to learn more vocabulary. This was followed by a yes/no question on using specific techniques to acquire more vocabulary ("Do you have some specific techniques or ways to learn new words?"), and if they answered yes, they were asked to describe the techniques they used with an open-ended question. The question did not mention "strategy" to encourage all types of descriptions and details about proactiveness and engagement with words. Strategy use was asked with an open-ended question instead of providing a list of strategies to examine students' intentional focus on vocabulary learning, ability to recognize the strategies they were using, and how they used them. It was hypothesized that the reported strategy use might be lower than what the student actually uses due to using an open-ended question, but the answers would indicate the participants' level of metacognitive awareness, use of metacognitive strategies, and deliberate attention to vocabulary learning.

When piloting these questions, it was noticed that answering the question on the use of learning strategies was set as optional. Answering the question was changed to mandatory, and as no other changes were made, the answers to the pilot study were included in the data.

3.2.2. Tasks on morphological knowledge

The data on receptive morphological knowledge was gathered with three tasks at the end of the questionnaire: (a) Morpheme meaning (MM) task, (b) Morphemes across words (MAW) task, and (c) Word segmentation (WS) task. These tasks on morphological knowledge (MK) measured the dimensions needed in the receptive use of morphological knowledge (Nation 2022). Furthermore, as the first step of the word part strategy requires learners to be able to break a complex word into its parts (Nation, 2022), the questionnaire aimed to find out the participants' ability to undertake this strategy without any pedagogical intervention by asking them to break complex

words into morphemes (the WS task). The second step of the word part strategy requires learners to be familiar with the meanings of the word parts to use those meanings to decipher the word's meaning (Nation, 2022). Therefore, the participants were also asked to explain morpheme meanings (the MM task). This was followed by naming other words that include the same morpheme (the MAW task), which was used to measure the participants' ability to make connections across words based on shared morphemes, a dimension that Nation (2022) includes as part of receptive morphological knowledge. A short description of each task with rationale is provided below (for further information on the tasks' layout and target items, see the appendix).

The MM and MAW tasks were combined so that the participants were first asked to define the meaning of a morpheme (MM task) and then to name two words that included the morpheme (MAW task). Six target items (three prefixes and three suffixes) were included in the MM and MAW tasks. The following example was given before the tasks:

midnight; midwinter:
1. definition: in the middle of
2. other words: *midday, midair*

In the MM task, no points were given if the definition was wrong, one point if the definition was incomplete or restricted in use, and two points if the definition was correct. The meaning definitions were considered from the word part strategy perspective of whether the definition could be used to construe the meaning of the whole word[1]. The definitions were first scored independently by two raters, who then compared their scoring for divergences and negotiated them to form corresponding scores. For the MAW task, a point per word (maximum of two points) was awarded. No points were given if the word provided did not have the correct morpheme[2].

The WS task measured the recognition of 21 target items in morphologically complex words. In the WS task, the participants were asked to break the multi-morphemic words into the smallest meaningful parts with the following example:

mismanaged → mis + manag(e) + ed

The WS task was chosen as previous studies have shown its usefulness for measuring affix recognition (e.g., Bubchaiya and Sukying, 2022; Hayashi & Murphy, 2011; Leontjev et al., 2016). Previous studies examining morpheme recognition in morphologically complex words (Hayashi & Murphy, 2011; Leontjev et al., 2016) have focused on affix recognition, but as roots provide essential information on the meaning of the word and are therefore necessary for the word part strategy, recognition of roots was included in the WS task. All items were chosen at random from Gardner and Davies' (2014) Academic Vocabulary List's 300 most frequent word families. Each correctly segmented morpheme scored one point. Alternative forms (e.g., *-ion* instead of *-ation*) were accepted when they did not interfere with the adjacent morphemes.

The online version of the Oxford English Dictionary (OED) was used as a source of reference if needed when scoring the MK tasks. It should also be noted that to ensure participant engagement and completion of the questionnaire, the MK tasks were set as non-compulsory. Hence, the number of participants per task varies in the analysis from the total number of participants to the study.

3.3. Procedure

The data were collected during the winter of 2020, and an online questionnaire (*Webropol*) was chosen due to the restrictions caused by the global pandemic. At the beginning of the questionnaire, a short description of the study and an overview of the questionnaire were given. It was

[1] For example: the definition 'profession' for the suffix *-er* was given only one point as it cannot be used for words like *Londoner, adapter,* or *insider.*

[2] For example: 'disco' for the prefix *dis-* or 'father' for the suffix *-er*.

emphasized that no additional sources, such as dictionaries, should be used. When constructing the questionnaire, it was ensured that no metalinguistic knowledge was needed to understand the instructions or complete the tasks. The questionnaire was first piloted with 24 students, which indicated that the questionnaire and its measures worked as intended.

The following data-driven analysis was conducted with IBM SPSS Statistics (Version 29) using independent samples *t*-tests and one-way analyses of variance (ANOVA). To examine the relationship between vocabulary strategy use and receptive morphological knowledge with *t*-tests and ANOVA, the students were categorized into groups based on their strategy use: 1) a dichotomous, yes/no use of learning strategies, and 2) engagement type with words. The groups created based on engagement type were formed with a qualitative content analysis using the students' descriptions of the strategies they used to learn new vocabulary. Since language students might possess greater metacognitive awareness of vocabulary strategies due to their discipline, it was ensured after categorization that none of the categories included a disproportionately large number of language students. The reliability of the MK tasks, which were developed to fit the Finnish university students' proficiency level, was examined using the Cronbach Alpha coefficient.

4. Results

4.1. Engagement with unfamiliar words

Of the 687 participants who answered the question on using learning strategies to learn new words, 180 (26.2%) reported using some strategy(s) to learn new words, and 507 (73.8%) reported using none. Those students who answered yes to using strategies were also asked to describe the technique they used. The strategies the participants named were sorted into groups (see Table 1) when mentioned more than once. It should be added that more than one strategy was mentioned in most answers and that, overall, the answers were rather detailed and descriptive.

Table 1. Learning strategies used by the students to learn more vocabulary (n = 180).

Learning strategy	Students reported using the strategy (%)
Consuming media in English	88 (48.9)
Dictionary	46 (25.6)
Memorization / repetition	23 (12.8)
Word lists / note-taking	20 (11.1)
Creating sentences / linking with synonyms	18 (10.0)
Digital learning apps	15 (8.3)
English production	11 (6.1)
Cognates / crosslinguistic similarities	10 (5.6)
Spelling / pronunciation	5 (2.8)
Context	3 (1.7)
Word parts	3 (1.7)

Besides consuming media in English, which was used most often, there was a great deal of variance across different strategies that were being used. However, using word parts and guessing from context were mentioned the least as only three participants named them. Moreover, activeness towards vocabulary learning, the level of engagement with words, and required metalinguistic awareness differed considerably within each strategy. For instance, the descriptions of how a dictionary was used varied noticeably as Examples (Ex.) 1–3 show.

Ex 1: *"Checking them from a web dictionaries; listening to the correct pronunciation from web; using thesaurus to associate the term/word with similar expressions; using phrase searches in google to check the idiomatic usages of the words/terms"* (R384),

Ex.2: *"I just google the finnish word and add "in english" after it. Some kind of translator always pops up."* (R399),

Ex. 3: *"asking google"* (R700)

Consequently, instead of focusing on specific strategies, the students' use of strategies to learn new vocabulary was categorized using content analysis (see Figure 2), the results of which are described below.

In the participants' answers, there was a clear division between strategies describing active work with words, explicitly focusing on them, and strategies where lexical items were learned implicitly through contact with the language. These answers were categorized as *Proactive* and *Passive* strategies. Passive strategy use included little to no involvement with words and relied on incidental learning, as the following Examples 4 and 5 demonstrate.

Ex.4: *"Read books in English and watch movies without subtitles"* (R49)

Ex. 5: *"Consuming a lot of different types of media on varying subjects"* (R67)

Contrary to the Passive strategies, Proactive strategies (Examples 6 and 7) described an active and deliberate focus on words.

Ex. 6: *"I look at the pronunciation parts and look at the spelling. Sometimes I link to another word I already know (e.g. similar pronunciation, spelling or meaning)"* (R169)

Ex. 7: *"if i want to learn a certain word, i repeat it in my head multiple times alone and in a sentence"* (R636)

Secondly, as the examples above already show, there was variance in the depth of engagement with words within the Proactive strategies; some relied on rote learning, whereas other answers involved a deeper level of mental processing and manipulation of the lexical items. The Proactive strategy category was therefore further divided into *Mechanical* and *Deep processing* categories. Students using Mechanical strategies relied on repetition, simple translations of meaning, and memorization as Examples 8 and 9 illustrate.

Ex. 8: *"Watching videos and repeating new expressions and words"* (R2)

Ex. 9: *"Write words down in finnish, then in english, and again in finnish. This is repeated until I have learned the words"* (R295).

Students using Deep processing strategies had a deeper, more analytical engagement with words. These strategies often involved metalinguistic awareness and went beyond checking the translation, repetition, or other means of rote learning, which the following Examples 10 and 11 show.

Ex. 10: *"I try to find the "body" of the new word or to use the word in a short and meaningful sentence, find synonyms etc."* (R248)

Ex. 11: *"Reading a lot, reading dictionary entries of new words and learning about their usage and etymology, trying to use new words."* (R648)

Figure 2 illustrates the strategy categorization based on engagement type and engagement depth.

The relationship between reported strategy use and the need to learn more (see Section 4.2) was examined but no relationship was found as students who felt the need to learn more were distributed similarly based on their reported strategy use to those who did not feel the need to learn more vocabulary.

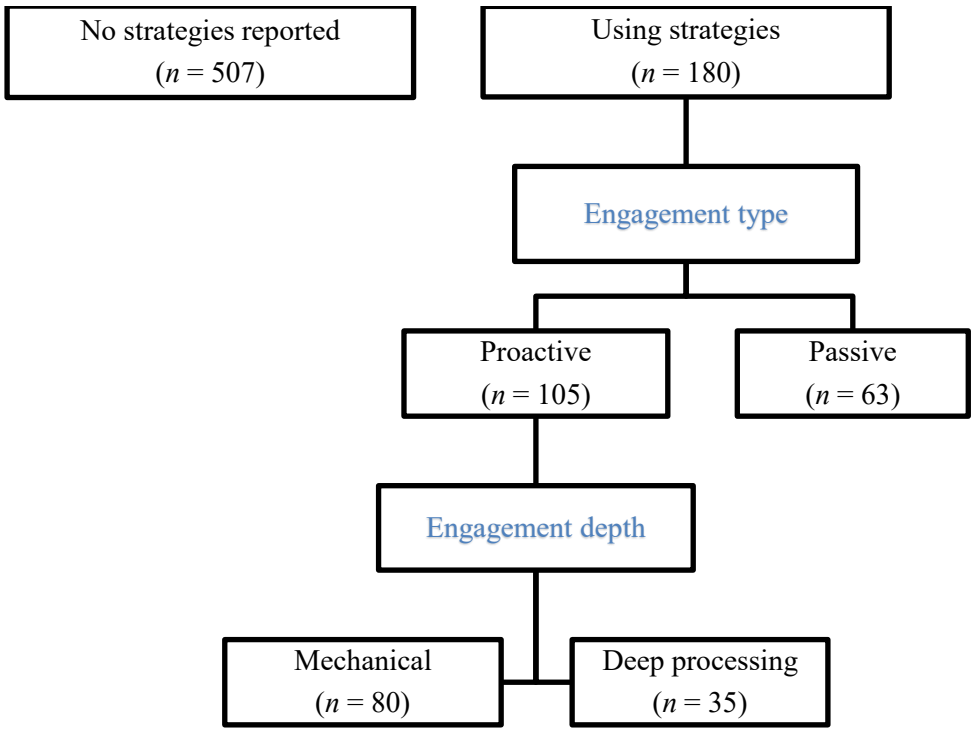

Figure 2. Learning strategies used by Finnish university students based on engagement with lexical items.

As strategic vocabulary learning requires motivation, the students were asked if they felt the need to learn more vocabulary and for what purposes. Most participants, 609 (87.8%), wanted to learn new vocabulary whereas the rest 85 (12.2%) were satisfied with their current vocabulary knowledge level. Of the 578 participants who specified the purposes, 266 (46.0%) students wanted to learn more academic or technical vocabulary, while 89 (15.4%) students wanted to acquire more vocabulary for future professional communication. The remaining 223 (38.6%) described a more general need, such as wanting to understand vocabulary more in-depth.

4.2. The level of receptive morphological knowledge

A reliability analysis was carried out on the target items in the MK tasks. The Cronbach's Alpha coefficient of .749 was considered to represent an acceptable degree of internal consistency across the items because each measured a different dimension of receptive morphological knowledge.

The tasks however differed in terms of their difficulty. As Table 2 summarizes, the WS and MM tasks, measuring the key aspects needed for using the word part strategy, posed the most difficulty for the participants as the means were only about half of the maximum. Noticing connections between words based on shared morphemes in the MAW task was quite high as the mean was 82% of the maximum score.

The mean score for all the tasks (27.16), indicating the overall level of receptive morphological knowledge of the students, was 59% from the maximum. This measure was also hypothesized to represent the students' readiness to use the word part strategy, referring to how likely it is that the students could implement the word part strategy into their vocabulary learning process without pedagogical interventions or being explicitly taught how to use the strategy.

Table 2. Scores on the tasks on receptive morphological knowledge.

	N	Mean (%)	95 % CI of the mean		*SD*	Max. score
			Lower	Upper		
All MK tasks	658	27.16 (59.0)	26.69	27.63	6.15	46
Word segmentation (WS) task	678	11.04 (52.6)	10.75	11.34	3.93	21
Morpheme meaning (MM) task	665	6.11 (50.9)	5.95	6.26	2.07	12
Morphemes across words (MAW) task	677	9.86 (82.2)	9.69	10.03	2.25	12

Note. The MK tasks were not compulsory, causing variance in the number of participants (*N*) per task.

4.3. Current strategy uses and their connection to morphological awareness

An independent-samples *t*-test was carried out to see if strategy use in general had a relationship with the participants' level of receptive morphological knowledge. Those who reported using strategies to learn new vocabulary ($N = 170$, $M = 28.38$, $SD = 5.66$) performed statistically significantly better ($p = .001$) in the MK tasks overall than participants who reported not using any strategy in their vocabulary acquisition ($N = 481$, $M = 26.71$, $SD = 6.29$). However, the effect size of the deliberate use of learning strategies on morphological awareness, measured by the MK tasks, was small ($d = .273$). Consequently, a more detailed examination of the relationship between the current strategy use, based on the engagement categorizations illustrated in Figure 2, and receptive morphological knowledge needed in the word part strategy was examined.

4.3.1. Proactive strategy use

One-way ANOVAs were performed per each MK task and their total score with strategies based on proactiveness with vocabulary learning. As shown in Table 3, the average score for the MK tasks was highest among students who used Proactive strategies.

The difference in the means of the total score between the three groups was statistically significant ($p <. 05$) but the effect size was small whereas the difference in means in the MAW task was not only statistically significant ($p < .001$) but had a medium effect size as well.

Examining the difference between the three groups in Table 3, a post-hoc Tukey HSD test was executed, which showed that the difference in mean ($MD = 1.80$) in the MK total score between those who reported not using strategies and those who used Proactive strategies was statistically significant, $p = .016$. In the MAW task, a post-hoc Tukey HSD test showed that the means of the No strategies reported group differed statistically significantly both from the Passive strategy group ($MD = .914$, $p = .007$) and from the Proactive strategy group ($MD = .712$, $p = .006$).

Table 3. The association between different engagement-type strategies with receptive morphological knowledge.

	No strategies reported		Passive strategies		Proactive strategies		*F*	*df*	*p*	Eta-squared
	M (*n*)	*SD*	*M* (*n*)	*SD*	*M* (*n*)	*SD*				
MK total score	26.62 (499)	6.27	27.43 (60)	6.21	28.41 (112)	5.82	4.009	2	.018	.012
MM task	6.03 (494)	2.06	6.31 (58)	2.12	6.35 (113)	2.07	1.459	2	.233	.004
MAW task	9.66 (503)	2.32	10.57 (61)	1.98	10.37 (113)	1.90	8.145	2	<.001	.024
WS task	10.93 (505)	3.95	10.79 (61)	3.83	11.67 (112)	3.83	1.753	2	.174	.005

4.3.2. Depth of engagement with words

As the Proactive strategies consisted of two sub-categories (*Deep processing* and *Mechanical strategies*) depicting the depth of engagement with words, their effect on receptive morphological knowledge was also examined. A series of *t*-tests were carried out between students using *Mechanical strategies* with the rest of the students using some other strategies or no strategies but the differences in means did not have statistical significance (> .05) in any of the tasks or the MK total score.

Next, the effect of using Deep processing strategies was examined similarly by executing a series of *t*-tests between those who used Deep processing strategies and those who did not. Due to the variance in group size of Deep processing ($n < 40$) and the rest ($n > 600$), Independent-Samples Mann-Whitney *U* Tests were also executed, and they verified the results of the parametric *t*-tests reported in Table 4.

The results presented in Table 4 revealed that students who used Deep processing strategies performed significantly better in the MM and WS tasks than students who used other strategies or did not report any strategies. It should be noted that the majority of the latter group was formed by students who did not report any strategies. The overall receptive morphological knowledge, measured by the total score of the tasks, was also significantly higher among students using Deep processing strategies. The use of Deep processing strategies had a small effect size ($d > .20$) in the MM and WS tasks as well as in the total score, albeit its effect on the total score was close to a medium effect (.480 < .50).

5. Discussion

The main aim of this study was to examine how Finnish university students' intentional use of vocabulary learning strategies contributes to morphological awareness and the analytical skills needed in the word part strategy. By examining the way the students are currently using vocabulary learning strategies to intentionally engage with lexical items, the current study discovered that certain types of engagement were more closely associated with receptive morphological knowledge and the different steps needed in the word part strategy.

Table 4. Comparisons between students who used Deep processing strategies and those who did not.

Task	Mean		*t*	*df*	*p*	Cohen's *d*
	Deep processing strategies	Other or no reported strategies				
MK total score	29.94 (*n* = 34)	27.01 (*n* = 624)	2.725	656	.007	.480
Morpheme meaning (MM) task	6.91 (*n* = 35)	6.06 (*n* = 630)	2.378	663	.018	.413
Morphemes across words (MAW) task	10.49 (*n* = 35)	9.83 (*n* = 642)	1.689	675	.092	-
Word segmentation(WS) task	12.47 (*n* = 34)	10.97 (*n* = 644)	2.182	676	.029	.384

Several different strategies were being used among students who reported using strategies. Consuming media was the most common strategy whereas only three students mentioned using word parts in their vocabulary learning. Even though the students who reported using strategies gave descriptive and detailed answers concerning their vocabulary strategy use, the number of participants who reported using strategies was expected to be affected by the method in which the data for strategy use was collected. That is, it is likely that more students were using strategies but they were not aware of them. For instance, using English media, the most popular strategy mentioned, was likely used by participants who reported not using any strategies. Nevertheless, as stated by Tseng et al. (2006), self-regulation is more effective than any singular strategy. Therefore, students who named English media as a strategy can be regarded as having more self-regulation and employing metacognitive strategies because they paid an intentional focus on vocabulary learning in comparison to those who reported not using any strategies. Moreover, from the participants who intentionally used vocabulary learning strategies, Proactive strategies, which involved explicit focus on words, were more popular than Passive strategies which involved implicit learning. Therefore, students who reported using strategies not only had higher levels of metacognitive awareness and use of metacognitive strategies, as they intentionally focused on vocabulary learning and were aware of the strategies they employed, but they were generally more proactive in their vocabulary learning.

There was a great deal of variance in the way the strategies were used to engage with words. Within the same strategy, students were employing it differently resulting in different types and depths of engagement. Past research has shown that positive learning outcomes are related to the proactiveness of the learners (Dörnyei, 2005) and engagement with words (Schmitt, 2008). Indeed, these were evident in the students' descriptions of their strategy use, as how strategies were used by the students could be divided into Proactive and Passive strategies based on the engagement type with words. Furthermore, the division within the Proactive strategies into Mechanical and Deep processing strategies based on the depth of engagement with words and their meanings has also been detected in past research (Gu & Johnson, 1996; Schmitt, 1997, 2008; see also Schmitt & Schmitt, 2020).

The current level of the participants' receptive morphological knowledge was also examined to provide information on their readiness to use the word part strategy without explicit instruction. The analysis revealed that the students' overall receptive morphological knowledge, which was hypothesized to denote their ability to use the word part strategy, was only partial, at 59% of the maximum.

Most students expressed the need to learn more vocabulary, and more specifically, to learn academic vocabulary. Yet, most students also reported not using any strategies to learn new vocabulary. When comparing their performance with students who used strategies, the use of vocabulary learning strategies was associated with morphological awareness. That is, students who used strategies to learn new vocabulary demonstrated significantly higher receptive morphological knowledge than students who did not employ any strategy in their vocabulary learning. This is not surprising as past research has also found that strategy use causes creative and adaptable language learning (Tseng et al., 2006), which are necessary for morphological analysis. Moreover, since using vocabulary learning strategies can be considered as engagement with the lexical items, its relationship with morphological awareness is in line with Svalberg's (2007, 2009) notion of the relationship between engagement and language awareness. Overall, students' engagement with words was connected to their morphological awareness as students with higher levels of receptive morphological knowledge also engaged with words and their meanings more actively and on a deeper level.

The engagement type affected the overall receptive morphological knowledge when compared to students who did not mention any strategies. More specifically, students using proactive strategies had a significantly higher level of receptive morphological knowledge, measured by the total score of the MK tasks, than students who did not intentionally use vocabulary learning strategies. This result is again supported by Dörnyei's (2005) notion of proactiveness as well as that of Schmitt and Schmitt (2020) on intentional focus on vocabulary causing better learning outcomes. When the depth of engagement with lexical items within the proactive strategies was considered, mechanical strategies were more commonly used in comparison to strategies that require deep processing. This finding is in line with Schmitt (1997) who discovered that students overused mechanical strategies over complex strategies that require deep processing. Among the different dimensions of receptive morphological knowledge, recognizing morphemes across words (the MAW task) was significantly higher among students using proactive and passive strategies compared to students who did not mention any strategies. This suggests that any type of deliberate engagement with words raises students' awareness of the similarities across words based on shared morphemes.

The relationship between the depth of engagement with words and students' morphological awareness was also examined, which provided evidence of how strategic vocabulary learning and receptive morphological knowledge are connected. The two categories within Proactive strategies, Deep processing and Mechanical strategies, depicting the engagement depth were compared with the rest of the students. The results showed that Mechanical strategies, such as repetition and memorization, did not have a significant relationship with receptive morphological knowledge or any of its dimensions. In line with Schmitt and Schmitt's (2020) claim about deep processing strategies being more beneficial than mechanical strategies, the results showed that the use of deep processing strategies was connected to receptive morphological knowledge and all its dimensions. As Deep processing strategies require metalinguistic awareness, this finding is consistent with past research indicating the positive effect metalinguistic awareness has on analysing linguistic structures, such as morphemes (e.g., Cenoz et al., 2001; Jessner, 2008).

The effect of using Deep processing strategies was most notable on the overall level of receptive morphological knowledge. In addition, students who used strategies requiring deep processing performed significantly better than the rest of the students in the word segmentation and morpheme meaning tasks. Among the dimensions of receptive morphological knowledge,

recognizing morphemes across words was the only dimension not affected by the use of Deep processing strategies. Since performance in the MAW task was affected by the use of learning strategies in general, the findings suggest that the ability to see connections across words based on similar structures might not require analytical skills, or at least not as significantly as the different steps of the word part strategy require. Instead, recognizing morphemes across words could be affected by an intentional focus on vocabulary learning and general use of learning strategies, regardless of which type of strategy is used.

The results seem to indicate that an analytical approach to lexical items enhances morpheme recognition and understanding morpheme meanings. The findings also indicate that the use of strategies involving deeper engagement with words and their meanings might develop the analytical skills needed not only in recognizing word parts in multimorphemic words (the first step in the word part strategy) and in understanding morpheme meanings (the second step in the word part strategy) but also in developing their overall morphological awareness. This finding supports the evidence Crosson et al. (2020) found on the benefits of developing students' morphological analysis skills by focusing on Latin roots to acquire academic vocabulary. Overall, together with past research that has provided evidence for the effectiveness of the word part strategy on vocabulary acquisition (Bubchaiya & Sukying, 2022) and over other strategies (Wei, 2015), these findings provide further evidence on how university students can benefit from word part strategy use after they are instructed on the steps and its use to acquire academic vocabulary.

6. Conclusion

This study examined how intentional engagement with words affected Finnish university students' morphological awareness and the skills needed in the word part strategy. The findings provide evidence of how intentional focus on and engagement with words, and specifically engagement type and depth, might affect morphological awareness and skills needed in the word part strategy.

The results suggest that most Finnish university students are not intentionally employing vocabulary learning strategies although they wish to learn more vocabulary. Based on this finding, Finnish university students are motivated to learn new vocabulary, and raising awareness towards strategic vocabulary learning could therefore be beneficial among university students. As using any type of engagement with words increased morphological awareness, the results indicate the usefulness of all types of strategic approaches in vocabulary learning to raise overall lexical awareness. Furthermore, the findings emphasized the need for incorporating the word part strategy into higher education L2 teaching as most students specifically expressed the need to acquire more academic vocabulary, for which the word part strategy can be particularly useful and efficient. Therefore, together with past research findings on the strong effect that developing morphological analysis skills has on acquiring academic vocabulary, the findings of this study can be used to argue for the usefulness and effectiveness of employing the word part strategy to learn academic vocabulary. This conclusion also highlights the importance of introducing L2 English learners to the strategy early in their education so that it can be used as proficiency increases. As Finnish students seem to be motivated to learn more academic vocabulary, the word part strategy should be introduced and incorporated specifically for the academic context so that students can understand the strategy's efficiency and apply it when interacting with academic English. It would therefore particularly effective if the strategy were introduced in the mandatory language studies that focus on academic English. This would also enable students to better understand and process the terminology that they encounter in their discipline-specific courses more effectively and profoundly.

Very few students reported using the word part strategy, which suggests that most need to be introduced to the strategy. Based on the partial receptive morphological knowledge, which was also considered to represent the students' ability to employ the word part strategy without explicit

instruction, students will need to be instructed on how to use the word part strategy. More specifically, the students' performance in the MK tasks indicates that they have developed morphological awareness, and the skills needed in the word part strategy to a certain degree, but the actual steps needed to employ the strategy and use morphological analysis should be addressed in teaching.

Advanced language learners have been shown to have higher levels of analytical skills and skills that are needed in detecting and manipulating linguistic elements. Therefore, the introduction and instruction of the word part strategy to Finnish students, as advanced language learners, might not need considerable pedagogical effort. Instead, using students' prior linguistic knowledge gained through their advanced proficiency level in L2 English and L1 Finnish, a morphologically complex language, can provide students with the skills needed to analyse complex word structures.

Indeed, the results suggest that the intentional use of learning strategies in general and the deep processing strategies, which require analytical skills and therefore also metalinguistic awareness, were associated with morphological awareness and the steps required in using the word part strategy. Raising metalinguistic awareness could thus be achieved with an explicit focus on lexical patterns and linguistic systems which could also develop students' proficiency in analysing semantic and crosslinguistic relationships.

The open-ended question used to collect data on the use of vocabulary learning strategies might have caused a lower number in reported strategy use as the participants might have been using strategies without considering them as such. This nonetheless indicates a lack of metacognitive awareness and strategies as well as intentionality towards vocabulary learning. Since past research has shown that there is a relationship between metacognitive skills and multilingualism (e.g., Dahm, 2015; Haukås, 2015), future research would benefit from a closer examination of Finnish university students' multilingual repertoire and how it is connected to learning both general English vocabulary, which shares few cognates with Finnish, and academic vocabulary, which includes many cognates between Finnish and English. Finnish has a rich and complex morphological system, and therefore further research with different L1s is needed to determine if the findings were influenced by the participants' L1. More research is also needed on how much attention receptive morphological knowledge requires in teaching before students can use word part strategies.

The data collection was affected by the global pandemic, and therefore, a limited number of target items and measures were chosen to prevent extra restraint to the participants during a stressful time. Due to the scope of the current study, other factors affecting vocabulary learning, such as students' general vocabulary knowledge or their perceptions of the usefulness of the word part strategy, could not be included.

Declarations

Funding details: This work was supported by the Emil Aaltonen Foundation under Grant 210187 and by the Department of Language and Communication Studies (JYU).

Disclosure statement: The author declares no conflict of interest.

Data availability statement: The data that support the findings of this study are available from the author, A.R., upon reasonable request.

Appendix. Target items and instructions per each task.

(Note. These are copies of the original measures. Layout and task naming are different from the original.)

1) ***The morpheme meaning task and the morphemes across words task***

In English, many words are created by connecting smaller parts together. This task focuses on the meanings of some word parts and how they are used across different words.

1. **Define the meaning** of the part that is underlined. You don't have to know the exact meaning.

2. **Name at least two other words** that contain the same word part.

For example: midnight ; midwinter → 1. mid = in the middle of 2. midday, midair

1. unfamiliar
   unsupported

2. disconnect
   disappear

3. demography
   paragraph

4. manager
   provider

5. unicycle
   unicolor

6. predictable
   adaptable

2) ***The word segmentation task***

This task examines the different parts that are combined to create words.

Divide the words into the smallest meaningful parts. Try to guess if you don't know!

Here is an example: mismanaged → mis + manag(e) + ed

1. globalization
2. economic
3. researchist
4. independently
5. encouragement
6. internationalize

References

Bauer, L., & Nation, I.S.P. (2020). *English morphology for the language teaching profession.* Routledge.

Bubchaiya, N., & Sukying, A. (2022). The Effect of Word Part Strategy Instruction on the Vocabulary Knowledge of Thai Primary School Learners. *Journal of Education and Learning*, *11*(5), 70–81. https://doi.org/10.5539/jel.v12n6p46

Cenoz, J., Huffeisen, B., & Jessner, U. (2001). Towards trilingual education. *International Journal of Bilingual Education and Bilingualism*, *4*(1), 1–10.

Council of Europe. (2001). *Common European Framework of Reference for language learning and teaching*. Cambridge University Press.

Crosson, A. C., McKeown, M. G., Lei, P., Zhao, H., Li, X., Patrick, K., Brown, K., & Shen, Y. (2021). Morphological analysis skills and academic vocabulary knowledge are malleable through intervention and may contribute to reading comprehension for multilingual adolescents. *Journal of Research in Reading*, *44*(1), 154–174. https://doi.org/10.1111/1467-9817.12323

Dahm, R. (2015). Developing Cognitive Strategies Through Pluralistic Approaches. In G. de Angelis, U. Jessner and M. Kresic (Eds.), *Cross-linguistic Influence and Multilingualism* (pp. 43–70). Bloomsbury.

Dörnyei, Z. (2001). *Motivational Strategies in the Language Classroom.* Cambridge University Press.

Finnish National Agency for Education. (2019). *Lukion opetussuunnitelman perusteet 2019* [*National core curriculum for upper secondary schools 2019*]. https://www.oph.fi/sites/default/files/documents/lukion_opetussuunnitelman_perusteet_2019.pdf

Dörnyei, Z. (2005). *The psychology of the language learner: Individual differences in second language acquisition.* Lawrence Erlbaum.

Gardner, D., & Davies, M. (2014). A New Academic Vocabulary List. *Applied Linguistics* *35*(3), 305-327. https://doi.org/10.1093/applin/amt015

Gu, Y. (2003). Fine brush and freehand: The vocabulary learning art of two successful Chinese EFL learners. *TESOL Quarterly*, *37*(1), 73–104. https://doi.org/10.2307/3588466

Gu, Y., & Johnson, R.K. (1996). Vocabulary Learning Strategies and Language Learning Outcomes. *Language Learning*, *46*(4), 643-679. https://doi.org/10.1111/j.1467-1770.1996.tb01355.x

Haukås, Å. (2015). A Comparison of L2 and L3 Learners' Strategy Use in School Settings. *Canadian Modern Language Review*, *71*(4), 383–405. https://doi.org/10.3138/cmlr.2701

Hayashi, Y., & Murphy, V. (2011). An investigation of morphological awareness in Japanese learners of English. *The Language Learning Journal*, *39*(1), 105–120. https://doi.org/10.1080/09571731003663614

Jessner, U. (2008). A DST model of multilingualism and the role of metalinguistic awareness. *The Modern Language Journal*, *92*(2), 270–283.

Jessner, U. (2018). Metacognition in Multilingual Learning: A DMM Perspective. In Å. Haukås, C. Bjørke and M. Dypedahl (Eds.), *Metacognition in Language Learning and Teaching* (pp. 31–47). Routledge.

Kojic-Sabo, I., & Lightbown, P. M. (1999). Students' Approaches to Vocabulary Learning and Their Relationship to Success. *The Modern Language Learning Journal*, *83*(2), 176–192. https://doi.org/10.1111/0026-7902.00014

Kuo, L-J., & Anderson, R. C. (2006). Morphological Awareness and Learning to Read: A Cross-Language Perspective. *Educational Psychologist*, *41*(3), 161–180. https://doi.org/10.1207/s15326985ep4103_3

Mochizuki, M., & Aizawa, K. (2000). An affix acquisition order for EFL learners: An exploratory study. *System*, *28*(2), 291–304. https://doi.org/10.1016/S0346-251X(00)00013-0

Moir, J., & Nation, P. (2002). Learners' use of strategies for effective vocabulary learning. *Prospect*, *17*(1), 15–35.

Mäntylä, K., & Huhta, A. (2014). Knowledge of word parts. In J. Milton and T. Fitzpatrick (eds.), *Dimensions of vocabulary knowledge* (pp. 45–59). Palgrave Macmillan.

Nation, P. (2008). Lexical awareness in second language learning. In J. Cenoz and N. H. Hornberger (Eds.), *Encyclopedia of Language and Education, Volume 6: Knowledge about Language* (2nd ed.) (pp. 167–177). Springer. https://doi.org/10.1007/978-0-387-30424-3

Nation, P. (2020). The Different Aspects of Vocabulary Knowledge. In S. Webb (Ed.), *The Routledge Handbook of Vocabulary Studies* (pp. 15–29). Routledge.

Nation, I.S.P. (2022). *Learning Vocabulary in Another Language* (3rd ed.). Cambridge University Press. https://doi.org/10.1017/9781009093873

Nation, P., & Meara, P. (2020). Vocabulary. In N. Schmitt & M.P.H. Rodgers (Eds.), *An Introduction to Applied Linguistics* (3rd edition), 35-43. Routledge.

Plonsky, L. (2011). The Effectiveness of Second Language Strategy Instruction: A Meta-analysis. *Language Learning*, *61*(4), 993–1038. https://doi.org/10.1111/j.1467-9922.2011.00663.x

Read, J. (2000). *Assessing Vocabulary.* Cambridge University Press.

Schmitt, N. (1997). Vocabulary Learning Strategies. In N. Schmitt and M. McCarty (Eds.), *Vocabulary: Description, Acquisition and Pedagogy* (pp. 199–227). Cambridge University Press.

Schmitt, N. (2007). Current Perspectives on Vocabulary Teaching and Learning. In J. Cummins and C. Davison (Eds.), *International Handbook of English Language Teaching* (pp. 827–841). Springer.

Schmitt, N. (2008). Instructed second language vocabulary learning. *Language Teaching Research*, *12*(3), 329–363. https://doi.org/10.1177/1362168808089921

Schmitt, N. (2010). *Researching Vocabulary: A Vocabulary Research Manual*. Palgrave Macmillan. http://dx.doi.org/10.1057/9780230293977

Schmitt, N., & Meara, P. (1997). Researching vocabulary through a word knowledge framework: word associations and verbal suffixes. *Studies in Second Language Acquisition 19*(1), 17–36. https://doi.org/10.1017/S0272263197001022

Schmitt, N., & Schmitt, D. (2020). *Vocabulary in Language Teaching* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/9781108569057

Svalberg, A. M. L. (2009). Engagement with language: interrogating a construct. *Language Awareness, 18(*3–4), 242–258. https://doi.org/10.1080/09658410903197264

Tseng, W-T., Dörnyei, Z., & Schmitt, N. (2006). A New Approach to Assessing Strategic Learning: The Case of Self-Regulation in Vocabulary Acquisition. *Applied Linguistics*, 27(1), 78–102.

Webb, S., & Nation, P. (2017). *How Vocabulary is Learned*. Oxford University Press.

Wei, Z. (2015). Does teaching mnemonics for vocabulary learning make a difference? Putting the keyword method and the word part technique to the test. *Language Teaching Research*, *19*(1), 43-69. https://doi.org/10.1177/1362168814541734

Xue, L. (2021) Using data-driven learning activities to improve lexical awareness in intermediate EFL learners. *Cogent Education*, *8*(1). https://doi.org/10.1080/2331186x.2021.1996867